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Handbook of Laser Wavelengths.
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Boca Raton: CRC Press LLC, 1999

Section 4: Gas Lasers

Section 4.1
NEUTRAL ATOM, ION, AND MOLECULAR GAS LASERS

Introduction to the Table

Lasers involving neutral atoms, ions, and molecules are listed in order of increasing wavelength in Table 4.1.1. The uncertainty in the wavelength determination and whether the wavelength value is for air or vacuum, if given, are noted in columns two and three. The lasing species and charge are given in the following two columns. The references generally include the original report of lasing plus other reports relevant to the identification of the lasing transition and operation. The references with titles or descriptions of the contents are given in Section 4.3.

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Table 4.1.1
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.0907		vacuum	Kr	2	892
0.0969		vacuum	Cs	0	903
0.1089		vacuum	Xe	2	892,896
0.10982		air	para-H_2	0	66
0.11020		air	H_2	0	66-72,74
0.11134		air	D_2	0	66
0.11152		air	para-H_2	0	66
0.11189		air	H_2	0	66-72,74
0.11377		air	D_2	0	66
0.11386		air	HD	0	66
0.11415		air	HD	0	66
0.11446		air	para-H_2	0	66
0.11476		air	D_2	0	66
0.11486		air	H_2	0	66-72,74
0.11520		air	HD	0	66
0.11565		air	D_2	0	66
0.11584		air	D_2	0	66
0.11600		air	Para-H_2	0	66
0.11613		air	H_2	0	66-72,74
0.11639		air	H_2	0	66-72,74
0.11662		air	H_2	0	66-72,74
0.11746		air	para-H_2	0	66
0.11758		air	H_2	0	66-72,74
0.11763			H_2	0	1535
0.11777			H_2	0	1535
0.11781		air	HD	0	66
0.11783		air	H_2	0	66-72,74
0.11805		air	H_2	0	66-72,74
0.11881		air	D_2	0	66
0.11893		air	H_2	0	66-72,74
0.11900		air	HD	0	66
0.11901		air	D_2	0	66
0.11928		air	HD	0	66
0.11975		air	D_2	0	66
0.11994		air	D_2	0	66

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.12010		air	HD	0	66
0.12054		air	para–H_2	0	66
0.12064		air	D_2	0	66
0.12067		air	H_2	0	66–72,74
0.12082		air	D_2	0	66
0.12093		air	H_2	0	66–72,74
0.12113		air	HD	0	66
0.12173		air	H_2	0	66–72,74
0.12177		air	para–H_2	0	66
0.12189		air	H_2	0	66–72,74
0.12214		air	H_2	0	66–72,74
0.12236		air	H_2	0	66–72,74
0.12280		air	D_2	0	66
0.12284		air	HD	0	66
0.12287		air	para–H_2	0	66
0.12299		air	H_2	0	66–72,74
0.12323		air	H_2	0	66–72,74
0.12356		air	D_2	0	66
0.12383		air	para–H_2	0	66
0.12394		air	H_2	0	66–72,74
0.124–0.128			Ar_2	0	1606,1622
0.12417		air	H_2	0	66–72,74
0.12424		air	D_2	0	66
0.12441		air	D_2	0	66
0.12457		air	HD	0	66,68
0.12462		air	para–H_2	0	66
0.12483		air	D_2	0	66
0.12500		air	D_2	0	66
0.12520		air	para–H_2	0	66
0.12528		air	HD	0	66,68
0.12533		air	D_2	0	66
0.1261		air	Ar_2	0	1,51,116
0.1270		vacuum	Zn	2	1817
0.12752			H_2	0	1535
0.12795		air	para–H_2	0	66,68
0.1280			H_2	0	1535

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.13033		air	HD	0	66,68
0.13036		air	D_2	0	66,68
0.1306		vacuum	Zn	2	1817
0.1319		vacuum	Zn	2	1817
0.13336			H_2	0	1535
0.13386		air	para–H_2	0	66,68
0.1339			H_2	0	1535
0.13423		air	H_2	0	66–72,74
0.13459		air	D_2	0	66,68
0.13551		air	HD	0	66,68
0.13598		air	para–H_2	0	66,68
0.13680		air	para–H_2	0	66,68
0.13888		air	D_2	0	66,68
0.13944			H_2	0	1535
0.13990		air	para–H_2	0	66,68
0.13998			H_2	0	1535
0.14026		air	H_2	0	66–72,74
0.14075		air	para–H_2	0	66,68
0.14077		air	HD	0	66,68
0.14187		air	H_2	0	66–72,74
0.14288			H_2	0	1535
0.14322		air	D_2	0	66,68
0.14326		air	para–H_2	0	66,68
0.14362		air	H_2	0	66–72,74
0.14376		air	para–H_2	0	66,68
0.14406		air	para–H_2	0	66,68
0.14409		air	H_2	0	66–72,74
0.14409			H_2	0	1535
0.145–0.146			Kr_2	0	1606,1622
0.14555			H_2	0	1535
0.1457		air	Kr_2	0	40,73,84,116
0.14602		air	para–H_2	0	66,68
0.14609			H_2	0	1535
0.14638		air	H_2	0	66–72,74
0.14641		air	para–H_2	0	66,68

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.14670		air	H_2	0	66–72,74
0.14684		air	para–H_2	0	66,68
0.14865		air	H_2	0	66–72,74
0.14876			H_2	0	1535
0.14884		air	HD	0	66,68
0.14917		air	para–H_2	0	66,68
0.14942		air	H_2	0	66–72,74
0.14952		air	H_2	0	66–72,74
0.14996			H_2	0	1535
0.15136		air	HD	0	66,68
0.15157		air	para–H_2	0	66,68
0.15199		air	para–H_2	0	66,68
0.15233		air	H_2	0	66–72,74
0.15299		air	HD	0	66,68
0.15315			H_2	0	1535
0.15349		air	para–H_2	0	66,68
0.15449		air	H_2	0	66–72,74
0.15454			H_2	0	1535
0.154820	±0.000030	vacuum	C	3	1099,1048
0.15501		air	para–H_2	0	66,68
0.155090	±0.000030	vacuum	C	3	1099,1048
0.15534		air	H_2	0	66–72,74
0.15574			H_2	0	1535
0.15620		air	HD	0	66,68
0.15640		air	para–H_2	0	66,68
0.15655		air	H_2	0	66–72,74
0.15663		air	H_2	0	66–72,74
0.15671		air	F_2	0	63–65
0.15673		air	H_2	0	66–72,74
0.15675		air	para–H_2	0	66,68
0.15708			H_2	0	1535
0.15713		air	HD	0	66,68
0.15720		air	H_2	0	66–72,74
0.15727		air	HD	0	66,68
0.15743		air	HD	0	66,68
0.15743		air	para–H_2	0	66,68

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.15748		air	F_2	0	63–65
0.15758		air	D_2	0	66,68
0.15759		air	F_2	0	63–65
0.15774		air	H_2	0	66–72,74
0.15777		air	H_2	0	66–72,74
0.15777		air	para–H_2	0	66,68
0.15792		air	H_2	0	66–72,74
0.15800		air	H_2	0	66–72,74
0.15800		air	para–H_2	0	66,68
0.15801		air	HD	0	66,68
0.15808		air	H_2	0	66–72,74
0.15809		air	HD	0	66,68
0.15811		air	para–H_2	0	66,68
0.15814		air	para–H_2	0	66,68
0.15819		air	HD	0	66,68
0.15825		air	HD	0	66,68
0.15831		air	HD	0	66,68
0.15849			H_2	0	1535
0.15863		air	D_2	0	66,68
0.15864		air	D_2	0	66,68
0.15867		air	D_2	0	66,68
0.15869		air	D_2	0	66,68
0.15871		air	D_2	0	66,68
0.15872		air	D_2	0	66,68
0.15890		air	H_2	0	66–72,74
0.15890		air	para–H_2	0	66,68
0.15898		air	D_2	0	66,68
0.15913		air	D_2	0	66,68
0.15913		air	H_2	0	66–72,74
0.15914		air	D_2	0	66,68
0.15923		air	D_2	0	66,68
0.15926		air	D_2	0	66,68
0.15934		air	H_2	0	66–72,74
0.15934		air	para–H_2	0	66,68
0.15938		air	HD	0	66,68

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.15955		air	HD	0	66,68
0.15961		air	H_2	0	66–72,74
0.15974		air	HD	0	66,68
0.15993		air	para–H_2	0	66,68
0.16009		air	D_2	0	66,68
0.16021		air	D_2	0	66,68
0.16023		air	HD	0	66,68
0.16024		air	para–H_2	0	66,68
0.16035		air	D_2	0	66,68
0.16037		air	HD	0	66,68
0.16046		air	HD	0	66,68
0.16049		air	H_2	0	66–72,74
0.16052		air	HD	0	66,68
0.16057		air	HD	0	66,68
0.16058		air	D_2	0	66,68
0.16059		air	H_2	0	66–72,74
0.16059		air	para–H_2	0	66,68
0.16062		air	H_2	0	66–72,74
0.16062		air	para–H_2	0	66,68
0.16065		air	D_2	0	66,68
0.16065		air	HD	0	66,68
0.16067		air	HD	0	66,68
0.16068		air	D_2	0	66,68
0.16068		air	HD	0	66,68
0.16069		air	HD	0	66,68
0.16075		air	H_2	0	66–72,74
0.16075		air	HD	0	66,68
0.16077		air	D_2	0	66,68
0.16079		air	HD	0	66,68
0.16083		air	H_2	0	66–72,74
0.16083		air	HD	0	66,68
0.16083		air	para–H_2	0	66,68
0.16084		air	H_2	0	66–72,74
0.16085		air	D_2	0	66,68
0.16090		air	H_2	0	66–72,74
0.16091		air	HD	0	66,68

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.16096		air	D_2	0	66,68
0.16096		air	para–H_2	0	66,68
0.16103		air	H_2	0	66–72,74
0.16103		air	HD	0	66,68
0.16103		air	para–H_2	0	66,68
0.16107		air	D_2	0	66,68
0.16108		air	D_2	0	66,68
0.16109		air	para–H_2	0	66,68
0.16113		air	HD	0	66,68
0.16115		air	D_2	0	66,68
0.16117		air	D_2	0	66,68
0.16117		air	H_2	0	66–72,74
0.16117		air	para–H_2	0	66,68
0.16120		air	D_2	0	66,68
0.16124		air	D_2	0	66,68
0.16126		air	D_2	0	66,68
0.16132		air	D_2	0	66,68
0.16132		air	H_2	0	66–72,74
0.16132		air	para–H_2	0	66,68
0.16141		air	D_2	0	66,68
0.16148		air	H_2	0	66–72,74
0.16149		air	para–H_2	0	66,68
0.16165		air	H_2	0	66–72,74
0.16166		air	D_2	0	66,68
0.16395		air	H_2	0	66–72,74
0.164		vacuum	He	1	851
0.16415		air	H_2	0	66–72,74
0.16429		air	H_2	0	66–72,74
0.16429		air	para–H_2	0	66,68
0.16444		air	H_2	0	66–72,74
0.16460		air	para–H_2	0	66,68
0.1690		air	ArCl	0	23,35,36
0.170–0.176			Xe_2	0	1606,1622
0.1716		air	Xe_2	0	35,15–20
0.1750		air	ArCl	0	23,35,36

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.175641	±0.000003	air	Kr	3	990
0.181085		vacuum	CO	0	55,56
0.183243	±0.000003	air	Kr	4	990
0.184343	±0.000003	vacuum	Ar	4	990
0.1850		vacuum	In	2	1818
0.187831		vacuum	CO	0	55,56
0.189784		vacuum	CO	0	55,56
0.1933		air	ArF	0	33–35,37,38
0.195006		vacuum	CO	0	55,56
0.196808	±0.000003	air	Kr	3	990
0.197013		vacuum	CO	0	55,56
0.201842	±0.000001	air	Ne	3	989,1081
0.202219	±0.000001	air	Ne	3	989,990,1081
0.205108	±0.000001	air	Kr	3	989,990
0.2055		air	Cd	1	1816
0.206530	±0.000001	air	Ne	2	989,990
0.206530	±0.000001	air	Ne	3	989,990
0.211398	±0.000001	air	Ar	3	989
0.2163			C	2	1834
0.2177			C	2	1834
0.217770	±0.000001	air	Ne	2	989
0.218086	±0.000001	air	Ne	2	989
0.2181			NO	0	1843,1844
0.21822	±0.00008	air	NO	0	1808
0.219192	±0.000001	air	Kr	3	989,990
0.21920			Kr	3	926
0.222		air	KrCl	0	23,33,36,93,94
0.223244	±0.000001	air	Xe	2	989
0.223244	±0.000001	air	Xe	3	989
0.2235	±.0005		KrCl	0	1572
0.224340	±0.000020	air	Ag	1	1001,937
0.224884	±0.000001	air	Ar	3	989
0.225464	±0.000001	air	Kr	3	989
0.22613	±0.00008	air	NO	0	1808
0.226400		air	Au	1	938
0.226570		air	Ne	4	989

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.227760	±0.000020	air	Ag	1	1001
0.228579	±0.000001	air	Ne	3	989
0.2312		air	Cd	1	1815
0.23152			Xe	3	1487
0.231536	±0.000001	air	Xe	2	989
0.231536	±0.000001	air	Xe	3	989
0.233848	±0.000001	air	Kr	3	989
0.235255	±0.000001	air	Ne	3	989
0.235798	±0.000001	air	Ne	3	653,989
0.236246	±0.000001	air	Br	3	991
0.237			NO	0	1583
0.237320	±0.000001	air	Ne	3	989
0.23869			Kr	3	926
0.24071			Kr	3	926
0.24177			Kr	3	926
0.241784	±0.000001	air	Kr	2	989
0.241784	±0.000001	air	Kr	3	989
0.24317			Kr	3	926
0.24433			Xe	3	1487
0.24504			Kr	3	926
0.2470		air	CO	1	61
0.247340	±0.000001	air	Ne	2	653,989
0.247739	±0.000003	air	Xe	0	653,874,983
0.248			NO	0	1583
0.2484		air	KrF	0	37,38,96–102
0.248580	±0.000010	air	Cu	1	937,999
0.24891			Kr	3	926
0.2491		air	KrF	0	37,38,96–102
0.250650	±0.000010	air	Cu	1	999
0.251330	±0.000002	air	Ar	3	989
0.252666			Xe	3	1487
0.252666	±0.000001	air	Xe	3	989
0.252920	±0.000010	air	Cu	1	937,1000
0.253350	±0.000020	air	Au	1	673
0.25563			Xe	3	1487

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.2573		air	Cd	1	1815
0.2580		air	Cl_2	0	55,56
0.258125	±0.000001	air	Br	3	991
0.259060	±0.000010	air	Cu	1	918,937,999
0.25973			Kr	3	926
0.259900	±0.000010	air	Cu	1	691,937,999
0.25993			Ar	3	1825
0.260030	±0.000010	air	Cu	1	691,937,1000
0.26048			Kr	3	926
0.260998	±0.000001	air	Ne	2	989
0.261340	±0.000010	air	Ne	2	989
0.261640	±0.000020	air	Au	1	673
0.262138	±0.000001	air	Ar	3	989
0.262488	±0.000001	air	Ar	3	653,989
0.263269	±0.000001	air	Cl	2	220,991,1020
0.263896	±0.000001	air	S	2	991,1489
0.263896	±0.000001	air	S	3	991,1489
0.264936	±0.000001	air	Kr	3	653,989,1125
0.26494			Kr	3	926
0.26644			Kr	3	926
0.266440	±0.000001	air	Kr	3	653,989,1125
0.2677			Ne	2	450,907,989
0.267792	±0.000001	air	Ne	2	450,907,989
0.267869	±0.000001	air	Ne	2	450,907,989
0.26919			Xe	3	1487
0.269194	±0.000001	air	Xe	3	653,874,983
0.270070	±0.000030	air	Cu	1	1161
0.270310	±0.000010	air	Cu	1	918,937,1000
0.2722		air	Cu	1	937,938
0.274138	±0.000001	air	Kr	3	653,989
0.27414			Kr	3	926
0.2748		air	Cd	1	1815
0.275388	±0.000001	air	Ar	2	450,985
0.275959	±0.000006	air	F	2	220,1022
0.27620			Ar	2	1825
0.27680			Xe	2	1487

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.277763	±0.000001	air	Ne	2	450,989
0.278150	±0.000050	air	O	4	908
0.278762	±0.000001	air	Br	2	991
0.2818		air	XeBr	0	123–126
0.28199			Xe	2	1487
0.282220	±0.000020	air	Au	1	673,691,937
0.28227			Xe	2	1487
0.2823–0.2832			ClF	0	1534
0.282608	±0.000006	air	F	3	220
0.2840			ClF	0	1527
0.2844			ClF	0	1527,1534
0.284720	±0.000020	air	Au	1	673,691,937
0.2849			ClF	0	1534
0.2850		air	ClF	0	56
0.285537	±0.000001	air	Ar	2	989
0.2860			ClF	0	1534
0.286673	±0.000001	air	Ne	2	450,653,989
0.28741			Xe	2	1487
0.288422	±0.000001	air	Ar	2	653,989,1153
0.289350	±0.000020	air	Au	1	673,691,937
0.29085			Kr	3	926
0.291292	±0.000001	air	Ar	3	450,907,989
0.2915		air	Br_2	0	50,52–54
0.29152			Kr	3	926
0.291810	±0.000020	air	Au	1	673,691,937
0.2925			Ta	0	1849
0.292623	±0.000001	air	Ar	3	450,653,989
0.29310			Kr	3	926
0.29547			Xe	2	1487
0.29707			Xe	2	1487
0.298389	±0.000006	air	O	2	450,908,989
0.29858			Kr	3	926
0.299951		air	Fe	0	415
0.300–0.350			SO	0	1848
0.300264	±0.000001	air	Ar	2	450,907,989

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.301618		air	Fe	0	415
0.302400	±0.000050	air	Ar	2	450,985
0.303164		air	Fe	0	415
0.304043		air	Fe	0	415
0.30438			Xe	0	1487
0.30438			Xe	2	1487
0.304715	±0.000006	air	O	2	450,653,908
0.30497			Kr	2	926
0.304970	±0.000002	air	Kr	2	450,653,989
0.3051		air	Tm	0	1493
0.305480	±0.000050	air	Ar	2	450,985
0.30633			Xe	0	1487
0.306346	±0.000006	air	O	3	653,908,989
0.30649			Ar	2	1825
0.3070		air	XeCl	0	3–6,33–36,126
0.3073		air	XeCl	0	3–6,33–36,126
0.30765		air	XeCl	0	3–6,33–36,126
0.30783			Ar	2	1825
0.3079		air	Tm	0	1493
0.30792		air	XeCl	0	3–6,33–36,126
0.307974	±0.000002	air	Xe	2	450,653,989
0.30817		air	XeCl	0	3–6,33–36,126
0.30843		air	XeCl	0	3–6,33–36,126
0.31049			Xe	0	1487
0.31089			Xe	3	1487
0.31095			Xe	0	1487
0.31104			Ar	2	1825
0.312150	±0.000001	air	F	2	220,991,1022
0.3122784		air	Au	0	132,134,135
0.312436	±0.000001	air	Kr	2	653,985,989
0.31260			Ar	2	1825
0.31260			Xe	2	1487
0.31379			Xe	0	1487
0.31722			Kr	2	926
0.317418	±0.000006	air	F	2	220,1022
0.318060	±0.000020	air	Ag	1	691,1001

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.31839			Xe	0	1487
0.319142	±0.000001	air	Cl	2	220,991
0.320274	±0.000006	air	F	1	220,1021
0.3227			Ta	0	1849
0.323951	±0.000001	air	Kr	2	450,653,989
0.324692	±0.000001	air	Xe	3	653,983,1024
0.3250		air	Cd	1	676–678,1034
0.3250		air	Cd	1	1812,1814
0.32596			Xe	0	1487
0.32676		air	Sb	0	1491
0.3269		air	Ge	0	1490
0.3281			Ta	0	1849
0.3304			Ta	0	1849
0.330596	±0.000001	air	Xe	3	450,653,923
0.33060			Xe	3	1487
0.331975	±0.000001	air	Ne	1	907,1030,1153
0.332375	±0.000001	air	Ne	1	907,987,1169
0.332486	±0.000001	air	S	2	991,1489
0.332750	±0.000050	air	Ne	1	450,1030
0.332902	±0.000010	air	Ne	1	1030,1153
0.333087	±0.000002	air	Xe	3	450,983,1122
0.333107	±0.000010	air	Ne	2	1153
0.33330			Xe	0	1487
0.333621	±0.000006	air	Ar	2	450,985,1169
0.334479	±0.000006	air	Ar	2	450,985,1169
0.334545	±0.000002	air	Ne	1	454,653,1153
0.334776	±0.000006	air	P	3	220
0.334974	±0.000006	air	Xe	2	653,874,983
0.335852	±0.000006	air	Ar	2	450,653,985
0.3364903		air	N_2	0	104,105,109–11
0.3365474		air	N_2	0	104,105,109–11
0.3365537		air	N_2	0	104,105,109–11
0.3366156		air	N_2	0	104,105,109–11
0.3366211		air	N_2	0	104,105,109–11
0.3366682		air	N_2	0	104,105,109–11

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.3366911		air	N_2	0	104,105,109–11
0.3367218		air	N_2	0	104,105,109–11
0.336732	±0.000006	air	N	2	653
0.3368432		air	N_2	0	104,105,109–11
0.3368917		air	N_2	0	104,105,109–11
0.3369250		air	N_2	0	104,105,109–11
0.3369361		air	N_2	0	104,105,109–11
0.3369502		air	N_2	0	104,105,109–11
0.3369542		air	N_2	0	104,105,109–11
0.3369555		air	N_2	0	104,105,109–11
0.3369575		air	N_2	0	104,105,109–11
0.3369760		air	N_2	0	104,105,109–11
0.3369838		air	N_2	0	104,105,109–11
0.3369852		air	N_2	0	104,105,109–11
0.3370081		air	N_2	0	104,105,109–11
0.3370121		air	N_2	0	104,105,109–11
0.3370138		air	N_2	0	104,105,109–11
0.3370161		air	N_2	0	104,105,109–11
0.3370169		air	N_2	0	104,105,109–11
0.3370297		air	N_2	0	104,105,109–11
0.3370316		air	N_2	0	104,105,109–11
0.3370360		air	N_2	0	104,105,109–11
0.3370374		air	N_2	0	104,105,109–11
0.3370434		air	N_2	0	104,105,109–11
0.3370472		air	N_2	0	104,105,109–11
0.3370529		air	N_2	0	104,105,109–11
0.3370551		air	N_2	0	104,105,109–11
0.3370559		air	N_2	0	104,105,109–11
0.3370614		air	N_2	0	104,105,109–11
0.3370623		air	N_2	0	104,105,109–11
0.3370663		air	N_2	0	104,105,109–11
0.3370682		air	N_2	0	104,105,109–11
0.3370716		air	N_2	0	104,105,109–11
0.3370731		air	N_2	0	104,105,109–11
0.3370757		air	N_2	0	104,105,109–11
0.3370762		air	N_2	0	104,105,109–11

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.3370787		air	N_2	0	104,105,109–11
0.3370803		air	N_2	0	104,105,109–11
0.3370821		air	N_2	0	104,105,109–11
0.3370843		air	N_2	0	104,105,109–11
0.3370924		air	N_2	0	104,105,109–11
0.3370941		air	N_2	0	104,105,109–11
0.3370990		air	N_2	0	104,105,109–11
0.3371042		air	N_2	0	104,105,109–11
0.3371082		air	N_2	0	104,105,109–11
0.3371120		air	N_2	0	104,105,109–11
0.3371129		air	N_2	0	104,105,109–11
0.3371141		air	N_2	0	104,105,109–11
0.3371147		air	N_2	0	104,105,109–11
0.3371179		air	N_2	0	104,105,109–11
0.3371271		air	N_2	0	104,105,109–11
0.3371312		air	N_2	0	104,105,109–11
0.3371371		air	N_2	0	104,105,109–11
0.3371398		air	N_2	0	104,105,109–11
0.3371427		air	N_2	0	104,105,109–11
0.3371433		air	N_2	0	104,105,109–11
0.337500	±0.000050	air	Kr	2	450,985,1169
0.337826	±0.000001	air	Ne	1	450,454,907
0.3379898		air	N_2	0	104,105,109–11
0.338134	±0.000006	air	O	3	653,1130
0.338134	±0.000006	air	O	3	653,1130
0.338554	±0.000006	air	O	3	653,908,1130
0.339280	±0.000001	air	Ne	1	450,1018,1169
0.339286	±0.000001	air	Cl	2	220,991
0.339340	±0.000010	air	Ne	1	1030,1153
0.339344	±0.000001	air	Cl	2	220,991
0.3400–0.3600			Na_2	0	1584
0.3420		air	I_2	0	85–87
0.3420–0.3428			I_2	0	1548–1553
0.3423		air	I_2	0	85–87
0.3424		air	I_2	0	85–87

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.3428		air	I_2	0	85–87
0.345132		air	B	1	200
0.345425	±0.000001	air	Xe	2	653,1024,1169
0.347			Ni	0	1845
0.347876	±0.000005	air	N	3	664,907,989
0.348302	±0.000006	air	N	3	653,902
0.348331	±0.000003	air	Xe	3	450,653,874,
0.3488		air	XeF	0	7–9,12,37
0.3497		air	Tm	0	1493
0.349733	±0.000001	air	S	2	991,1489
0.34995			Ar	2	1825
0.35035			Ar	2	1825
0.350742	±0.000001	air	Kr	2	450,1092,1169
0.35092			Ar	2	1825
0.351			XeF	0	1607
0.3511		air	XeF	0	7–9,12,37
0.351112	±0.000006	air	Ar	2	450,454,997
0.3514			Ta	0	1849
0.351415	±0.000006	air	Ar	2	450,997,1123
0.353			XeF	0	1608,1609
0.353002	±0.000001	air	Cl	2	220,991
0.3531		air	XeF	0	7–9,12,37
0.3540		air	XeF	0	7–9,12,37
0.3542			BrF	0	1527
0.354231	±0.000005	air	Xe	2	454
0.3545			BrF	0	1527
0.356063	±0.000001	air	Cl	2	220,991
0.356420	±0.000006	air	Kr	2	653,989,1088
0.3566		air	Tm	0	1493
0.3568		air	Tm	0	1493
0.3575980		air	N_2	0	104,105,109–11
0.3576194		air	N_2	0	104,105,109–11
0.3576250		air	N_2	0	104,105,109–11
0.3576320		air	N_2	0	104,105,109–11
0.3576571		air	N_2	0	104,105,109–11
0.3576613		air	N_2	0	104,105,109–11

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.3576778		air	N_2	0	104,105,109–11
0.3576899		air	N_2	0	104,105,109–11
0.357690	±0.000050	air	Ar	1	450,1005
0.3576955		air	N_2	0	104,105,109–11
0.358			Ar	0	1807
0.358660	±0.000010	air	Al	1	423
0.358740	±0.000020	air	Al	1	878
0.359600	±0.000100	air	Xe	2	923,1169
0.360210	±0.000006	air	Cl	2	220
0.361210	±0.000006	air	Cl	2	220
0.362–0.570			S_2	0	1598
0.3620			S_2	0	1599
0.362269	±0.000006	air	Cl	2	220
0.363786	±0.000004	air	Ar	2	450,997,1172
0.36395677		air	Pb	0	204,239
0.36395677		air	Pb	0	204,239
0.364548	±0.000001	air	Xe	3	653,923,1153
0.36482			Xe	0	1487
0.36483			Xe	0	1487
0.36492			Kr	3	926
0.365–0.570		air	S_2	0	120,121
0.365015		air	Hg	0	156
0.365483		air	Hg	0	156
0.366288		air	Hg	0	156
0.366328		air	Hg	0	156
0.36667			Xe	0	1487
0.366920	±0.000003	air	Xe	2	653,874,1123
0.370520	±0.000050	air	Ar	0	450,1117
0.3706		air	Ca	1	976,1109,1166
0.370935	±0.000001	air	S	2	991,1489
0.3712			S_2	0	1599
0.371300	±0.000100	air	Ne	1	1030,1169,1172
0.3718		air	Tm	0	1493
0.372044	±0.000001	air	Cl	2	220,991
0.3722		air	Tm	0	1493

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.37268			Ne	1	1825
0.37270			Ne	1	1825
0.372711	±0.000050	air	O	1	908
0.37303			Xe	0	1487
0.37304			Xe	0	1487
0.3737		air	Ca	1	976,1109,1166
0.374573	±0.000006	air	Xe	2	653,1088,1169
0.374877	±0.000001	air	Cl	2	220,991
0.374947	±0.000004	air	O	1	450,664,964,989
0.375468	±0.000004	air	O	2	450,664,908,964
0.3755			O	2	1846
0.37572		air	O	2	989,1026
0.375989	±0.000005	air	O	2	450,664,908,964
0.375994	±0.000003	air	Xe	3	450,874,923,983
0.3760			O	2	1846
0.37622			Xe	2	1487
0.37688			Xe	0	1487
0.377134	±0.000005	air	Kr	1	454,1007
0.37738		air	O	2	1026
0.3775727		air	Tl	0	180
0.37765			Xe	2	1487
0.378099	±0.000002	air	Xe	2	450,653,1169
0.379528	±0.000006	air	Ar	2	450,1123
0.3801		air	Sn	0	1490
0.380329	±0.000003	air	Xe	3	653,874,1025
0.38035			Xe	3	1487
0.3807			S_2	0	1599
0.381			Ni	0	1845
0.38281			Xe	0	1487
0.384100	±0.000100	air	Xe	2	1123
0.384100	±0.000100	air	Xe	2	1123
0.385		air	POPOP	0	32
0.385826	±0.000006	air	Ar	2	450,1123
0.3869757			Se_2	0	1601
0.3870360			Se_2	0	1601
0.38742			Ar	2	1825

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.3907			S_2	0	1599
0.39079			Ar	2	1825
0.391			N_2	1	1581,1582
0.3914		air	N_2	1	112–115,127
0.3925932			Se_2	0	1601
0.3926552			Se_2	0	1601
0.3954		air	CO	1	61
0.3962			Al	0	1832
0.397301	±0.000003	air	Xe	3	653,874,1025
0.39732			Xe	3	1487
0.3983450			Se_2	0	1601
0.398399	±0.000002	air	Hg	1	930
0.3984086			Se_2	0	1601
0.399300	±0.000100	air	Xe	2	1016,1123
0.399300	±0.000100	air	Xe	2	1016,1123
0.399499	±0.000001	air	N	1	1092,1170,1173
0.4011			S_2	0	1599
0.402478	±0.000006	air	F	1	220,1021
0.4032987		air	Ga	0	177
0.404			XeF	0	1610
0.404		air	Hg	0	1504
0.4042357			Se_2	0	1601
0.4043010			Se_2	0	1601
0.4044136		air	K	0	350
0.4044136		air	K	0	350
0.40472602		air	K	0	350
0.404990	±0.000020	air	Xe	2	1015,1092
0.40578067		air	Pb	0	204,207,239
0.4059			N_2	0	1578–1580
0.406048	±0.000006	air	Xe	2	450,989,1169
0.4062			$PbBr_2$	0	1805
0.40621360		air	Pb	0	204,207,239
0.40621360		air	Pb	0	204,207,239
0.406736	±0.000006	air	Kr	2	450,1092,1172
0.4078		air	Sr	1	895

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.408620	±0.000020	air	Ag	1	691,948
0.408860	±0.000020	air	Ar	0	1123,1125
0.408890	±0.000010	air	Si	3	450,1090,1134
0.4095			V	0	1006
0.409729	±0.000006	air	N	2	664,907,989
0.40982			Ar	2	1825
0.4101745		air	In	0	178
0.410336	±0.000002	air	N	2	664,989,1092
0.4118		air	Tm	0	1493
0.4119			S_2	0	1599
0.4120		air	N	0	212
0.4122		air	Tm	0	1493
0.413138	±0.000006	air	Kr	2	450,974,1092
0.413250	±0.000010	air	Cl	1	1107
0.41349			Kr	3	926
0.41420			Xe	2	1487
0.414530	±0.000060	air	Xe	2	1016,1123
0.414660	±0.000004	air	Ar	2	450,1123
0.41500			Xe	0	1487
0.4151		air	Tm	0	1493
0.415445	±0.000004	air	Kr	2	450,1123
0.41604			Xe	0	1487
0.4162		air	Sr	1	976,1109
0.4164526			Se_2	0	1601
0.4165214			Se_2	0	1601
0.417181	±0.000010	air	Kr	2	450
0.4172042		air	Ga	0	177
0.418292	±0.000006	air	Ar	2	450,1081,1128,
0.41968			Xe	0	1487
0.420185		air	Rb	0	350
0.4210		air	CO	1	61
0.4210		air	CO	1	61
0.421405	±0.000006	air	Xe	2	450,1169
0.421556		air	Rb	0	350
0.422225	±0.000006	air	P	2	220
0.422651	±0.000006	air	Kr	2	450

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.42266			Kr	2	
0.4227890			Se_2	0	1601
0.4228597			Se_2	0	1601
0.4233			S_2	0	1599
0.42371			Kr	0	926
0.42375			Xe	0	1487
0.424026	±0.000010	air	Xe	2	450,1169
0.427260	±0.000006	air	Xe	2	450,1169
0.42781		air	N_2	1	112–115,127
0.428			N_2	1	1581,1582
0.428592	±0.000006	air	Xe	2	450
0.429633	±0.000005	air	Xe	1	454,1092
0.430	±.25		Kr_2F	0	1573
0.430–0.437			ICl	0	1557
0.430–0.452			Na_2	0	1587
0.4300		air	Kr_2F	0	129
0.4305		air	Sr	1	976,1109
0.430575	±0.000003	air	Xe	3	450,989,1092
0.43148			Ti	0	1850–1855
0.431800	±0.000020	air	Kr	1	978,1019,1151
0.43199			Kr	0	926
0.43283955		air	N	0	213
0.4340465		air	H	0	130
0.434738	±0.000004	air	O	1	450,664,908
0.435		air	$TbAl_3Cl_{12}$	0	26,27
0.435126	±0.000004	air	O	1	450,664,1092
0.4352			S_2	0	1599
0.435835		air	Hg	0	156
0.4359310			Se_2	0	1601
0.4360			Na_2	0	1586
0.4360		air	Tm	0	1493
0.4360198			Se_2	0	1601
0.437073	±0.000006	air	Ar	1	450,1005,1118
0.43760			Ar	1	1825
0.43760			Ar	1	1825

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.438360	±0.000060	air	Ar	1	1005,1016
0.438610	±0.000020	air	Kr	1	978,107,11517
0.441300	±0.000060	air	Xe	2	923,1016
0.441439	±0.000004	air	O	1	450,664,1092
0.4415		air	Tm	0	1493
0.441560	±0.000070	air	Cd	1	870,1064,1065
0.4416		air	Cd	1	1812,1814
0.441697	±0.000004	air	O	1	450,664,1092
0.442–0.444			HgI	0	1547
0.4427765			Se_2	0	1601
0.4428531			Se_2	0	1601
0.4430		air	HgI	0	78,79
0.443422	±0.000010	air	Xe	2	450,921
0.444328	±0.000004	air	Kr	2	450
0.4450		air	HgI	0	78,79
0.446800	±0.000050	air	Se	1	963
0.4472			CS_2	0	1804
0.4477			S_2	0	1599
0.448200	±0.000100	air	Ar	1	857,973,1005
0.448850	±0.000020	air	I	1	993,1037
0.450	±.01		Kr_2F	0	1574
0.450350	±0.000060	air	Xe	2	1016
0.450660	±0.000030	air	Cu	1	1174
0.451089	±0.000002	air	N	2	664,989,1092
0.4511			In	0	1832
0.4511299		air	In	0	178
0.451486	±0.000003	air	N	2	664,989,1092
0.4525		air	N	0	212
0.452862		air	Fe	0	416
0.453379	±0.000003	air	I	2	968
0.453379	±0.000003	air	I	3	968
0.4538			S_2	0	1524
0.4544			S_2	0	1524
0.454504	±0.000010	air	Ar	1	450,888,1096
0.455259	±0.000006	air	Si	2	220,1020,1091
0.4555276		air	Cs	0	350

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.455630	±0.000030	air	Cu	1	1174
0.4557			S_2	0	1524
0.455874	±0.000006	air	Xe	3	922,923,1092
0.456070	±0.000010	air	Bi	2	957
0.4563			S_2	0	1524
0.456784	±0.000006	air	Si	2	220,1020,1091
0.4569772			Se_2	0	1601
0.4570582			Se_2	0	1601
0.457720	±0.000010	air	Kr	1	450,861,1116
0.457936	±0.000016	air	Ar	1	880,888,1005
0.458300	±0.000100	air	Kr	1	941,978,1151
0.460302	±0.000004	air	Xe	1	450,884,1116–7
0.460460	±0.000050	air	Se	1	915,1034,1069
0.460552	±0.000009	air	O	0	664
0.46075			$^{130}Te_2$	0	1602
0.4608			S_2	0	1599
0.46087			$^{130}Te_2$	0	1602
0.460957	±0.000010	air	Ar	1	450,1005
0.461520	±0.000010	air	Kr	1	1007,1014
0.461910	±0.000050	air	Se	1	963
0.461917	±0.000010	air	Kr	1	450,1007,1116–7
0.462100	±0.000080	air	N	1	1016,1092,1170
0.463051	±0.000002	air	N	1	664,989,1170
0.463392	±0.000006	air	Kr	1	450,1116,1118
0.46392			Kr	0	926
0.4643593			Se_2	0	1601
0.464390	±0.000080	air	N	1	1016,1092,1170
0.4644427			Se_2	0	1601
0.464740	±0.000004	air	C	2	450,664,874
0.464740	±0.000004	air	Xe	3	450,874,923
0.464860	±0.000050	air	Se	1	915,1069
0.464908	±0.000010	air	O	1	212,450
0.465016	±0.000010	air	Kr	1	450,1007
0.465021	±0.000004	air	C	2	450,664,874
0.465025	±0.000001	air	Xe	2	450,983,1117

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.465025	±0.000001	air	Xe	3	450,983,1117
0.4654			CS_2	0	1804
0.46576			$^{130}Te_2$	0	1602
0.465795	±0.000002	air	Ar	1	888,965,1005
0.46588			$^{130}Te_2$	0	1602
0.4662		air	Tm	0	1493
0.467			IF	0	1558
0.4671			S_2	0	1524
0.467320	±0.000030	air	Cu	1	1174
0.467373	±0.000006	air	Xe	2	450,1092,1118
0.467440	±0.000003	air	I	2	968
0.467440	±0.000003	air	I	3	968
0.4675		air	Be	1	1108
0.467560	±0.000020	air	I	1	993,1037
0.4677			S_2	0	1524
0.468045	±0.000006	air	Kr	1	450,1116,1117
0.468050	±0.000070	air	In	1	1064
0.468290	±0.000030	air	Cu	1	1174
0.468357	±0.000006	air	Xe	2	450,1122
0.4690			S_2	0	1524
0.469410	±0.000020	air	Kr	1	978,1151
0.4697			S_2	0	1524
0.47085			$^{130}Te_2$	0	1602
0.4709		air	N_2	1	112–115,127
0.47098			$^{130}Te_2$	0	1602
0.471030	±0.000060	air	Kr	2	1016
0.47226			Ti	0	1850–1855
0.4712			Ti	0	1850–1855
0.471850	±0.000050	air	Se	1	963
0.4719389			Se_2	0	1601
0.4720249			Se_2	0	1601
0.4722			Bi	0	1806
0.4722		air	Zn	0	1503
0.472252		air	Bi	0	223,386,769
0.472357	±0.000005	air	Xe	2	923,983,1014
0.4725			IF	0	1558

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.472689	±0.000004	air	Ar	1	888,1005,1096
0.4737		air	Tl	1	931
0.474040	±0.000010	air	Cl	1	1107
0.474060	±0.000050	air	Se	1	963
0.474266	±0.000003	air	Br	1	955,1043
0.4745			S_2	0	1599
0.474894	±0.000001	air	Xe	2	874,983,1118
0.475			CdI	0	1530
0.4750295		air	N	0	212
0.475450	±0.000030	air	Kr	2	1016
0.47603			$^{130}Te_2$	0	1602
0.47616			$^{130}Te_2$	0	1602
0.476244	±0.000006	air	Kr	1	450,861
0.476410	±0.000050	air	Se	1	1069
0.476488	±0.000004	air	Ar	1	929,965,1096
0.4765		air	Ar	1	1812,1814
0.476510	±0.000050	air	Se	1	915,963
0.476571	±0.000010	air	Kr	1	450,1116,1117
0.476874	±0.000006	air	Cl	1	220,1107
0.478134	±0.000003	air	Cl	1	857,927,997
0.4787			IF	0	1559
0.478840	±0.000020	air	Ag	1	691,948
0.479450	±0.000060	air	Xe	2	1016
0.479630	±0.000060	air	Kr	1	1007,1016
0.479700	±0.000010	air	Hg	2	876,996,1131
0.4797236			Se_2	0	1601
0.4798120			Se_2	0	1601
0.4800		air	Cd	0	1503
0.4810			S_2	0	1524
0.4811		air	Zn	0	1503
0.48130			$^{130}Te_2$	0	1602
0.48143			$^{130}Te_2$	0	1602
0.4816			S_2	0	1524
0.482518	±0.000006	air	Kr	1	450,861,1116
0.4830			S_2	0	1524

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.4830		air	XeF	0	10,11
0.4838			S_2	0	1524
0.484060	±0.000050	air	Se	1	1069
0.484330	±0.000040	air	Te	1	904,1073
0.484666	±0.000006	air	Kr	1	450,1007,1117
0.4847			IF	0	1559
0.485			XeF	0	1609,1611–16
0.485–0.491			IF	0	1565,1566
0.485–0.507			Hg_3	0	1536
0.4852			CS_2	0	1804
0.485500	±0.000050	air	Se	1	915,958,1069
0.485580	±0.000030	air	Cu	1	1174
0.4860		air	XeF	0	10,11
0.4861324		air	H	0	130
0.486200	±0.000100	air	Xe	1	979,1049,1151
0.48667			$^{130}Te_2$	0	1602
0.48680			$^{130}Te_2$	0	1602
0.486948	±0.000006	air	Xe	2	450,1118
0.4877210			Se_2	0	1601
0.4878120			Se_2	0	1601
0.487986	±0.000004	air	Ar	1	888,965,1096
0.4882		air	Cd	1	1027
0.488700	±0.000100	air	Xe	1	857
0.48884122		vacuum	Se	0	245,390
0.488906	±0.000006	air	Ar	1	450,1005,1118
0.489688	±0.000003	air	Cl	1	857,873,997
0.490473	±0.000003	air	Cl	1	857,927,997
0.4907			IF	0	1527,1559–61
0.490970	±0.000030	air	Cu	1	1174
0.49116		air	Zn	1	945,1059,1085,
0.491766	±0.000003	air	Cl	1	857,927,997
0.4920			S_2	0	1524
0.49212			$^{130}Te_2$	0	1602
0.49226			$^{130}Te_2$	0	1602
0.4925		air	Zn	1	1027,1039,1085
0.492560	±0.000006	air	S	1	1489

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.493170	±0.000030	air	Cu	1	975,1174
0.493467	±0.000003	air	I	2	968
0.493467	±0.000003	air	I	3	968
0.495–0.512			I_2	0	1554,1555
0.4950			S_2	0	1524
0.495418	±0.000003	air	Xe	3	450,923,1092
0.4959397			Se_2	0	1601
0.4960333			Se_2	0	1601
0.4965			IF	0	1559
0.496508	±0.000006	air	Xe	1	450,857
0.496509	±0.000002	air	Ar	1	888,965,1096
0.497271	±0.000005	air	Xe	1	454,911,1150
0.497610	±0.000050	air	Se	1	915,958,1069
0.49768			$^{130}Te_2$	0	1602
0.49782			$^{130}Te_2$	0	1602
0.4981		air	Tl	1	931
0.498670	±0.000020	air	I	1	266,993,1042
0.4990		air	HgBr	0	75–78
0.499255	±0.000005	air	Ar	0	877
0.499290	±0.000050	air	Se	1	915,1034,1069
0.500780	±0.000003	air	Xe	3	450,923,1122
0.501330	±0.000030	air	Cu	1	1174
0.501424	±0.000006	air	S	1	1489
0.501639		air	N	1	872,1170
0.501640	±0.000010	air	Kr	2	1016
0.5018		air	HgBr	0	75–78
0.5020–0.5026			HgBr	0	1537–1545
0.502000	±0.000040	air	Te	1	904,1073
0.502190	±0.000030	air	Cu	1	1174
0.502200	±0.000100	air	Kr	1	857,1118
0.5023		air	HgBr	0	75–78
0.50259		air	Cd	1	1027
0.5026		air	HgBr	0	75–78
0.502720	±0.000020	air	Ag	1	948
0.503262	±0.000006	air	S	1	1489

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.50333			$^{130}Te_2$	0	1602
0.50348			$^{130}Te_2$	0	1602
0.503750	±0.000060	air	Kr	1	1016,1157
0.5039		air	HgBr	0	75–78
0.5042		air	HgBr	0	75–78
0.5043880			Se_2	0	1601
0.5044847			Se_2	0	1601
0.504489	±0.000006	air	Xe	1	450,884,1116–7
0.5046		air	HgBr	0	75–78
0.505210	±0.000030	air	Cu	0	1174
0.505463	±0.000005	air	Br	1	955,1043
0.506050	±0.000030	air	Cu	1	1174
0.5061		air	Tm	0	1493
0.506210	±0.000025	air	Ar	1	975,1005,1111
0.506870	±0.000050	air	Se	1	915,963,1069
0.5072			CS_2	0	1804
0.507830	±0.000003	air	Cl	1	857,927,997
0.5079		air	Tl	1	931
0.5086		air	Cd	0	1503
0.509610	±0.000050	air	Se	1	915,943,1069
0.5100			Na_2	0	1524,1588
0.510310	±0.000010	air	Cl	1	1107
0.510554		air	Cu	0	336,338,340,805
0.5115		air	Tm	0	1493
0.512600	±0.000010	air	Kr	1	880,978,1151
0.5130754			Se_2	0	1601
0.513150	±0.000070	air	Ge	1	1063,1064
0.5131750			Se_2	0	1601
0.5137			Na_2	0	1524,1588
0.514180	±0.000005	air	Ar	1	450,1005,1118
0.514190	±0.000050	air	Se	1	958,1069
0.5144			CS_2	0	1804
0.514533	±0.000002	air	Ar	1	888,965,1096
0.514570	±0.000050	air	C	1	1031
0.51495			$^{130}Te_2$	0	1602
0.51510			$^{130}Te_2$	0	1602

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.5152		air	Tl	1	931,977
0.515704	±0.000006	air	Xe	3	922,923,983
0.515908	±0.000003	air	Xe	3	450,923,1122
0.516032	±0.000006	air	S	0	1489
0.517600	±0.000050	air	Se	1	915,963,1069
0.517840	±0.000070	air	Ge	1	1063,1064
0.5180		air	Xe_2Cl	0	21,22,34
0.518238	±0.000002	air	Br	1	857,943,955
0.520–0.530			Xe_2Cl	0	1604,1605
0.520–0.565			NaK	0	1842
0.520832	±0.000004	air	Kr	1	450,1116,1117
0.52092			$^{130}Te_2$	0	1602
0.5210		air	Hg	2	1131
0.52107			$^{130}Te_2$	0	1602
0.521430	±0.000020	air	I	1	993,1037
0.521630	±0.000020	air	I	1	266,993,1042
0.521790	±0.000003	air	Cl	1	873,927,997
0.521820	±0.000040	air	Kr	1	1007,1016
0.521962	±0.000006	air	S	0	1489
0.5220119			Se_2	0	1601
0.5221138			Se_2	0	1601
0.522130	±0.000003	air	Cl	1	857,927,997
0.522340	±0.000060	air	Xe	2	1016
0.522760	±0.000050	air	Se	1	963,1034,1069
0.5228		air	N_2	1	112,114,115,127
0.5237			$^{6}Li_2$	0	1576
0.523826	±0.000004	air	Br	1	857,955,1043
0.523889	±0.000006	air	Xe	2	450,1074,1118
0.5245		air	Na_2	0	117–119
0.52504			$^{130}Te_2$	0	1602
0.5251			Na_2	0	1524,1588
0.525260	±0.000050	air	Se	1	958,1034,1069
0.525640	±0.000040	air	Te	1	904,1073
0.525650	±0.000060	air	Xe	3	923,1016,1487
0.52575			$^{130}Te_2$	0	1602

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.526017	±0.000003	air	Xe	3	450,923,1117
0.526043	±0.000003	air	Xe	1	923,1117,1118
0.526150	±0.000100	air	Xe	1	450,1077,1116
0.5263			$^{6}Li_2$	0	1576
0.52633		air	Na_2	0	117–119
0.5269			$^{6}Li_2$	0	1576
0.527130	±0.000050	air	Se	1	958,1069
0.5272		air	Be	1	1108
0.5274		air	Na_2	0	117–119
0.528700	±0.000100	air	Ar	1	888,1005,1096
0.5289			Na_2	0	1524,1588
0.52982		air	Na_2	0	117,118
0.52995		air	Na_2	0	117,118
0.530550	±0.000050	air	Se	1	915,958,1069
0.5307		air	Tm	0	1493
0.530868	±0.000004	air	Kr	1	450,1116,1117
0.5310			Na_2	0	1524,1588
0.5312057			Se_2	0	1601
0.5313116			Se_2	0	1601
0.531400	±0.000100	air	Xe	1	979,1077,1151
0.5319			Na_2	0	1524,1588
0.532088	±0.000006	air	S	1	857,869,1489
0.5321		air	Na_2	0	117–119
0.5326			Na_2	0	1524,1588
0.53318			$^{130}Te_2$	0	1602
0.533203	±0.000003	air	Br	1	857,943,955
0.5333		air	Na_2	0	117–119
0.53334			$^{130}Te_2$	0	1602
0.5337		air	Cd	1	868,953,1085
0.5338		air	Cd	1	868,953,1085
0.5339			Na_2	0	1524,1588
0.5340		air	Na_2	0	117–119
0.5341065		air	Mn	0	406,407,409–414
0.53415		air	Na_2	0	117,118
0.53428		air	Na_2	0	117,118
0.534334	±0.000005	air	Xe	3	923,983,1074

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.534583	±0.000006	air	S	1	857,869,1489
0.5346			Na_2	0	1524,1588
0.5347			Na_2	0	1524,1588
0.53490		air	Na_2	0	117–119
0.5349472		air	Ca	0	137
0.535065		air	Tl	0	181,182,187–189
0.5352			Na_2	0	1524,1588
0.535290	±0.000003	air	Xe	3	450,983,1122
0.5355			Na_2	0	1524,1588
0.5358			$^6Li_2$	0	1576
0.5362			$^6Li_2$	0	1576
0.5363			Na_2	0	1524,1588
0.536700	±0.000060	air	Xe	2	1016
0.53690		air	Na_2	0	117–119
0.5370		air	Na_2	0	117–119
0.5371		air	Na_2	0	117–119
0.537210	±0.000070	air	Pb	1	1064
0.5374			Na_2	0	1524,1588
0.5376		air	Na_2	0	117–119
0.5376		air	XeO	0	14,39,41
0.53781		air	Na_2	0	117–119
0.5382			Na_2	0	1524,1588
0.5383			Na_2	0	1524,1588
0.5384			CS_2	0	1804
0.53850		air	Na_2	0	117,118
0.538510	±0.000040	air	As	1	981,1033,1041
0.53863		air	Na_2	0	117,118
0.5387			Se_2	0	1601
0.5388			Na_2	0	1524,1588
0.5389		air	Na_2	0	117–119
0.5391			Na_2	0	1524,1588
0.539215	±0.000003	air	Cl	1	857,873,927,997
0.539460	±0.000003	air	Xe	3	450,923,1122
0.53949			$^{130}Te_2$	0	1602
0.53965			$^{130}Te_2$	0	1602

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.54005616		air	Ne	0	188,336,446,448
0.540090	±0.000030	air	Xe	2	1012
0.54024		air	Na_2	0	117–119
0.5405			$^{6}Li_2$	0	1576
0.5406689			Se_2	0	1601
0.540750	±0.000020	air	I	1	266,866,993
0.5407782			Se_2	0	1601
0.5409			Na_2	0	1524,1588
0.54131		air	Na_2	0	117–119
0.541350	±0.000060	air	Xe	2	1016
0.5416		air	Na_2	0	117–119
0.5417			$^{6}Li_2$	0	1576
0.5417			$^{6}Li_2$	0	1576
0.5418			Na_2	0	1524,1588
0.541916	±0.000006	air	Xe	1	450,884,1116
0.5420368		air	Mn	0	406–7,411,413
0.5424			$^{6}Li_2$	0	1576
0.5424			Na_2	0	1524,1588
0.542874	±0.000006	air	S	1	869,1489
0.543287	±0.000006	air	S	1	857,869,1489
0.5435161		vacuum	Ne	0	449
0.54353			$^{130}Te^{128}Te$	0	1602
0.54355			$^{130}Te_2$	0	1602
0.5440		air	N	0	212
0.54402			$^{130}Te^{128}Te$	0	1602
0.5442		air	XeO	0	14,39,41
0.5443		air	I_2	0	88–92
0.54430			$^{130}Te_2$	0	1602
0.5446			$^{6}Li_2$	0	1576
0.54469		air	Na_2	0	117–119
0.5448		air	Na_2	0	117–119
0.544980	±0.000040	air	Te	1	904,1073
0.545		air	$TbAl_3Cl_{12}$	0	26,27
0.5451			$^{6}Li_2$	0	1576
0.54529		air	Eu	0	421
0.545388	±0.000006	air	S	1	857,869,1489

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.5454		air	Na_2	0	117–119
0.5454		air	Te	0	443
0.545400	±0.000050	air	Te	1	443,904
0.545460	±0.000060	air	Xe	2	1016,1101
0.5459			$^{6}Li_2$	0	1576
0.546074		air	Hg	0	156,159
0.5467		air	Na_2	0	117–119
0.5469		air	Na_2	0	117–119
0.547			XeO	0	1519
0.5470640		air	Mn	0	406,407,413
0.547374	±0.000006	air	S	1	869,1489
0.54742			Ti	0	1850–1855
0.547930	±0.000040	air	Te	1	904,1073
0.5480		air	Na_2	0	117–119
0.5481345		air	Mn	0	336,407
0.5485		air	Na_2	0	117–119
0.54916		air	Na_2	0	117–119
0.5496			$^{6}Li_2$	0	1576
0.549680	±0.000040	air	As	1	981,1033,1041
0.549760	±0.000040	air	As	1	943,1033,1041
0.5499		air	Na_2	0	117–119
0.549931	±0.000004	air	Xe	3	922,923,1074
0.5500428		air	N	0	212
0.550150	±0.000050	air	Kr	2	1016
0.550220	±0.000050	air	Ar	2	450
0.5504125			Se_2	0	1601
0.5505254			Se_2	0	1601
0.55053			Br_2	0	1526
0.5508			$^{6}Li_2$	0	1576
0.550990	±0.000006	air	S	1	1489
0.55125			Ti	0	1850–1855
0.55144			Ti	0	1850–1855
0.55145			Ti	0	1850–1855
0.5516		air	HgCl	0	75,78–83
0.5516777		air	Mn	0	336,406,407,413

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.552280	±0.000050	air	Se	1	915,1034,1069
0.5523		air	HgCl	0	75,78–83
0.55245			$^{130}Te_2$	0	1602
0.552450	±0.000050	air	Xe	1	1118
0.55262			$^{130}Te_2$	0	1602
0.5528			$^{6}Li_2$	0	1576
0.55374			$^{128}Te_2$	0	1602
0.5537749		air	Mn	0	336,406,407,413
0.55400			$^{128}Te_2$	0	1602
0.5540307		air	N	0	212
0.5545			C_2	0	1528
0.5550		air	HgCl	0	75,78–83
0.5550		air	I_2	0	88–92
0.555820	±0.000040	air	As	1	943,1033,1041
0.55645			$^{130}Te_2$	0	1602
0.556511	±0.000006	air	S	1	1489
0.5567		air	I_2	0	88–92
0.556710	±0.000050	air	Se	1	958,963
0.5571		air	Te_2	0	48
0.55723			$^{130}Te_2$	0	1602
0.5575		air	Te_2	0	48
0.5576		air	HgCl	0	75,78–83
0.557650	±0.000040	air	Te	1	442–3,904,1073
0.557714		air	Eu	0	421
0.5578		air	Te_2	0	48
0.55781		air	KrO	0	2,39,41,42,44,47
0.55788939		vacuum	O	0	224,225,387,388
0.5579		air	Te_2	0	48
0.558			HgCl	0	1546
0.5580		air	ArO	0	2,39,41–47
0.5581		air	Na_2	0	117–119
0.5584		air	HgCl	0	75,78–83
0.5588			$^{6}Li_2$	0	1576
0.5589		air	Sn	1	202
0.559			HgCl	0	1546
0.5590		air	HgCl	0	75,78–83

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.5591		air	Na_2	0	117–119
0.55912			$^{130}Te_2$	0	1602
0.559160	±0.000050	air	Se	1	915,1069
0.5592			O	2	1846
0.55921		vacuum	CO	0	59,60
0.559235	±0.000005	air	Xe	3	904,923,967,983
0.559237	±0.000006	air	O	2	450,664,1026
0.55929			$^{130}Te_2$	0	1602
0.5593			$^{6}Li_2$	0	1576
0.559310	±0.000020	air	I	1	993,1037
0.55949		vacuum	CO	0	59,60
0.5597		air	Na_2	0	117–119
0.55975		vacuum	CO	0	59,60
0.559770	±0.000100	air	Kr	2	1016
0.5599			$^{6}Li_2$	0	1576
0.55998		vacuum	CO	0	59,60
0.56019		vacuum	CO	0	59,60
0.56040		vacuum	CO	0	59,60
0.5604483			Se_2	0	1601
0.56053		vacuum	CO	0	59,60
0.5605648			Se_2	0	1601
0.560860	±0.000050	air	Pb	1	1072
0.562280	±0.000050	air	Se	1	963
0.5625		air	I	1	266,993
0.5626		air	Te_2	0	48
0.56308			$^{130}Te_2$	0	1602
0.56353			$^{130}Te^{128}Te$	0	1602
0.5638		air	Te_2	0	48
0.56388			$^{130}Te_2$	0	1602
0.5640		air	Te	0	443
0.564012	±0.000006	air	S	1	857,869,1489
0.56405			$^{130}Te^{128}Te$	0	1602
0.564050	±0.000050	air	Te	1	443,904
0.5642		air	Te_2	0	48
0.5643		air	Te_2	0	48

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.5646		air	Te_2	0	48
0.5647		air	Te_2	0	48
0.564716	±0.000006	air	S	1	869,1489
0.56486			$^{128}Te^{126}Te$	0	1602
0.5649		air	Te_2	0	48
0.5650		air	Te_2	0	48
0.565200	±0.000100	air	As	1	943,981
0.56541			$^{128}Te^{126}Te$	0	1602
0.565900	±0.000100	air	Xe	1	857,923,1117
0.566610	±0.000040	air	Te	1	904,1073
0.566662	±0.000003	air	N	1	872,927,1170
0.5670			$^{6}Li_2$	0	1576
0.5676		air	Tm	0	1493
0.567603	±0.000003	air	N	1	927,1170
0.5678		air	Hg	1	924,933
0.567820	±0.000020	air	I	1	266,866,1042
0.567953	±0.000003	air	N	1	212,450,872
0.5680		air	I_2	0	88–92
0.568192	±0.000004	air	Kr	1	450,861,1116–17
0.5685			Se_2	0	1601
0.568690	±0.000080	air	N	1	1016,1170
0.5689			$^{6}Li_2$	0	1576
0.5696		air	Te_2	0	48
0.5697		air	I_2	0	88–92
0.569790	±0.000050	air	Se	1	915,1069
0.570024		air	Cu	0	349
0.5701		air	Te_2	0	48
0.5707882			Se_2	0	1601
0.570850	±0.000050	air	Te	1	442,904,1098
0.5709091			Se_2	0	1601
0.5711		air	Te_2	0	48
0.5714		air	Te_2	0	48
0.5715		air	Te_2	0	48
0.5719		air	Te_2	0	48
0.571920	±0.000010	air	Bi	1	957
0.5720		air	Te_2	0	48

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.5721		air	Te_2	0	48
0.5721		air	Te_2	0	48
0.5724		air	Te_2	0	48
0.572700	±0.000100	air	Xe	1	857,1117,1151
0.57284			$^{130}Te_2$	0	1602
0.57284			Te_2	0	1602
0.57302			$^{130}Te_2$	0	1602
0.574			K_2	0	1858
0.574150	±0.000040	air	Te	1	904,1073
0.57434			$^{128}Te_2$	0	1602
0.5745		air	I_2	0	88–92
0.57462			$^{128}Te_2$	0	1602
0.574790	±0.000050	air	Se	1	1069
0.575100	±0.000100	air	Xe	1	857,1117
0.575340	±0.000050	air	Kr	1	857,921,1007
0.5755			$^{6}Li_2$	0	1576
0.575570	±0.000040	air	Te	1	904,1073
0.576070	±0.000020	air	I	1	1032,1042
0.5764		air	I_2	0	88–92
0.576490	±0.000040	air	Te	1	904,1073
0.5766		air	Te_2	0	48
0.5766		air	Tm	0	1493
0.5767		air	Te_2	0	48
0.57671			$^{130}Te_2$	0	1602
0.576959		air	Hg	0	156
0.5773			$^{6}Li_2$	0	1576
0.5773		air	Te_2	0	48
0.5774		air	Te_2	0	48
0.57754			$^{130}Te_2$	0	1602
0.5780		air	Te_2	0	48
0.5783		air	Te_2	0	48
0.5784		air	Te_2	0	48
0.5785		air	Te_2	0	48
0.5787			$^{6}Li_2$	0	1576
0.5787		air	Te_2	0	48

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.5788			Se_2	0	1601
0.5789		air	Te_2	0	48
0.5790		air	Te_2	0	48
0.5793		air	Te_2	0	48
0.5794		air	Te_2	0	48
0.5797		air	Te_2	0	48
0.5798		air	Te_2	0	48
0.579870	±0.000070	air	Sn	1	202,1064
0.57989			Te_2	0	1602
0.57989			$^{130}Te_2$	0	1602
0.580–0.635			Xe_2F	0	1518
0.58008			Te_2	0	1602
0.58008			$Te_2{}^{130}$	0	1602
0.58048			Br_2	0	1526
0.5807			$^6Li_2$	0	1576
0.5809			$^6Li_2$	0	1576
0.5809		air	Tm	0	1493
0.58090			Br_2	0	1526
0.5814462			Se_2	0	1601
0.5815		air	I_2	0	88–92
0.5815369			Se_2	0	1601
0.581935	±0.000006	air	S	1	1489
0.5830		air	I_2	0	88–92
0.58372			$^{130}Te_2$	0	1602
0.583800	±0.000040	air	As	1	981,1033,1041
0.5841		air	Te_2	0	48
0.584280	±0.000050	air	Se	1	963
0.58457			$^{130}Te_2$	0	1602
0.58471			$^{130}Te^{128}Te$	0	1602
0.5849		air	Te_2	0	48
0.585			IF	0	1567
0.585100	±0.000040	air	Te	1	904,1073
0.58525		air	Ne	0	1495–1497
0.58526			$^{130}Te^{128}Te$	0	1602
0.5857		air	Te_2	0	48
0.5857452		air	Ca	0	137

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.5859		air	Te_2	0	48
0.58627			$^{128}Te^{126}Te$	0	1602
0.5865		air	Te_2	0	48
0.586670	±0.000050	air	Se	1	915,963
0.5867			$^{6}Li_2$	0	1576
0.58686			$^{128}Te^{126}Te$	0	1602
0.5869		air	Te_2	0	48
0.5870		air	Te_2	0	48
0.5874		air	Te_2	0	48
0.5880		air	I_2	0	88–92
0.5889			$^{6}Li_2$	0	1576
0.589330	±0.000003	air	Xe	1	454,874
0.5894		air	Zn	1	1034,1039
0.58959236		air	Na	0	350,463
0.58995		air	Tm	0	1494
0.5905		air	I_2	0	88–92
0.59205			$^{130}Te^{128}Te$	0	1602
0.5924		air	Te_2	0	48
0.5924350			Se_2	0	1601
0.5925637			Se_2	0	1601
0.59261			$^{130}Te^{128}Te$	0	1602
0.5927		air	Te_2	0	48
0.5929		air	Bi_2	0	48,49
0.59293			Bi_2	0	1524,1525
0.5934		air	Te_2	0	48
0.593530	±0.000060	air	Kr	1	1007,1016
0.593530	±0.000060	air	Kr	2	1016
0.5936		air	Te_2	0	48
0.593650	±0.000050	air	Te	1	443,904,1073
0.59369			$^{129}Te^{126}Te$	0	1602
0.59409633		vacuum	Ne	0	185,212,451
0.59442			$^{130}Te_2$	0	1602
0.59448342		air	Ne	0	444,453–55
0.59461			$^{130}Te_2$	0	1602
0.5949		air	Tl	1	897–8,977

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.595567	±0.000003	air	Xe	3	923,1024,1074
0.5968		air	I_2	0	88–92
0.5971		air	Tm	0	1493
0.597112	±0.000006	air	Xe	1	450,1116–17
0.597430	±0.000040	air	Te	1	904,1073
0.59813			$^{130}Te_2$	0	1602
0.59902			$^{130}Te_2$	0	1602
0.6002		air	Te_2	0	48
0.6004		air	Te_2	0	48
0.6005		air	Te_2	0	48
0.6008		air	Te_2	0	48
0.6009		air	Te_2	0	48
0.6011			ZnI	0	1520,1541
0.601470	±0.000040	air	Te	1	904,1073
0.6018			ZnI	0	1520,1541
0.60190			Te_2	0	1602
0.60190			$^{130}Te_2$	0	1602
0.6021		air	Zn	1	946,1145
0.60210			Te_2	0	1602
0.60210			$^{130}Te_2$	0	1602
0.602427	±0.000006	air	P	1	220,869,992
0.6025			ZnI	0	1520,1541
0.6025		air	I_2	0	88–92
0.6031			ZnI	0	1520,1541
0.60311			IF	0	1567,1839
0.603419	±0.000006	air	P	1	220,992
0.60372			$Te_2{}^{128}$	0	1602
0.603760	±0.000080	air	Kr	1	1007,1015
0.603760	±0.000080	air	Kr	2	1015
0.6037695			Se_2	0	1601
0.6039			ZnI	0	1520,1541
0.6039026			Se_2	0	1601
0.604			K_2	0	1858
0.60403			$Te_2{}^{128}$	0	1602
0.604322	±0.000006	air	P	1	220,869,992
0.60461348		air	Ne	0	185,451

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.6048		air	I_2	0	88–92
0.60555			$^{130}Te_2$	0	1602
0.605630	±0.000050	air	Se	1	915,1034,1069
0.605736		air	Eu	0	420
0.60645			$^{130}Te_2$	0	1602
0.60646		vacuum	CO	0	59,60
0.606610	±0.000050	air	Se	1	963
0.60674		vacuum	CO	0	59,60
0.606900	±0.000020	air	I	1	993,1037,1104
0.60699		vacuum	CO	0	59,60
0.607200	±0.000100	air	Kr	0	656
0.60722		vacuum	CO	0	59,60
0.60742		vacuum	CO	0	59,60
0.6075			C_2	0	1528
0.60759		vacuum	CO	0	59,60
0.6082		air	Te_2	0	48
0.608240	±0.000040	air	Te	1	904,1073
0.6083		air	Te_2	0	48
0.6085		air	Te_2	0	48
0.6087		air	Te_2	0	48
0.608804	±0.000006	air	P	1	220,992
0.6089		air	Te_2	0	48
0.609400	±0.000100	air	Xe	1	1077,1151
0.609474	±0.000003	air	Cl	1	857,927,997
0.610210	±0.000050	air	Se	1	963
0.610280	±0.000070	air	Zn	1	1064,1083–85
0.6111		air	I_2	0	88–92
0.611756	±0.000006	air	Br	1	200,956,1043
0.6119		air	Tm	0	1493
0.61197087		vacuum	Ne	0	212,451,456
0.612		air	K	1	1810
0.6124			Se_2	0	1601
0.612740	±0.000020	air	I	1	993,1032,1037
0.613000	±0.000100	air	Sb	1	442
0.61316			Br_2	0	1526

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.61368			Br_2	0	1526
0.614170	±0.000010	air	Ba	1	145,149
0.61430623		air	Ne	0	447–8,453–461
0.61495			$^{130}Te^{128}Te$	0	1602
0.6150		air	Hg	1	924,951,1132
0.61546			Bi_2	0	1524,1525
0.6154650			Se_2	0	1601
0.61555			$^{130}Te^{128}Te$	0	1602
0.6156027			Se_2	0	1601
0.6160		air	Bi_2	0	48,49
0.6162		air	Te_2	0	48
0.61629			Bi_2	0	1524,1525
0.6165		air	Te_2	0	48
0.616574	±0.000006	air	P	1	220,992
0.6168		air	Te_2	0	48
0.61685			$^{128}Te^{126}Te$	0	1602
0.616878	±0.000006	air	Br	1	956,1043
0.616880	±0.000050	air	Kr	1	1007,1118
0.6170		air	Te_2	0	48
0.6170		air	Tm	0	1493
0.617020	±0.000040	air	As	1	943,1033,1041
0.61749			$^{128}Te^{126}Te$	0	1602
0.6175		air	I_2	0	88–92
0.617520		air	I_2	0	88–92
0.617619	±0.000003	air	Xe	2	921,923,983
0.617730		air	I_2	0	88–92
0.617900		air	I_2	0	88–92
0.617970		air	I_2	0	88–92
0.617990		air	I_2	0	88–92
0.618245		air	I_2	0	88–92
0.618325		air	I_2	0	88–92
0.618490		air	I_2	0	88–92
0.618580		air	I_2	0	88–92
0.6198		air	I_2	0	88–92
0.6204		air	Te_2	0	48
0.620490	±0.000020	air	I	1	993,1037

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.6214		air	Zn	1	1036,1145
0.62290			$^{130}Te^{128}Te$	0	1602
0.62293			IF	0	1568
0.62297			IF	0	1568
0.623040	±0.000040	air	Te	1	904,1073
0.62351			$^{130}Te^{128}Te$	0	1602
0.62369			IF	0	1568
0.62378			IF	0	1568
0.623890	±0.000080	air	Xe	2	921,1015
0.6239		air	Bi_2	0	48,49
0.6239651		air	F	0	248,249
0.623987			Bi_2	0	1524,1525
0.6241			Se_2	0	1601
0.62436			IF	0	1568
0.624550	±0.000050	air	Te	1	443,904,1073
0.62493			IF	0	1567,1839
0.625		air	K	1	1810
0.62508			IF	0	1568
0.62522			IF	0	1569
0.62524			Te_2	0	1602
0.62524			$^{130}Te_2$	0	1602
0.62541			IF	0	1569
0.62545			Te_2	0	1602
0.62545			$^{130}Te_2$	0	1602
0.62546			IF	0	1569
0.62552			IF	0	1569
0.6258		air	I_2	0	88–92
0.6258			Ti	0	1850–1855
0.62592			IF	0	1568
0.6260		air	I_2	0	88–92
0.62614			IF	0	1569
0.62626			IF	0	1569
0.62634			IF	0	1569
0.62639			IF	0	1569
0.62645			IF	0	1569

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.62651			IF	0	1569
0.62657			IF	0	1569
0.62662			IF	0	1569
0.62664950		air	Ne	0	462
0.627090	±0.000010	air	Xe	1	450,1116,1117
0.62733			$^{128}Te_2$	0	1602
0.6275378			Se_2	0	1601
0.62766			$^{128}Te_2$	0	1602
0.6276804			Se_2	0	1601
0.6278		air	Te_2	0	48
0.6278170		air	Au	0	336,341–2,132
0.62866			$^{130}Te_2$	0	1602
0.628660	±0.000060	air	Xe	3	923,1016,1101
0.6287		air	Te_2	0	48
0.6288		air	Te_2	0	48
0.62937447		air	Ne	0	451,456
0.6295		air	Te_2	0	48
0.62962			$^{130}Te_2$	0	1602
0.629951			Bi_2	0	1524,1525
0.6300		air	Bi_2	0	48,49
0.631		air	K	1	1810
0.631030	±0.000080	air	Kr	2	1015
0.631260	±0.000080	air	Kr	0	921,926,1015
0.63281646		air	Ne	0	459,462,465
0.6330		air	I_2	0	88–92
0.63308			Bi_2	0	1524,1525
0.63334			Te_2	0	1602
0.63334			$^{130}Te_2$	0	1602
0.63355			Te_2	0	1602
0.63355			$^{130}Te_2$	0	1602
0.6339		air	Bi_2	0	48,49
0.63396			Bi_2	0	1524,1525
0.633990	±0.000020	air	I	1	993,1037
0.634343	±0.000005	air	Xe	2	923,983,1101
0.6345			K_2	0	1841
0.634724	±0.000006	air	Si	1	220,1020,1062

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.6348508		air	F	0	248–250
0.63497		air	Te	0	442
0.63518618		air	Ne	0	451
0.6352		air	I_2	0	88–92
0.63548		air	Cd	1	1057–58,1085
0.63552			$^{128}Te_2$	0	1602
0.635737		air	I	1	873,993
0.63586			$^{128}Te_2$	0	1602
0.63601		air	Cd	1	871,1057,1058
0.63654			Br_2	0	1526
0.63666			$^{130}Te_2$	0	1602
0.63705			Br_2	0	1526
0.6371		air	Te_2	0	48
0.637148	±0.000006	air	Si	1	220,1020,1062
0.63735			$^{130}Te_2$	0	1602
0.6379		air	Te_2	0	48
0.638075		air	Sr	0	138
0.6381		air	Te_2	0	48
0.6381			K_2	0	1841
0.6388		air	Te_2	0	48
0.6400050			Se_2	0	1601
0.6401526			Se_2	0	1601
0.6404		air	Tm	0	1493
0.640430	±0.000020	air	Ag	1	1044
0.6413651		air	F	0	248,249
0.6414		air	Bi_2	0	48,49
0.641445			Bi_2	0	1524,1525
0.641700	±0.000100	air	Kr	1	656,1007
0.642134			Bi_2	0	1524,1525
0.6422		air	Bi_2	0	48,49
0.64418			$^{130}Te_2$	0	1602
0.644390	±0.000050	air	Se	1	915,1034,1069
0.644981		air	Ca	0	138
0.645300	±0.000070	air	Sn	1	676,1064
0.6455			K_2	0	1841

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.6461		air	Tm	0	1493
0.647100	±0.000050	air	Kr	1	861,1018,1116
0.6477		air	Te_2	0	48
0.64771			$^{130}Te^{128}Te$	0	1602
0.64812			IF	0	1567,1839
0.648260	±0.000060	air	N	1	986,1016,1170
0.648280	±0.000020	air	Ar	1	941,1005,1077
0.64837			$^{130}Te^{128}Te$	0	1602
0.6484		air	Te_2	0	48
0.648897		air	I	1	873,993
0.6490		air	I_2	0	88–92
0.649010	±0.000050	air	Se	1	915,1034,1069
0.649690	±0.000010	air	Ba	1	145,149
0.65000			$^{128}Te^{126}Te$	0	1602
0.6501		air	Hg	2	1131
0.65071			$^{128}Te^{126}Te$	0	1602
0.651000	±0.000010	air	Kr	1	880,1007,1077
0.6511		air	I_2	0	88–92
0.651180	±0.000040	air	As	1	981,1033,1041
0.651620	±0.000020	air	I	1	993,1032,1037
0.65183			Bi_2	0	1524,1525
0.6519		air	Tm	0	1493
0.65246			IF	0	1569
0.65264			Bi_2	0	1524,1525
0.652850	±0.000050	air	Xe	1	884,1118
0.6528847			Se_2	0	1601
0.6530380			Se_2	0	1601
0.65315			IF	0	1569
0.65315			$^{130}Te_2$	0	1602
0.653460	±0.000050	air	Se	1	1069
0.6537			IF	0	1570
0.6538			CdI	0	1529,1530
0.65501			IF	0	1569
0.6553			CdI	0	1529–1531
0.65535			IF	0	1569
0.65592			IF	0	1569

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.656			H	0	1836,1837
0.6561		air	Te_2	0	48
0.65632			IF	0	1569
0.65632			$^{130}Te^{128}Te$	0	1602
0.6568			CdI	0	1531
0.65700			$^{130}Te^{128}Te$	0	1602
0.657000	±0.000050	air	Kr	1	1007,1116–18
0.6571			CdI	0	1529,1531
0.6574			CdI	0	1531
0.6574		air	Te_2	0	48
0.6576		air	Bi_2	0	48,49
0.65765			Bi_2	0	1524,1525
0.657800	±0.000050	air	C	1	1031
0.657903		air	Sn	0	200–202
0.657903	±0.000006	air	Sn	1	200–202
0.6581		air	Te_2	0	48
0.65817			Bi_2	0	1524,1525
0.6582		air	Bi_2	0	48,49
0.65847			Bi_2	0	1524,1525
0.658500	±0.000040	air	Te	1	904,1073
0.658530	±0.000020	air	I	1	910,1032,1037
0.65862			$^{130}Te_2$	0	1602
0.65885			$^{130}Te_2$	0	1602
0.6589		air	Tm	0	1493
0.6592		air	I_2	0	88–92
0.65923			Bi_2	0	1524,1525
0.6593			CdI	0	1531
0.65973		vacuum	CO	0	59,60
0.6599		air	Ne	0	1496
0.660		air	K	1	1810
0.66013		vacuum	CO	0	59,60
0.660280	±0.000080	air	Kr	1	921,1007,1015
0.660280	±0.000080	air	Kr	2	921,1015
0.6603		air	Bi_2	0	48,49
0.660386			Bi_2	0	1524,1525

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.66049		vacuum	CO	0	59,60
0.66082		vacuum	CO	0	59,60
0.66109		vacuum	CO	0	59,60
0.661110			Bi_2	0	1524,1525
0.66133		vacuum	CO	0	59,60
0.66153		vacuum	CO	0	59,60
0.66163			$^{130}Te_2$	0	1602
0.6620		air	Tm	0	1493
0.662250	±0.000020	air	I	1	993,1037
0.66269			$^{130}Te_2$	0	1602
0.664020	±0.000100	air	O	1	986
0.66405			Bi_2	0	1524,1525
0.66406			Bi_2	0	1524,1525
0.6645		air	Eu	1	1054,1087
0.6645		air	I_2	0	88–92
0.66457			Bi_2	0	1524,1525
0.664820	±0.000040	air	Te	1	904,1073
0.6650		air	Bi_2	0	48,49
0.66500			Bi_2	0	1524,1525
0.66510			Bi_2	0	1524,1525
0.66512			$^{130}Te^{128}Te$	0	1602
0.6658		air	Tm	0	1493
0.66581			$^{130}Te^{128}Te$	0	1602
0.66594			Bi_2	0	1524,1525
0.666010	±0.000050	air	Pb	1	1072
0.6661968			Se_2	0	1601
0.6663315			Se_2	0	1601
0.666545			NaRb	0	1597
0.66661			Bi_2	0	1524,1525
0.66665			Bi_2	0	1524,1525
0.666694		air	O	1	872,1156
0.66710			Bi_2	0	1524,1525
0.667193		air	P	0	220
0.667193	±0.000006	air	Si	1	220,1020,1062
0.667227		air	I	1	873,993
0.66740			Te_2	0	1602

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.66740			$^{130}Te_2$	0	1602
0.66764			Te_2	0	1602
0.66764			$^{130}Te_2$	0	1602
0.667650	±0.000040	air	Te	1	904,1073
0.6678			He	0	1838
0.668681			NaRb	0	1597
0.66943		air	Xe	1	973
0.669950	±0.000030	air	Xe	3	922,923
0.67001			$^{128}Te_2$	0	1602
0.670200	±0.000100	air	Xe	1	884,1106
0.67029			$^{130}Te_2$	0	1602
0.67038			$^{128}Te_2$	0	1602
0.6707		air	Li	0	1490
0.67137			$^{130}Te_2$	0	1602
0.6717			K_2	0	1841
0.67191			Bi_2	0	1524,1525
0.672138	±0.000004	air	O	1	664,872
0.6723		air	Tm	0	1493
0.67272			Bi_2	0	1524,1525
0.673000	±0.000050	air	Ar	0	921
0.673448			Bi_2	0	1524,1525
0.674241			Bi_2	0	1524,1525
0.67455			Br_2	0	1526
0.6748596			Se_2	0	1601
0.675			IF	0	1567
0.67506			Br_2	0	1526
0.6756099			Se_2	0	1601
0.6762			IF	0	1570
0.6763		air	I_2	0	88–92
0.67637			$^{130}Te_2$	0	1602
0.676457	±0.000010	air	Kr	1	450,861,1116
0.67661			$^{130}Te_2$	0	1602
0.67686			IF	0	1569
0.67704			Bi_2	0	1524,1525
0.67793			IF	0	1569

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.67804			Bi_2	0	1524,1525
0.6782		air	Tm	0	1493
0.678360	±0.000050	air	C	1	1031
0.6799589			Se_2	0	1601
0.6801233			Se_2	0	1601
0.680156			Bi_2	0	1524,1525
0.68036			IF	0	1569
0.68081			IF	0	1569
0.6809		air	Bi_2	0	48,49
0.680917			Bi_2	0	1524,1525
0.68137			IF	0	1569
0.68210			IF	0	1569
0.682520	±0.000020	air	I	1	993,1037,1104
0.6831			K_2	0	1841
0.68366			Bi_2	0	1524,1525
0.68420			IF	0	1569
0.684400	±0.000070	air	Sn	1	676,1064
0.6845		air	Tm	0	1493
0.68465			Bi_2	0	1524,1525
0.6848		air	Tm	0	1493
0.68510			IF	0	1569
0.686110	±0.000020	air	Ar	1	941,1005,1077
0.68651			Bi_2	0	1524,1525
0.68656			Bi_2	0	1524,1525
0.68687			Bi_2	0	1524,1525
0.6869			K_2	0	1841
0.687096	±0.000010	air	Kr	1	450,1116,1118
0.68710			Bi_2	0	1524,1525
0.68813			$^{130}Te_2$	0	1602
0.688530	±0.000040	air	Te	1	904,1073
0.6887340			Se_2	0	1601
0.68926			$^{130}Te_2$	0	1602
0.6895119			Se_2	0	1601
0.69010			Bi_2	0	1524,1525
0.6904		air	I	1	266,873,993
0.6908			K_2	0	1841

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.69084			Bi_2	0	1524,1525
0.6911			K	0	1840
0.6914		air	Tm	0	1493
0.691998	±0.000010	air	Al	1	423,878,1050
0.69263			$^{130}Te^{128}Te$	0	1602
0.69337			$^{130}Te^{128}Te$	0	1602
0.6936		air	I_2	0	88–92
0.693677			Bi_2	0	1524,1525
0.6939			K	0	1840
0.6941961			Se_2	0	1601
0.6943668			Se_2	0	1601
0.694482			Bi_2	0	1524,1525
0.6951		air	Tl	1	898,931,977
0.69549			$^{128}Te^{126}Te$	0	1602
0.6956		air	Tm	0	1493
0.6961			K_2	0	1524
0.69629			$^{128}Te^{126}Te$	0	1602
0.6966349		air	F	0	250–52,440
0.69667			Bi_2	0	1524,1525
0.69732			$^{130}Te_2$	0	1602
0.69742			Bi_2	0	1524,1525
0.6975			K_2	0	1524
0.69848			$^{130}Te_2$	0	1602
0.6985			K_2	0	1524
0.6988		air	Tm	0	1493
0.6995			K_2	0	1524
0.6996		air	Sb	1	932
0.6996		air	Tm	0	1493
0.7006		air	Bi_2	0	48,49
0.700636			Bi_2	0	1524,1525
0.7013		air	Bi_2	0	48,49
0.701423			Bi_2	0	1524,1525
0.70220			$^{130}Te^{128}Te$	0	1602
0.70295			$^{130}Te^{128}Te$	0	1602
0.70324		air	Ne	0	1495,1496

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.703300	±0.000020	air	I	1	993,1032,1037
0.7037			K_2	0	1524
0.7037469		air	F	0	197,251–255
0.7038		air	Tm	0	1493
0.703920	±0.000060	air	Te	1	443,904,1073
0.70403			Bi_2	0	1524,1525
0.704209	±0.000010	air	Al	1	423,878,1050
0.70440			$^{130}Te_2$	0	1602
0.70466			$^{130}Te_2$	0	1602
0.70507			Bi_2	0	1524,1525
0.70518			$^{128}Te^{126}Te$	0	1602
0.705640	±0.000020	air	Al	1	878
0.70600			$^{128}Te^{126}Te$	0	1602
0.706420	±0.000050	air	Se	1	963
0.70670			$^{130}Te_2$	0	1602
0.7067124		vacuum	He	0	422,423
0.7067162		vacuum	He	0	422,423
0.70691661		vacuum	Ar	0	454
0.70723		air	Xe	1	973
0.70725			Bi_2	0	1524,1525
0.70730			Bi_2	0	1524,1525
0.70730			IF	0	1569
0.70759			Bi_2	0	1524,1525
0.707677			Bi_2	0	1524,1525
0.70784			Bi_2	0	1524,1525
0.70789			$^{130}Te_2$	0	1602
0.70840			IF	0	1569
0.708506			Bi_2	0	1524,1525
0.7089			K_2	0	1524
0.7089295			Se_2	0	1601
0.710250	±0.000040	air	As	1	981,1033,1041
0.71065			Bi_2	0	1524,1525
0.71096			Bi_2	0	1524,1525
0.7114		air	I_2	0	88–92
0.71141			Bi_2	0	1524,1525
0.71197			$^{130}Te^{128}Te$	0	1602

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.71199			Bi_2	0	1524,1525
0.7120329		air	Ba	0	138,145
0.71274			$^{130}Te^{128}Te$	0	1602
0.7127890		air	F	0	197,249,253
0.7133974		vacuum	Cd	0	152
0.713900	±0.000020	air	I	1	1032,1104
0.71406			IF	0	1569
0.7141			IF	0	1570
0.71414			$^{130}Te_2$	0	1602
0.71416			IF	0	1569
0.71441			Te_2	0	1602
0.71466			IF	0	1569
0.71482			IF	0	1569
0.714894	±0.000060	air	Xe	1	884,923,973
0.71508			$^{128}Te^{126}Te$	0	1602
0.71515			IF	0	1569
0.71592			$^{128}Te^{126}Te$	0	1602
0.71630			IF	0	1569
0.71714			Bi_2	0	1524,1525
0.71737			$^{128}Te_2$	0	1602
0.71748			$^{130}Te_2$	0	1602
0.71756			Bi_2	0	1524,1525
0.71770			Bi_2	0	1524,1525
0.71775			Bi_2	0	1524,1525
0.71780			$^{128}Te_2$	0	1602
0.71825			Bi_2	0	1524,1525
0.71848			Bi_2	0	1524,1525
0.7202360		air	F	0	250–253,440
0.7215			IF	0	1570
0.72156			IF	0	1569
0.721908			Bi_2	0	1524,1525
0.72194			IF	0	1569
0.72195			$^{130}Te^{128}Te$	0	1602
0.72205			IF	0	1569
0.72233			IF	0	1569

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.72275			$^{130}Te^{128}Te$	0	1602
0.722799			Bi_2	0	1524,1525
0.7229			Pb	0	1847
0.7229			$PbBr_2$	0	1805
0.72294			IF	0	1569
0.72321			IF	0	1569
0.72369		air	Cd	1	871,1057,1085
0.72410			Te_2	0	1602
0.72410			$^{130}Te_2$	0	1602
0.72437			Te_2	0	1602
0.72437			$^{130}Te_2$	0	1602
0.72452		air	Ne	0	1495,1496
0.725600	±0.000020	air	Cu	1	1077
0.72746			$^{128}Te_2$	0	1602
0.72790			$^{128}Te_2$	0	1602
0.7281			He	0	1838
0.7284			Na_2	0	1589,1590
0.72843		air	Cd	1	871,1057,1085
0.72915			Bi_2	0	1524,1525
0.7292		air	Bi_2	0	48,49
0.729288			Bi_2	0	1524,1525
0.72940			Bi_2	0	1524,1525
0.7301		air	Bi_2	0	48,49
0.730173			Bi_2	0	1524,1525
0.73068569		vacuum	Ne	0	451
0.7309033		air	F	0	249
0.7311019		air	F	0	250–2,255,440
0.73236			Bi_2	0	1524,1525
0.73238			Bi_2	0	1524,1525
0.73349			Bi_2	0	1524,1525
0.7335		air	Bi_2	0	48,49
0.73355			Bi_2	0	1524,1525
0.7339		air	Tm	0	1493
0.7342		air	Tm	0	1493
0.73427			Te_2	0	1602
0.73427			$^{130}Te_2$	0	1602

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.73454			Te_2	0	1602
0.73454			$^{130}Te_2$	0	1602
0.7346		air	Hg	1	924
0.734804	±0.000005	air	Ar	1	454,1005
0.73601			$^{130}Te_2$	0	1602
0.73615			Bi_2	0	1524,1525
0.73623			Bi_2	0	1524,1525
0.73629			Bi_2	0	1524,1525
0.7364		air	Bi_2	0	48,49
0.73641			Bi_2	0	1524,1525
0.7366		air	Bi_2	0	48,49
0.73667			Bi_2	0	1524,1525
0.736693			Bi_2	0	1524,1525
0.73682			Bi_2	0	1524,1525
0.73728			$^{130}Te_2$	0	1602
0.737584			Bi_2	0	1524,1525
0.7376		air	Bi_2	0	48,49
0.73777			$^{128}Te_2$	0	1602
0.73822			$^{128}Te_2$	0	1602
0.73881			Bi_2	0	1524,1525
0.7392		air	Tm	0	1493
0.73923			Bi_2	0	1524,1525
0.739240	±0.000050	air	Se	1	963
0.73925			Bi_2	0	1524,1525
0.73937			Bi_2	0	1524,1525
0.73974			Bi_2	0	1524,1525
0.73978			Bi_2	0	1524,1525
0.7398		air	Bi_2	0	48,49
0.7398688		air	F	0	248,250
0.740020	±0.000020	air	Cu	1	1077
0.74014			Bi_2	0	1524,1525
0.740450	±0.000030	air	Cu	1	1051,1174
0.7406		air	Tm	0	1493
0.7408		air	Bi_2	0	48,49
0.74084			Bi_2	0	1524,1525

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7409		air	Tm	0	1493
0.74181		air	Hg	1	886
0.7425645		air	F	0	256
0.743576	±0.000001	air	Kr	1	989,1007,1089
0.74367			Bi_2	0	1524,1525
0.74372			Bi_2	0	1524,1525
0.74377			Bi_2	0	1524,1525
0.74387			Bi_2	0	1524,1525
0.7439		air	Bi_2	0	48,49
0.7439		air	Tm	0	1493
0.743900	±0.000020	air	Cu	1	1077
0.74413			Bi_2	0	1524,1525
0.744169			Bi_2	0	1524,1525
0.74438			Bi_2	0	1524,1525
0.74466			Te_2	0	1602
0.74466			$^{130}Te_2$	0	1602
0.7448		air	Tm	0	1493
0.74494			Te_2	0	1602
0.74494			$^{130}Te_2$	0	1602
0.745046			Bi_2	0	1524,1525
0.74615			Bi_2	0	1524,1525
0.74619			$^{130}Te_2$	0	1602
0.74638			Br_2	0	1526
0.74660			Bi_2	0	1524,1525
0.74674			Bi_2	0	1524,1525
0.74675			Bi_2	0	1524,1525
0.7468		air	Bi_2	0	48,49
0.74704			Br_2	0	1526
0.7471		air	Bi_2	0	48,49
0.74713			Bi_2	0	1524,1525
0.747149	±0.000010	air	Al	1	423,878,1050
0.74731			Bi_2	0	1524,1525
0.74749			$^{130}Te_2$	0	1602
0.7475		air	Bi_2	0	48,49
0.74754			Bi_2	0	1524,1525
0.7478		air	Zn	1	1809

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.747830	±0.000160	air	Zn	1	945,1064
0.7481		air	Tm	0	1493
0.7482		air	Bi_2	0	48,49
0.7482187		air	N_2	0	105
0.7482723		air	F	0	256
0.74829			Bi_2	0	1524,1525
0.7485941		air	N_2	0	105
0.7486135		air	N_2	0	105
0.7486253		air	N_2	0	105
0.7486413		air	N_2	0	105
0.7487409		air	N_2	0	105
0.7488046		air	N_2	0	105
0.7488246		air	N_2	0	105
0.7489107		air	N_2	0	105
0.7489155		air	F	0	250,252,440
0.74893			Bi_2	0	1524,1525
0.7489626		air	N_2	0	105
0.7489809		air	N_2	0	105
0.7490096		air	N_2	0	105
0.7490317		air	N_2	0	105
0.7491510		air	N_2	0	105
0.7491705		air	N_2	0	105
0.7492379		air	N_2	0	105
0.7493082		air	N_2	0	105
0.7493716		air	N_2	0	105
0.7493910		air	N_2	0	105
0.74946			Bi_2	0	1524,1525
0.7495086		air	N_2	0	105
0.7495465		air	N_2	0	105
0.7495660		air	N_2	0	105
0.7496024		air	N_2	0	105
0.7497256		air	N_2	0	105
0.7497524		air	N_2	0	105
0.7497728		air	N_2	0	105
0.7498898		air	N_2	0	105

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7499013		air	N_2	0	105
0.7499327		air	N_2	0	105
0.7499593		air	N_2	0	105
0.7499825		air	N_2	0	105
0.7500071		air	N_2	0	105
0.7500646		air	N_2	0	105
0.7500734		air	N_2	0	105
0.7501056		air	N_2	0	105
0.7501295		air	N_2	0	105
0.7501404		air	N_2	0	105
0.7501553		air	N_2	0	105
0.7502139		air	N_2	0	105
0.7502729		air	N_2	0	105
0.7502768		air	N_2	0	105
0.7503035		air	N_2	0	105
0.7503371		air	N_2	0	105
0.7503418		air	N_2	0	105
0.7503642		air	N_2	0	105
0.7503669		air	N_2	0	105
0.7503697		air	N_2	0	105
0.7503838		air	N_2	0	105
0.7503960		air	N_2	0	105
0.7503994		air	N_2	0	105
0.7504106		air	N_2	0	105
0.7504160		air	N_2	0	105
0.7504184		air	N_2	0	105
0.7504274		air	N_2	0	105
0.7504598		air	N_2	0	105
0.7504768		air	N_2	0	105
0.750508	±0.000005	air	Ar	1	454,1005
0.7505113		air	N_2	0	105
0.7505710		air	N_2	0	105
0.7505903		air	N_2	0	105
0.75059341		vacuum	Ar	0	450
0.7506063		air	N_2	0	105
0.7506356		air	N_2	0	105

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7508145		air	N_2	0	105
0.7509890		air	N_2	0	105
0.7510133		air	N_2	0	105
0.7510923		air	N_2	0	105
0.7511592		air	N_2	0	105
0.7512799		air	N_2	0	105
0.75130			Bi_2	0	1524,1525
0.7513003		air	N_2	0	105
0.7513569		air	N_2	0	105
0.75137			Bi_2	0	1524,1525
0.75139			Bi_2	0	1524,1525
0.7514357		air	N_2	0	105
0.7514919		air	F	0	256
0.7515079		air	N_2	0	105
0.7515446		air	N_2	0	105
0.7515650		air	N_2	0	105
0.75166			Bi_2	0	1524,1525
0.751735			Bi_2	0	1524,1525
0.7517728		air	N_2	0	105
0.7518013		air	N_2	0	105
0.7522		air	Tm	0	1493
0.752550	±0.000010	air	Kr	1	947,1007
0.7526		air	Tm	0	1493
0.752653			Bi_2	0	1524,1525
0.7532		air	Tm	0	1493
0.75363			Bi_2	0	1524,1525
0.75408			Bi_2	0	1524,1525
0.75409			Bi_2	0	1524,1525
0.75419			Bi_2	0	1524,1525
0.7543		air	Bi_2	0	48,49
0.75441			H_2	0	1535
0.75463			Bi_2	0	1524,1525
0.75466			Bi_2	0	1524,1525
0.75496			Bi_2	0	1524,1525
0.7551		air	Bi_2	0	48,49

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7552235		air	F	0	248–250
0.75527			$^{130}Te_2$	0	1602
0.75557			$^{130}Te_2$	0	1602
0.755600	±0.000020	air	Au	1	673
0.75580			Bi_2	0	1524,1525
0.7559		air	Tm	0	1493
0.75622			Bi_2	0	1524,1525
0.7563			Na_2	0	1589,1590
0.75657			$^{130}Te_2$	0	1602
0.75683			Bi_2	0	1524,1525
0.7577		air	Tm	0	1493
0.75791			$^{130}Te_2$	0	1602
0.7586439		air	N_2	0	105
0.758750	±0.000160	air	Zn	1	676,945,1064
0.7587693		air	N_2	0	105
0.759870	±0.000050	air	Bi	2	957
0.760040	±0.000020	air	Au	1	673
0.760154393		air	Kr	0	604
0.7603477		air	N_2	0	105
0.76048			Bi_2	0	1524,1525
0.7606374		air	N_2	0	105
0.76068			Bi_2	0	1524,1525
0.7607626		air	N_2	0	105
0.7608801		air	N_2	0	105
0.7609853		air	N_2	0	105
0.7610759		air	N_2	0	105
0.7611082		air	N_2	0	105
0.761118	±0.000160	air	Zn	1	1064,1145
0.7611514		air	N_2	0	105
0.7612105		air	N_2	0	105
0.76122			Bi_2	0	1524,1525
0.7612528		air	N_2	0	105
0.7613260		air	N_2	0	105
0.7615347		air	N_2	0	105
0.76165			Bi_2	0	1524,1525
0.76169			Bi_2	0	1524,1525

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.7616994		air	N_2	0	105
0.7617357		air	N_2	0	105
0.76177			Bi_2	0	1524,1525
0.761850	±0.000020	air	I	1	993,1037
0.761900	±0.000020	air	Xe	1	1077
0.7619288		air	N_2	0	105
0.76204			Bi_2	0	1524,1525
0.7620844		air	N_2	0	105
0.7620943		air	N_2	0	105
0.7621029		vacuum	Rb	0	350
0.7621161		air	N_2	0	105
0.76215			Bi_2	0	1524,1525
0.7622235		air	N_2	0	105
0.76223			Bi_2	0	1524,1525
0.76224			Bi_2	0	1524,1525
0.7622565		air	N_2	0	105
0.7622959		air	N_2	0	105
0.7623256		air	N_2	0	105
0.7623311		air	N_2	0	105
0.76235			Bi_2	0	1524,1525
0.7623582		air	N_2	0	105
0.7623686		air	N_2	0	105
0.7623918		air	N_2	0	105
0.7624220		air	N_2	0	105
0.7624690		air	N_2	0	105
0.7624924		air	N_2	0	105
0.7625115		air	N_2	0	105
0.7625445		air	N_2	0	105
0.76256			Bi_2	0	1524,1525
0.7625709		air	N_2	0	105
0.7625770		air	N_2	0	105
0.7625812		air	N_2	0	105
0.7625906		air	N_2	0	105
0.7626007		air	N_2	0	105
0.7626044		air	N_2	0	105

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7626114		air	N_2	0	105
0.7626180		air	N_2	0	105
0.7626207		air	N_2	0	105
0.7626360		air	N_2	0	105
0.7626560		air	N_2	0	105
0.7626700		air	N_2	0	105
0.7626749		air	N_2	0	105
0.7626826		air	N_2	0	105
0.7628854		air	N_2	0	105
0.7629102		air	N_2	0	105
0.7630305		air	N_2	0	105
0.7631880		air	N_2	0	105
0.7632446		air	N_2	0	105
0.7633348		air	N_2	0	105
0.7633985		air	N_2	0	105
0.7634546		air	N_2	0	105
0.7634779		air	N_2	0	105
0.7635474		air	N_2	0	105
0.7636126		air	N_2	0	105
0.7636904		air	N_2	0	105
0.7637586		air	N_2	0	105
0.7638274		air	N_2	0	105
0.7639571		air	N_2	0	105
0.7639715		air	N_2	0	105
0.7640383		air	N_2	0	105
0.7640794		air	N_2	0	105
0.7641929		air	N_2	0	105
0.7642478		air	N_2	0	105
0.7644612		air	N_2	0	105
0.7647			Na_2	0	1589,1590
0.764852			Na_2	0	1589,1590
0.765418			Na_2	0	1589,1590
0.76613			$^{130}Te_2$	0	1602
0.76642			$^{130}Te_2$	0	1602
0.766470	±0.000030	air	Cu	1	1051,1174
0.7664899		air	K	0	350

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7669		air	Tm	0	1493
0.76718			$^{130}Te_2$	0	1602
0.767324			Na_2	0	1589,1590
0.767490	±0.000050	air	Se	1	963
0.7676			Na_2	0	1589,1590
0.767606			Na_2	0	1589,1590
0.76763			Bi_2	0	1524,1525
0.76784			Bi_2	0	1524,1525
0.768487			Na_2	0	1589,1590
0.76855			$^{130}Te_2$	0	1602
0.7687			Na_2	0	1589,1590
0.76904			Bi_2	0	1524,1525
0.76916			Bi_2	0	1524,1525
0.76930			Bi_2	0	1524,1525
0.76941			Bi_2	0	1524,1525
0.772360	±0.000050	air	Se	1	963
0.7726542		vacuum	S	0	238
0.773250	±0.000050	air	Zn	1	928,1145
0.773580	±0.000020	air	I	1	993,1037
0.773800			Na_2	0	1589,1590
0.773870	±0.000030	air	Cu	1	1051,1174
0.7743859		air	N_2	0	105
0.77486			Bi_2	0	1524,1525
0.77506			Bi_2	0	1524,1525
0.7752354		air	N_2	0	105
0.775265			Na_2	0	1589,1590
0.7753652		air	N_2	0	105
0.775423			Na_2	0	1589,1590
0.7754696		air	F	0	250,252,440
0.7757		air	Zn	1	868,1139
0.77612			Bi_2	0	1524,1525
0.7761570		vacuum	Rb	0	350
0.77624			Bi_2	0	1524,1525
0.77635			Bi_2	0	1524,1525
0.77647			Bi_2	0	1524,1525

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7768		air	Tm	0	1493
0.77700379		vacuum	Se	0	245,390
0.77722			$^{130}Te_2$	0	1602
0.77752			$^{130}Te_2$	0	1602
0.777890	±0.000030	air	Cu	1	1174
0.77801			$^{130}Te_2$	0	1602
0.77941			$^{130}Te_2$	0	1602
0.779620	±0.000050	air	Se	1	963
0.7800212		air	F	0	250,252,254
0.7800268		air	Rb	0	350
0.780160	±0.000060	air	Te	1	904,1073
0.7804		air	Tm	0	1493
0.780530	±0.000030	air	Cu	1	934,1174
0.780780	±0.000030	air	Cu	1	691,1051,1149
0.78218			Bi_2	0	1524,1525
0.78237			Bi_2	0	1524,1525
0.782600	±0.000030	air	Cu	1	934,1174
0.782800	±0.000300	air	Xe	1	1075
0.78330			Bi_2	0	1524,1525
0.78342			Bi_2	0	1524,1525
0.783930	±0.000050	air	Se	1	963
0.784292			Na_2	0	1589,1590
0.7845		air	Tm	0	1493
0.784530	±0.000030	air	Cu	1	934,1051,1174
0.7846		air	P	1	869,992
0.7849		air	Tm	0	1493
0.78493		air	Na_2	0	117,118
0.7851			Na_2	0	1589,1590
0.78569		air	Na_2	0	117,118
0.7879			Na_2	0	1589,1590
0.7888			Na_2	0	1589,1590
0.789204			Na_2	0	1589,1590
0.789600	±0.000030	air	Cu	1	934,1174
0.78974		air	Na_2	0	117,118
0.78979		air	Na_2	0	117,118
0.790270	±0.000030	air	Cu	1	935,1174

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.790912			Na_2	0	1589,1590
0.791003			Na_2	0	1589,1590
0.7913			Li_2	0	1577,1619
0.79154			IF	0	1839
0.79178		air	Na_2	0	117,118
0.792140	±0.000060	air	Te	1	904,1073
0.792346			Na_2	0	1589,1590
0.792346			Na_2	0	1589,1590
0.792517			Na_2	0	1589,1590
0.7929		air	Tm	0	1493
0.79295		air	Na_2	0	117,118
0.7931		air	Tm	0	1493
0.79314		air	Kr	1	973,1007
0.793253			Na_2	0	1589,1590
0.79370		air	Na_2	0	117,118
0.793903			Na_2	0	1589,1590
0.794072			Na_2	0	1589,1590
0.794480	±0.000030	air	Cu	1	935,1174
0.7945		air	Hg	1	951,1035,1060
0.7947603		air	Rb	0	350
0.7948			Ar	0	1833
0.7957			Na_2	0	1589,1590
0.795889			Na_2	0	1589,1590
0.796070	±0.000250	air	Ni	1	936
0.796550			Na_2	0	1589,1590
0.7968			Na_2	0	1589,1590
0.79747		air	Na_2	0	117,118
0.797480	±0.000250	air	Ni	1	936
0.7975			Na_2	0	1589,1590
0.797559			Na_2	0	1589,1590
0.79766		air	Na_2	0	117,118
0.7983		air	Tm	0	1493
0.798523			IF	0	1567,1839
0.798553			Na_2	0	1589,1590
0.798820	±0.000030	air	Cu	1	934,1174

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.7989			Na_2	0	1589,1590
0.798900	±0.000300	air	Xe	1	1075
0.79909		air	Na_2	0	117,118
0.799154			IF	0	1567
0.799300	±0.000050	air	Kr	1	973,1007,1116
0.79966		air	Na_2	0	117,118
0.799752			IF	0	1567,1839
0.800540	±0.000010	air	Ag	1	691,954,1045
0.80084		air	Na_2	0	117,118
0.800991			IF	0	1567,1839
0.801329			Na_2	0	1589,1590
0.8020		air	Tm	0	1493
0.802136			Na_2	0	1589,1590
0.802345			Na_2	0	1589,1590
0.803391			Na_2	0	1589,1590
0.80365		air	Na_2	0	117,118
0.80393		air	Na_2	0	117,118
0.80445		air	Na_2	0	117,118
0.804472			Na_2	0	1589,1590
0.8050			Na_2	0	1589,1590
0.80537		air	Na_2	0	117,118
0.80561		air	Na_2	0	117,118
0.80669		air	Cd	1	871,953,1059
0.806920	±0.000050	air	Bi	2	957
0.80694		air	Na_2	0	117,118
0.80805		air	Na_2	0	117,118
0.808858		air	Cu	1	935
0.8096		air	Cu	1	934
0.810436392		air	Kr	0	454,455,538
0.811–0.816			CdBr	0	1529
0.8144		air	I_2	0	88–92
0.8170		air	Tm	0	1493
0.817020	±0.000020	air	I	1	993,1037
0.8175			Na_2	0	1589,1590
0.8180		air	Tm	0	1493
0.8186		air	Tm	0	1493

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.819228		air	Cu	1	934
0.819228		air	Cu	1	934
0.8215		air	Tm	0	1493
0.82316376		air	Xe	0	248,588,589
0.8233		air	Tm	0	1493
0.825390	±0.000020	air	I	1	993,1032,1037
0.825450	±0.000010	air	Ag	1	691,935,1044
0.826300	±0.000200	air	Ag	1	806
0.8264			Li_2	0	1577,1619
0.827–0.832			Na_2	0	1591
0.827290		air	Au	1	935
0.827700	±0.000200	air	Cu	1	806
0.82798		air	D_2	0	71,72,74
0.828030	±0.000010	air	Kr	1	947,973,1007
0.828321		air	Cu	1	935
0.830890	±0.000050	air	Se	1	963
0.832206			IF	0	1839
0.832480	±0.000010	air	Ag	1	935,1044,1045
0.832819			IF	0	1839
0.833000	±0.000300	air	Xe	1	1075
0.8334		air	Kr	1	1007,1152
0.8335149		air	C	0	190
0.833532			IF	0	1839
0.834767			IF	0	1839
0.83519		air	H_2	0	71,72,74
0.8358		air	I_2	0	88–92
0.8370			H_2	0	1535
0.837950		air	Ag	1	806,935
0.8389		air	Cd	1	153,152
0.840350	±0.000010	air	Ag	1	691,935,1044
0.84039			Ag	1	1831
0.84091940		air	Xe	0	538,609
0.844300	±0.000300	air	Xe	1	1075
0.844628		air	O	0	226–240,1698
0.844638		air	O	0	226–240,1698

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.844672		air	O	0	226–240,1698
0.844672		air	O	0	226–240,1698
0.844680		air	O	0	226–240,1698
0.844680		air	O	0	226–240,1698
0.844680		air	O	0	226–240,1698
0.8454			Li_2	0	1577,1619
0.84633569		air	Ne	0	526
0.8473		air	Kr	1	1007,1089
0.8480		air	Tm	0	1493
0.8480		air	Tm	0	1493
0.8482		air	Tm	0	1493
0.851104		air	Cu	1	935
0.8521133		air	Cs	0	350
0.85309		air	Cd	1	871,1034,1059
0.8533		air	Tm	0	1493
0.854180	±0.000060	air	Ca	1	336,1166
0.8547		air	Hg	1	160
0.856900	±0.000300	air	Xe	2	923,983,1075
0.8578		air	I_2	0	88–92
0.8579		air	I_2	0	88–92
0.858200	±0.000300	air	Xe	1	1075
0.858900	±0.000300	air	Kr	2	1075
0.8594005		air	N	0	190,214
0.859900		air	Au	1	938
0.860440	±0.000060	air	Te	1	904,1073
0.8628		air	Hg	1	160
0.8629238		air	N	0	190–92,214–16
0.86376895		vacuum	Ne	0	526
0.8652		air	Cd	1	938
0.866200	±0.000060	air	Ca	1	336,1166
0.8669223		air	N_2	0	105
0.8671332		air	N_2	0	105
0.8672			Li_2	0	1577,1619
0.8677		air	Hg	0	160
0.8677		air	Hg	1	160
0.8680		air	N	0	1505

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.86819216		air	Ne	0	462
0.8682			Li_2	0	1577,1619
0.8683		air	N	0	1505
0.868400	±0.000100	air	Cr	1	939
0.8686		air	N	0	1505
0.86901		air	Kr	1	973,1007
0.8692580		air	N_2	0	105
0.8696366		air	N_2	0	105
0.8697945		air	N_2	0	105
0.8698263		air	N_2	0	105
0.8699397		air	N_2	0	105
0.8700		air	Sr	1	976
0.8700670		air	N_2	0	105
0.8700684		air	N_2	0	105
0.8701481		air	N_2	0	105
0.8701718		air	N_2	0	105
0.8702451		air	N_2	0	105
0.8702681		air	N_2	0	105
0.8703		air	N	0	1505
0.8703093		air	N_2	0	105
0.8703457		air	N_2	0	105
0.8704549		air	N_2	0	105
0.8707478		air	N_2	0	105
0.8710118		air	N_2	0	105
0.8710273		air	N_2	0	105
0.8712956		air	N_2	0	105
0.8713533		air	N_2	0	105
0.871400	±0.000300	air	Xe	1	973,1075
0.8715519		air	N_2	0	105
0.8716718		air	N_2	0	105
0.8717377		air	N_2	0	105
0.8717970		air	N_2	0	105
0.8718571		air	N_2	0	105
0.8718654		air	N_2	0	105
0.8719537		air	N_2	0	105

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.8719562		air	N_2	0	105
0.8719791		air	N_2	0	105
0.8720251		air	N_2	0	105
0.8720284		air	N_2	0	105
0.8720308		air	N_2	0	105
0.8720419		air	N_2	0	105
0.8720848		air	N_2	0	105
0.8721155		air	N_2	0	105
0.8721327		air	N_2	0	105
0.8721718		air	N_2	0	105
0.8721971		air	N_2	0	105
0.8722007		air	N_2	0	105
0.8722220		air	N_2	0	105
0.8722341		air	N_2	0	105
0.8722569		air	N_2	0	105
0.8722836		air	N_2	0	105
0.8723057		air	N_2	0	105
0.8726333		air	N_2	0	105
0.8728430		air	N_2	0	105
0.8730		air	Tm	0	1493
0.8730453		air	N_2	0	105
0.8732394		air	N_2	0	105
0.8734247		air	N_2	0	105
0.873430	±0.000060	air	Te	1	904,1073
0.8735995		air	N_2	0	105
0.8737644		air	N_2	0	105
0.8739162		air	N_2	0	105
0.8740559		air	N_2	0	105
0.8742917		air	N_2	0	105
0.8747			Li_2	0	1577,1619
0.874760		air	Ag	1	806,935
0.8757			Li_2	0	1577,1619
0.87614150		air	Cs	0	350
0.87614150		air	Cs	0	350
0.877300	±0.000200	air	Ag	1	806
0.87740648		vacuum	Ne	0	526

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.878000	±0.000300	air	Ar	1	1075,1077
0.8803		air	Tm	0	1493
0.8804		air	I_2	0	88–92
0.880428	±0.000020	air	I	1	266,993,1037
0.8806		air	I_2	0	88–92
0.8813		air	I_2	0	88–92
0.88228702		vacuum	O	0	190
0.8836		air	Tm	0	1493
0.8845349		air	N_2	0	105
0.8846			Li_2	0	1577,1619
0.8856271		air	N_2	0	105
0.8858470		air	N_2	0	105
0.886347			Li_2	0	1577,1619
0.8865			Li_2	0	1577,1619
0.88653057		air	Ne	0	490,526,527
0.886760		air	Au	1	935
0.887376			Li_2	0	1577,1619
0.887740	±0.000020	air	I	1	993,1037
0.88778		air	Cd	1	871,1039,1085
0.88787		air	H_2	0	71,72,74
0.8880521		air	N_2	0	105
0.8884527		air	N_2	0	105
0.8886204		air	N_2	0	105
0.8886378		air	N_2	0	105
0.8887756		air	N_2	0	105
0.8889111		air	N_2	0	105
0.8889738		air	N_2	0	105
0.8890243		air	N_2	0	105
0.8891133		air	N_2	0	105
0.8891769		air	N_2	0	105
0.8892149		air	N_2	0	105
0.8892940		air	N_2	0	105
0.8896001		air	N_2	0	105
0.8898930		air	N_2	0	105
0.8899078		air	N_2	0	105

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.89013		air	H_2	0	71,72,74
0.8901733		air	N_2	0	105
0.8902711		air	N_2	0	105
0.8904419		air	N_2	0	105
0.8906097		air	N_2	0	105
0.8906649		air	N_2	0	105
0.8906994		air	N_2	0	105
0.8907920		air	N_2	0	105
0.8908808		air	N_2	0	105
0.8908878		air	N_2	0	105
0.8909451		air	N_2	0	105
0.8909527		air	N_2	0	105
0.8909750		air	N_2	0	105
0.8910132		air	N_2	0	105
0.8910480		air	N_2	0	105
0.8910612		air	N_2	0	105
0.8911001		air	N_2	0	105
0.8911063		air	N_2	0	105
0.8911280		air	N_2	0	105
0.8911502		air	N_2	0	105
0.8911538		air	N_2	0	105
0.8911608		air	N_2	0	105
0.8911898		air	N_2	0	105
0.8912139		air	N_2	0	105
0.8918033		air	N_2	0	105
0.8920			Na_2	0	1592
0.8920184		air	N_2	0	105
0.8922249		air	N_2	0	105
0.8924223		air	N_2	0	105
0.8926099		air	N_2	0	105
0.8927865		air	N_2	0	105
0.892869155		air	Kr	0	588,589
0.8929509		air	N_2	0	105
0.893			$^{130}Te_2$	0	1603
0.8931019		air	N_2	0	105
0.8933580		air	N_2	0	105

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.8943468		air	Cs	0	350
0.895			$^{130}Te_2$	0	1603
0.8963			Li_2	0	1577,1619
0.8964		air	Br	0	1505
0.8969			Li_2	0	1577,1619
0.897190	±0.000060	air	Te	1	904,1073
0.8972			Li_2	0	1577,1619
0.8974			Li_2	0	1577,1619
0.8978			Li_2	0	1577,1619
0.89784		air	Kr	1	1007,1089
0.8979			Li_2	0	1577,1619
0.8982			Li_2	0	1577,1619
0.8984			Li_2	0	1577,1619
0.8989			Li_2	0	1577,1619
0.8991			Li_2	0	1577,1619
0.89910237		vacuum	Ne	0	490,526
0.899820	±0.000060	air	Te	1	904,1073
0.900			Na_2	0	1593
0.9037			Li_2	0	1577,1619
0.9037		air	I_2	0	88–92
0.9038		air	I_2	0	88–92
0.904			Na_2	0	1593
0.90454514		air	Xe	0	455,538
0.9045878		air	N	0	214
0.9047			Li_2	0	1577,1619
0.9047		air	I_2	0	88–92
0.905			Na_2	0	1593
0.9060		air	I_2	0	88–92
0.906300	±0.000400	air	Xe	1	1075
0.9064			Li_2	0	1577,1619
0.9068			Li_2	0	1577,1619
0.907			Na_2	0	1593
0.9074			Li_2	0	1577,1619
0.910			Na_2	0	1593
0.9122			Li_2	0	1577,1619

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
0.912297		air	Ar	0	248,588–9,722
0.9163		air	HD	0	71,72,74
0.91723217		air	Cs	0	350
0.9173		air	Br	0	1505
0.9178		air	Br	0	1505
0.9187449		air	N	0	190
0.918784		air	N	0	190
0.921800	±0.000150	air	Mg	1	920,976,1046
0.9222			H_2	0	1535
0.924400	±0.000150	air	Mg	1	920,976,1046
0.924930	±0.000100	air	Se	1	963
0.926500	±0.000400	air	Xe	1	1075
0.9274		air	I_2	0	88–92
0.9276		air	I_2	0	88–92
0.928700	±0.000400	air	Xe	1	1075
0.9288		air	I_2	0	88–92
0.9295		air	I_2	0	88–92
0.9305		air	I_2	0	88–92
0.9350		air	Tl	1	931
0.937790	±0.000060	air	Te	1	904,1073
0.9386805		air	N	0	190–2,215–218
0.9392789		air	N	0	190–2,215–218
0.9396		air	Hg	1	160
0.9405729		air	C	0	190–192,383
0.9452098		air	Cl	0	258,260
0.94892838		vacuum	Ne	0	528
0.9518		air	I_2	0	88–92
0.9520		air	I_2	0	88–92
0.95326		air	D_2	0	71,72,74
0.9545		air	I_2	0	88–92
0.9555		air	I_2	0	88–92
0.961			Na_2	0	1593
0.962		air	C	0	1505
0.965389		air	N_2	0	105
0.965779		air	Ar	0	588–9,593,722
0.9658		air	C	0	1505,1506

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
0.965846		air	N_2	0	105
0.966599		air	N_2	0	105
0.967270		air	N_2	0	105
0.967758		air	N_2	0	105
0.967943		air	N_2	0	105
0.968061		air	N_2	0	105
0.969552		air	N_2	0	105
0.969700	±0.000200	air	Xe	1	1075,1171
0.969879		air	N_2	0	105
0.9766		air	I_2	0	88–92
0.9767		air	I_2	0	88–92
0.9793		air	Br	0	1505
0.97997039		air	Xe	0	455,588,589
0.98		air	I	0	266
0.9838743		vacuum	Cd	0	152
0.9898		air	Eu	1	1054,1087
0.9940		air	Ca	1	976,1166
0.995470	±0.000100	air	Se	1	963
0.9963		air	I_2	0	88–92
0.9973		air	I_2	0	88–92
1.0019		air	I_2	0	88–92
1.0020		air	Eu	1	1078,1087
1.0053		air	I_2	0	88–92
1.008422		air	P	0	221
1.01		air	I	0	266
1.01236025		air	Cs	0	350
1.016–1.340			I_2	0	1556
1.0166		air	Eu	1	1078,1087
1.0225		air	I_2	0	88–92
1.0245		air	I_2	0	88–92
1.0255		air	I_2	0	88–92
1.0274		air	I_2	0	88–92
1.0298238		vacuum	Ne	0	490,526,527
1.03		air	I	0	266
1.0324559		vacuum	Yb	0	247

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.033050	±0.000050	air	Sr	1	139,881
1.040940	±0.000100	air	Se	1	963
1.041720	±0.000060	air	I	3	968
1.042			$^{130}Te_2$	0	1603
1.0455451		air	S	0	195,196,239
1.0455985		vacuum	As	0	222
1.04701		air	Ar	0	588
1.0534		air	I_2	0	88–92
1.0563328		air	N	0	219
1.0586		air	Hg	1	160,924
1.059			$^{130}Te_2$	0	1603
1.0600		air	$Nd(thd)_3$	0	25
1.0612556		vacuum	Sn	0	384
1.0617063		vacuum	As	0	222
1.062		air	Sn	1	202,384
1.0623177		air	N	0	219
1.0623574		vacuum	Ne	0	185,490,531–3
1.0634		air	Xe	0	609
1.063400	±0.000600	air	Xe	1	1075
1.0635993		air	S	0	195,196
1.0643981		air	N	0	219
1.06596		air	Kr	1	1007,1089
1.0683082		air	C	0	192–193
1.0685345		air	C	0	190,193
1.0691250		air	C	0	190–196
1.06939			Tm	0	1856,1857
1.0707333		air	C	0	193
1.0730		air	C	0	1505
1.074		air	Sn	1	202
1.0775		air	I_2	0	88–92
1.0788		air	I_2	0	88–92
1.0801000		vacuum	Ne	0	389,526,534
1.0847447		vacuum	Ne	0	389,526,534
1.0860		air	S_2	0	122
1.0867911		vacuum	Cd	0	152
1.088			$^{130}Te_2$	0	1603

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.089			$^{130}Te_2$	0	1603
1.091450	±0.000050	air	Sr	1	139,881
1.0915		air	S_2	0	122
1.091500	±0.000150	air	Mg	1	920,1046
1.0917		air	S_2	0	122
1.0920		air	S_2	0	122
1.0923		air	S_2	0	122
1.092300	±0.000100	air	Ar	1	594,1117,1143
1.0941		air	S_2	0	122
1.0946		air	S_2	0	122
1.0950		air	Xe	0	609
1.095000	±0.000600	air	Xe	0	1075
1.095200	±0.000150	air	Mg	1	920,1046
1.0990		air	S_2	0	122
1.09963		air	CN	0	57,58
1.09965		air	CN	0	57,58
1.09966		air	CN	0	57,58
1.09974		air	CN	0	57,58
1.09974		air	CN	0	57,58
1.09987		air	CN	0	57,58
1.1000		air	S_2	0	122
1.10007		air	CN	0	57,58
1.10031		air	CN	0	57,58
1.10061		air	CN	0	57,58
1.10096		air	CN	0	57,58
1.10136		air	CN	0	57,58
1.10182		air	CN	0	57,58
1.10232		air	CN	0	57,58
1.10288		air	CN	0	57,58
1.10348		air	CN	0	57,58
1.10414		air	CN	0	57,58
1.10445		air	CN	0	57,58
1.10485		air	CN	0	57,58
1.10521		air	CN	0	57,58
1.10560		air	CN	0	57,58

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.10603		air	CN	0	57,58
1.10641		air	CN	0	57,58
1.1066		air	I_2	0	88–92
1.10689		air	CN	0	57,58
1.10726		air	CN	0	57,58
1.1073		air	I_2	0	88–92
1.10782		air	CN	0	57,58
1.10879		air	CN	0	57,58
1.10981		air	CN	0	57,58
1.1101		air	Tm	0	1494
1.11090		air	CN	0	57,58
1.11200		air	CN	0	57,58
1.113			$^{130}Te_2$	0	1603
1.11321		air	CN	0	57,58
1.1146071		vacuum	Ne	0	472,526,534
1.1163455		vacuum	P	0	221
1.1165		air	H_2	0	71,72,74
1.1179812		vacuum	Hg	0	160,161
1.1179812		vacuum	Hg	0	160,161
1.1180588		vacuum	Ne	0	529,537,539
1.1186470		vacuum	P	0	221
1.1206		air	I_2	0	88–92
1.1210			H_2	0	1535
1.1214		air	I_2	0	88–92
1.1216		air	I_2	0	88–92
1.1225		air	H_2	0	71,72,74
1.1226		air	I_2	0	88–92
1.1230		air	Sr	1	976
1.1247708		vacuum	As	0	222
1.1255		air	I_2	0	88–92
1.126		air	Al	0	1499
1.1290435		vacuum	Hg	0	156
1.130304		air	Ba	0	146–148
1.1328		air	I_2	0	88–92
1.1334		air	I_2	0	88–92
1.134			$^{130}Te_2$	0	1603

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.1347		air	I_2	0	88–92
1.1348		air	I_2	0	88–92
1.1350		air	I_2	0	88–92
1.1350		air	Tl	1	931
1.138145		air	Na	0	572–3,679,785
1.1393552		vacuum	Ne	0	528,529,534
1.1403784		air	Na	0	572–3,679,785
1.1412258		vacuum	Ne	0	389,466,526–9
1.144			$^{130}Te_2$	0	1603
1.1453		air	I_2	0	88–92
1.14574813		air	Kr	0	538
1.1464		air	I_2	0	88–92
1.1485		air	Cd	0	152
1.14881		air	Ar	0	588
1.1502		air	I_2	0	88–92
1.1510		air	I_2	0	88–92
1.1515		air	I_2	0	88–92
1.1522		air	I_2	0	88–92
1.1522595		vacuum	As	0	175,222
1.1524056		vacuum	As	0	175,222
1.1525900		vacuum	Ne	0	529,535–40
1.1528174		vacuum	Ne	0	535,537,544
1.1529		air	I_2	0	88–92
1.1547277		vacuum	P	0	221
1.1554		air	Cd	0	152
1.1587		air	S_2	0	122
1.159		air	Pb	1	1086
1.1604712		vacuum	Ne	0	389,466,540
1.161			$^{130}Te_2$	0	1603
1.1617260		vacuum	Ne	0	529,536,540
1.1663677		vacuum	Cd	0	152
1.1698		air	I_2	0	88–92
1.1703		air	I_2	0	88–92
1.171			$^{130}Te_2$	0	1603
1.1711		air	Bi	0	1492

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.1711		air	I_2	0	88–92
1.1718		air	I_2	0	88–92
1.1740		air	I_2	0	88–92
1.1743		air	Br	0	1505
1.1745636		vacuum	Cd	0	152
1.1750		air	I_2	0	88–92
1.1750		air	Tl	1	931
1.1770013		vacuum	Ne	0	466,526–529
1.177283		air	K	0	350
1.1787698		vacuum	P	0	221
1.1792270		vacuum	Ne	0	490,526–529
1.1874246		vacuum	Cd	0	152,153
1.191			$^{130}Te_2$	0	1603
1.1984187		air	Si	0	199
1.1988192		vacuum	Ne	0	526,529,536
1.2031507		air	Si	0	199
1.2068179		vacuum	Ne	0	535,536,546
1.2096		air	Be	1	1108
1.2115637		vacuum	Ar	0	532
1.21397378		air	Ar	0	588
1.2170		air	I_2	0	88–92
1.2222		air	Hg	0	162,163
1.224			$^{130}Te_2$	0	1603
1.2246		air	Hg	0	162,163
1.240282693		air	Ar	0	588,590
1.243224		air	K	0	772
1.2462797		vacuum	Ne	0	490,526–529
1.2478		air	Ba	1	976
1.252211		air	K	0	350,772
1.2545		air	Hg	0	160
1.2545		air	Hg	1	160
1.255136		vacuum	Yb	0	247
1.2561370		air	Pb	0	211
1.258790	±0.000100	air	Se	1	963
1.258790	±0.000100	air	Se	1	963
1.2588072		vacuum	Ne	0	553

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.2588088		vacuum	Ne	0	553
1.2598449		vacuum	Ne	0	528,529
1.2692672		vacuum	Ne	0	426,542,553
1.27022810		air	Ar	0	590–593,806
1.271400	±0.000100	air	Yb	1	404,1002
1.2740		air	I_2	0	88–92
1.2760		air	Hg	0	162,163
1.2773017		vacuum	Ne	0	526,528
1.279		air	Li	0	1499
1.279		air	Li	0	1499
1.28027391?		air	Ar	0	532
1.2870		air	I_2	0	88–92
1.2890684		vacuum	Ne	0	490
1.2899		air	Mn	0	406–7,411–13
1.2915545		vacuum	Ne	0	490,553,528
1.2925		air	I_2	0	88–92
1.2940		air	I_2	0	88–92
1.2945989		vacuum	As	0	222
1.2981		air	Hg	0	160
1.2981		air	Hg	1	160
1.3010		air	I_2	0	88–92
1.3020		air	I_2	0	88–92
1.304		air	Ca	0	1499
1.3040		air	I_2	0	88–92
1.305363		air	Zn	0	383
1.3058983		vacuum	Tm	0	246
1.3061		air	H_2	0	71,72,74
1.3069		air	I_2	0	88–92
1.3080		air	I_2	0	88–92
1.3103722		vacuum	Pb	0	383
1.3104227		vacuum	Tm	0	246
1.31258		vacuum	HF	0	1624
1.3152443		vacuum	I	0	267–283,2
1.3152769		vacuum	Pb	0	383
1.3153		air	I_2	0	88–92

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.3166		air	H_2	0	71,72,74
1.317		air	Ca	0	1499
1.31774118		air	Kr	0	538
1.3192		air	I_2	0	88–92
1.32		air	Rb	0	1501
1.3200		air	I_2	0	88–92
1.32125		vacuum	HF	0	1624
1.3282		air	I_2	0	88–92
1.3291		air	I_2	0	88–92
1.32941		air	Mn	0	336,406–7,411
1.3295		air	Kr	1	1007,1089
1.33053		vacuum	HF	0	1624
1.3310		air	I_2	0	88–92
1.33179		air	Mn	0	336,406–7,411
1.3324		air	I_2	0	88–92
1.3333		air	I_2	0	88–92
1.3349		air	I_2	0	88–92
1.3380		air	I_2	0	88–92
1.3383700		vacuum	Tm	0	246
1.34043		vacuum	HF	0	1624
1.3406		air	I_2	0	88–92
1.3418		air	I_2	0	88–92
1.3421		air	I_2	0	88–92
1.3429		air	I_2	0	88–92
1.342961		air	N	0	215
1.342996		air	In	0	383
1.345300	±0.000100	air	Yb	1	404,1002
1.3476544		vacuum	Ar	0	594
1.35099		vacuum	HF	0	1624
1.3574217		vacuum	Hg	0	156
1.358133		air	N	0	191,195–6,215
1.358831		air	Cs	0	350
1.360257		air	Cs	0	796
1.3610		air	Eu	1	1078,1087
1.3612294		vacuum	Sn	0	383
1.36219		vacuum	HF	0	1624

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
1.36224153		air	Kr	0	538
1.3625		air	Mn	0	406,407,413
1.3655		air	Hg	0	160
1.36570559		air	Xe	0	538
1.366501		air	Rb	0	350
1.3677207		vacuum	Hg	0	156,161
1.37282		vacuum	HF	0	1638,1639
1.37406		vacuum	HF	0	1638,1639
1.375883		air	Cs	0	350,796
1.375900	±0.000200	air	Ag	1	806
1.38196		vacuum	HF	0	1638,1639
1.3863		air	Mn	0	406,407,413
1.38633		air	Cl	0	260
1.38931		air	Cl	0	260
1.39175		vacuum	HF	0	1638,1639
1.3954389		vacuum	Hg	0	156
1.396710		air	Ni	0	417
1.3982714		vacuum	Cd	0	152,154,383
1.39970		air	Mn	0	336,406–7,411
1.4019620		air	S	0	240
1.40936399		air	Ar	0	538
1.4124892		vacuum	As	0	222
1.41830		air	CN	0	57,58
1.41849		air	CN	0	57,58
1.41876		air	CN	0	57,58
1.41911		air	CN	0	57,58
1.41954		air	CN	0	57,58
1.42005		air	CN	0	57,58
1.42065		air	CN	0	57,58
1.42132		air	CN	0	57,58
1.42207		air	CN	0	57,58
1.42289		air	CN	0	57,58
1.42380		air	CN	0	57,58
1.42478		air	CN	0	57,58
1.425		air	Ca	0	1499

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
1.42583		air	CN	0	57,58
1.42586227712		vacuum	As	0	175
1.4259232		vacuum	As	0	175
1.42696		air	CN	0	57,58
1.42808		air	CN	0	57,58
1.42945		air	CN	0	57,58
1.43081		air	CN	0	57,58
1.4321	±.00051	air	Ne	0	554
1.4330	±.00051	air	Ne	0	554
1.4331602		vacuum	Cd	0	152–154,383
1.4343722		vacuum	Tm	0	246
1.4346		air	Ne	0	554
1.4368	±.00051	air	Ne	0	554
1.441920		air	In	0	383
1.44267933		air	Kr	0	538
1.44693		vacuum	HF	0	1638,1639
1.4478302		vacuum	Cd	0	154,383,775
1.4489080		vacuum	Tm	0	246
1.45304			Tm	0	1856,1857
1.45423		air	N	0	215
1.454250		air	C	0	191,194–198
1.4545941		vacuum	I	0	260
1.4553011		vacuum	N	0	195,196
1.455371		vacuum	Ni	0	155
1.45730		vacuum	HF	0	1638,1639
1.4629079		vacuum	As	0	222
1.469493		air	Cs	0	350
1.47			Cs	0	1835
1.475241		air	Rb	0	350
1.47654720		air	Kr	0	538
1.4770		air	Eu	1	1054,1087
1.4793059		vacuum	Yb	0	404
1.4848636		vacuum	Ne	0	555
1.4873294		vacuum	Ne	0	555
1.4876248		vacuum	Ne	0	555
1.4892012		vacuum	Ne	0	555

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.4903576		vacuum	Ne	0	555
1.4940304		vacuum	Ne	0	555
1.49578			Tm	0	1856,1857
1.49618939		air	Kr	0	605
1.4998810		vacuum	Tm	0	246
1.50004		air	Ba	0	146–151,708
1.502499		air	Mg	0	146
1.5036834		vacuum	Tm	0	246
1.504605		air	Ar	0	806
1.5234875		vacuum	Ne	0	526,529,550
1.528843		air	Rb	0	350
1.528948		air	Rb	0	350
1.529954		vacuum	Hg	0	160–61,164–74
1.53264796		air	Kr	0	605
1.5335134		vacuum	Pb	0	383
1.5422255		air	S	0	241
1.5533401		vacuum	I	0	400
1.5550		air	Hg	1	160,1102
1.5716351		air	P	0	221
1.5730		air	Cl	0	1505
1.58697		air	Cl	0	197,261,391
1.588441		air	Si	0	199,403
1.5970		air	Cl	0	1505
1.598200	±0.000200	air	Ag	1	806
1.6057666		vacuum	Xe	0	538
1.6180021		air	Ar	0	389,429
1.6383650		vacuum	Tm	0	246
1.6404449		vacuum	Cd	0	152,154,383
1.6407031		vacuum	Ne	0	551
1.6437081		vacuum	Cd	0	152
1.646400	±0.000200	air	Ag	1	806
1.6486189		vacuum	Cd	0	152,153
1.648791		vacuum	P	0	221
1.649800	±0.000200	air	Yb	1	247,1002,1133
1.65199		air	Ar	0	593

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.6542665		air	S	0	241
1.6758663		vacuum	Tm	0	246
1.68534881		air	Kr	0	538
1.68967525		air	Kr	0	389,429,538
1.6924775		vacuum	Hg	0	160,161
1.69358061		air	Kr	0	389,429
1.6940584		air	Ar	0	389,429,538
1.6946636		vacuum	Hg	0	160,161
1.7077438		vacuum	Hg	0	160,161
1.7114554		vacuum	Hg	0	160,161
1.7166616		vacuum	Ne	0	490,526
1.720200	±0.000200	air	Ag	1	806
1.7323684		vacuum	Tm	0	247
1.7330499		vacuum	Xe	0	588–89,610–13
1.7334185		vacuum	Hg	0	161,167
1.734600	±0.000200	air	Ag	1	806
1.7367231		vacuum	Ga	0	175
1.7459155		vacuum	Yb	0	247
1.748000	±0.000200	air	Ag	1	806
1.7600985		vacuum	Eu	0	247,418
1.771000	±0.000200	air	Cu	1	806
1.78427374		air	Kr	0	389,429
1.79			Ar	0	1807
1.7919615		vacuum	Ar	0	389,429
1.798400		vacuum	Yb	0	404
1.801			Na_2	0	1593
1.804			Na_2	0	1593
1.8053474		vacuum	As	0	175
1.8057		air	Yb	1	404,1002
1.8068806		vacuum	As	0	222
1.8135329		vacuum	Hg	0	160–61,164–69
1.81673150		air	Kr	0	427
1.81850539		air	Kr	0	389,429
1.8199686		vacuum	Cu	0	806
1.820416		air	Ba	0	147
1.8215302		vacuum	Ne	0	526

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
1.82340574		vacuum	Cu	0	806
1.8258313		vacuum	Ne	0	185
1.8258357		vacuum	Ne	0	185
1.827659		air	Ne	0	551,557–559
1.828258		air	Ne	0	551,557–559
1.830400		air	Ne	0	551,557,559
1.831000	±0.000100	air	Zn	1	155,1145
1.836		vacuum	DF	0	1281
1.8380629		vacuum	Ag	0	383,806
1.840316		air	Ne	0	550–1,557,559
1.841000	±0.000200	air	Ag	1	806
1.844			Na_2	0	1593
1.844		vacuum	DF	0	1281
1.846400	±0.000200	air	Ag	1	806
1.854		vacuum	DF	0	1281
1.859112		air	Ne	0	551,557,559
1.859730		air	Ne	0	556,557,559
1.868596		air	He	0	424,425
1.870		air	Li	0	1499
1.872400	±0.000200	air	Ag	1	806
1.8736732		vacuum	In	0	175
1.87510		air	H	0	130,339
1.876			Na_2	0	1593
1.879600	±0.000200	air	Ag	1	806
1.882			Na_2	0	1593
1.888			Na_2	0	1593
1.8943842		vacuum	P	0	221
1.897		air	Ca	0	1499
1.898000	±0.000200	air	Ag	1	806
1.9022415		vacuum	Ba	0	146
1.905		air	Ca	0	1499
1.9123124		vacuum	Cd	0	152
1.91240055d		vacuum	Sm	0	247
1.915600	±0.000200	air	Cu	1	806
1.9216572		vacuum	Kr	0	389,429

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
1.925			Na_2	0	1593
1.926		air	Eu	0	420
1.931			Na_2	0	1593
1.9371923		vacuum	Ag	0	806
1.948000	±0.000200	air	Cu	1	806
1.954313		air	He	0	424–427
1.95740		air	Ne	0	526,542,553
1.958248		vacuum	Ne	0	434,526,561
1.958985		vacuum	Tm	0	246
1.961		air	Eu	0	420
1.968			Na_2	0	1593
1.971000	±0.000200	air	Cu	1	806
1.971600	±0.000200	air	Ag	1	806
1.9722834		vacuum	Tm	0	246
1.973362		air	Br	0	261,403
1.97546477557		air	Cl	0	199,260–64
1.97546477557		vacuum	As	0	175
1.9814602		vacuum	Ge	0	175
1.982400	±0.000200	air	Ag	1	806
1.9835173		vacuum	Yb	0	246,247
1.98616		air	CN	0	57,58
1.98629		air	CN	0	57,58
1.98658		air	CN	0	57,58
1.98701		air	CN	0	57,58
1.98759		air	CN	0	57,58
1.98831		air	CN	0	57,58
1.98918		air	CN	0	57,58
1.99020		air	CN	0	57,58
1.99135		air	CN	0	57,58
1.99263		air	CN	0	57,58
1.99406		air	CN	0	57,58
1.9947227		vacuum	Tm	0	
1.99563		air	CN	0	57,58
1.99733		air	CN	0	57,58
1.9988		air	CN	0	57,58
2.000400	±0.000200	air	Cu	1	806

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
2.0009		air	CN	0	57,58
2.0031		air	CN	0	57,58
2.0041827		vacuum	Yb	0	246,247
2.0055		air	CN	0	57,58
2.0080		air	CN	0	57,58
2.0107		air	CN	0	57,58
2.0135		air	CN	0	57,58
2.0164		air	CN	0	57,58
2.0196		air	CN	0	57,58
2.01994		air	Cl	0	199,260–64
2.020052		vacuum	V	0	155
2.020602		vacuum	Ge	0	175
2.02622395		air	Xe	0	389,538,588–9
2.0282741		vacuum	As	0	175
2.0355792		vacuum	Ne	0	526,537,550
2.0359432		vacuum	Ne	0	537,542,564
2.0482		air	Sm	0	247
2.0581302		air	He	0	181,428
2.060755		vacuum	He	0	185,429,431
2.0616228		air	Ar	0	389,596–8,806
2.0655993		vacuum	C	0	195
2.079400	±0.000200	air	Ag	1	806
2.0962339		vacuum	P	0	221
2.0986110		air	Ar	0	427,565,806
2.1023345		vacuum	Ne	0	185,435,526
2.10409		air	Ne	0	434,537,542
2.1059135		vacuum	Tm	0	246
2.1129476		vacuum	Tm	0	246
2.11654709		air	Kr	0	389,429,570
2.1186997		vacuum	Yb	0	246,247
2.1332885		air	Ar	0	195
2.1480		air	Yb	1	404,1002
2.1534205		air	Ar	0	427,565,593
2.1573497		vacuum	Ba	0	146,147
2.17074		air	Ne	0	434,537,553

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
2.19025126		air	Kr	0	389,429,570
2.206		air	Na	0	1500
2.2077181		air	Ar	0	195,264,564
2.24857754		air	Kr	0	602
2.252965		air	Rb	0	183,796
2.2792		vacuum	H_2O	0	1329
2.2801247		vacuum	S	0	242,403
2.286565		air	Br	0	265
2.293247		air	Rb	0	183,350,796
2.3133204		air	Ar	0	538,564,593
2.31933328		air	Xe	0	559,582,607
2.32553		air	Ba	0	146,147
2.3266649		vacuum	Ne	0	526
2.351215		air	Br	0	265
2.3785794		vacuum	In	0	175
2.3851957		vacuum	Tm	0	246
2.3957953		vacuum	Ne	0	542,556,560
2.3962995		vacuum	Ne	0	185,542,567–8
2.3966520		air	Ar	0	428,564,588
2.404160	±0.000300	air	Mg	1	136,1046
2.412520	±0.000300	air	Mg	1	136,1046
2.41381		vacuum	HF	0	1638,1639
2.4162547		vacuum	Ne	0	569
2.4225538		vacuum	Ne	0	185,570
2.4256255		vacuum	Ne	0	434,526,542
2.42605059		air	Kr	0	427,565
2.43312		vacuum	HF	0	1638,1639
2.436331		air	S	0	241
2.437700	±0.000200	air	Yb	1	247,1002,1133
2.4466627		vacuum	As	0	175
2.44700		air	Cl	0	197,260,264
2.448099		vacuum	V	0	155
2.45381		vacuum	HF	0	1638,1639
2.458			Na_2	0	1593
2.47588		vacuum	HF	0	1638,1639
2.4764593		vacuum	Ba	0	146

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
2.48247157		air	Xe	0	610
2.498			Na_2	0	1593
2.5014408		vacuum	Ar	0	195,564
2.503			Na_2	0	1593
2.510			Na_2	0	1593
2.5152702		vacuum	Xe	0	602
2.517			Na_2	0	1593
2.520			Na_2	0	1593
2.52338198		air	Kr	0	538,570,608
2.524			Na_2	0	1593
2.537			Na_2	0	1593
2.538			Na_2	0	1593
2.5400115		vacuum	Ne	0	195,564
2.54946		vacuum	Ar	0	195,564
2.55083		vacuum	HF	0	1638,1639
2.5512187		vacuum	Ar	0	195,564
2.55157		air	Ba	0	146,147
2.5531329		vacuum	Ne	0	526
2.557			Na_2	0	1593
2.561			Na_2	0	1593
2.5634025		vacuum	Ar	0	195
2.5668023		vacuum	Ar	0	564
2.57885		vacuum	HF	0	1638,1639
2.5818111		vacuum	Eu	0	247
2.592300	±0.000150	air	Ba	1	146,1133
2.598577		air	I	0	260
2.60848		vacuum	HF	0	1638,1639
2.6266703		vacuum	Kr	0	195,564
2.62690832		air	Xe	0	559,582,607
2.6288137		vacuum	Kr	0	195,564
2.63976		vacuum	HF	0	1638,1639
2.65108645		air	Xe	0	550,582,610–3
2.6513946		vacuum	O	0	236
2.6550282		vacuum	Ar	0	601
2.6608397		vacuum	Xe	0	559,607

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
2.66679		vacuum	HF	0	1638,1639
2.6672615		vacuum	Xe	0	601
2.67274		vacuum	HF	0	1638,1639
2.6843026		vacuum	Ar	0	195,564
2.6886382		vacuum	$^{12}C^{16}O$	0	1293,1324
2.689		air	Li	0	1499
2.6914188		vacuum	$^{12}C^{16}O$	0	1293,1324
2.69625		vacuum	HF	0	1638,1639
2.7006079		vacuum	Sm	0	247
2.70752377		vacuum	HF	0	1638,1639
2.71			Br	0	1859
2.7135274		vacuum	Br	0	437–439
2.7152859		vacuum	Ar	0	602
2.7181668		vacuum	Eu	0	247
2.7261939		vacuum	$^{12}C^{16}O$	0	1293,1324
2.72749		vacuum	HF	0	1638,1639
2.7290266		vacuum	$^{12}C^{16}O$	0	1293,1324
2.73		air	Rb	0	1501
2.7319168		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7348646		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7363805		vacuum	Ar	0	195,564
2.7378703		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7409341		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7440564		vacuum	$^{12}C^{16}O$	0	1293,1324
2.74412		vacuum	HF	0	1638,1639
2.7472374		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7504772		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7537763		vacuum	$^{12}C^{16}O$	0	1638,1639
2.7571350		vacuum	$^{12}C^{16}O$	0	1293,1324
2.757298		air	I	0	265,401
2.7580982		vacuum	Ne	0	195,261
2.76036		vacuum	HF	0	1638,1639
2.7605534		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7640319		vacuum	$^{12}C^{16}O$	0	1638,1639
2.7646881		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7675709		vacuum	$^{12}C^{16}O$	0	1293,1324

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
2.7675747		vacuum	$^{12}C^{16}O$	0	1638,1639
2.7705202		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7711706		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7765892		vacuum	$^{12}C^{16}O$	0	1638,1639
2.7797133		vacuum	$^{12}C^{16}O$	0	1293,1324
2.78		air	Ba	0	1502
2.78257		vacuum	HF	0	1638,1639
2.7826380		vacuum	Ne	0	185,564,195
2.7828975		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7861419		vacuum	$^{12}C^{16}O$	0	1638,1639
2.7894469		vacuum	$^{12}C^{16}O$	0	1293,1324
2.79023		vacuum	HF	0	1638,1639
2.790537		air	Rb	0	350
2.7928128		vacuum	$^{12}C^{16}O$	0	1293,1324
2.79527		vacuum	HF	0	1638,1639
2.7962400		vacuum	$^{12}C^{16}O$	0	1293,1324
2.7997285		vacuum	$^{12}C^{16}O$	0	1638,1639
2.8032790		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8041545		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8068915		vacuum	$^{12}C^{16}O$	0	1638,1639
2.8070965		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8100991		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8105665		vacuum	$^{12}C^{16}O$	0	1638,1639
2.8143044		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8181054		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8202417		vacuum	Ar	0	195,564
2.82126		vacuum	HF	0	1638,1639
2.8219699		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8227216		vacuum	$^{12}C^{16}O$	0	1293,1324
2.82310		vacuum	HF	0	1638,1639
2.8245953		vacuum	Ar	0	195,564
2.8258983		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8260316		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8294039		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8298909		vacuum	$^{12}C^{16}O$	0	1293,1324

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
2.83181		vacuum	HF	0	1638,1639
2.8328388		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8363366		vacuum	$^{12}C^{16}O$	0	1293,1324
2.837716		air	Br	0	265
2.8398977		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8435224		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8446284		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8472110		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8476276		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8506891		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8509638		vacuum	$^{12}C^{16}O$	0	1293,1324
2.85404		vacuum	HF	0	1638,1639
2.8547812		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8586637		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8590043		vacuum	Xe	0	602
2.8610550		air	Kr	0	195,538,559
2.8620231		vacuum	Ar	0	598,603
2.8626114		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8633965		vacuum	Ne	0	195
2.8655717		air	Kr	0	195,538,559
2.86567		vacuum	HF	0	1638,1639
2.8666249		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8703841		vacuum	$^{12}C^{16}O$	0	1293,1324
2.87057		vacuum	HF	0	1638,1639
2.8707045		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8738903		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8774613		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8782932		vacuum	Ar	0	195,564
2.8810972		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8843088		vacuum	Ar	0	195,564
2.8847986		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8885657		vacuum	$^{12}C^{16}O$	0	1293,1324
2.88889		vacuum	HF	0	1638,1639
2.8892054		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8923278		vacuum	$^{12}C^{16}O$	0	1293,1324
2.8923991		vacuum	$^{12}C^{16}O$	0	1293,1324

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
2.8944397		vacuum	O	0	235,1698
2.8962987		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9002654		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9042993		vacuum	$^{12}C^{16}O$	0	1293,1324
2.905900	±0.000200	air	Ba	1	146,1133
2.9084008		vacuum	$^{12}C^{16}O$	0	1293,1324
2.91026		vacuum	HF	0	1638,1639
2.91106		vacuum	HF	0	1638,1639
2.9134037		vacuum	Ar	0	603
2.9196521		vacuum	$^{12}C^{16}O$	0	1293,1324
2.92208		vacuum	HF	0	1638,1639
2.9230381		vacuum	Ba	0	146,147
2.9233655		vacuum	$^{12}C^{16}O$	0	1293,1324
2.92555		vacuum	HF	0	1638,1639
2.9271462		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9280662		vacuum	Ar	0	195,564
2.9287507		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9309946		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9317981		vacuum	Cs	0	350
2.9318698		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9349111		vacuum	$^{12}C^{16}O$	0	1293,1324
2.935		vacuum	OH	0	1288
2.9350549		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9388960		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9429497		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9455858		vacuum	Ne	0	185,195,564
2.9470727		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9512653		vacuum	$^{12}C^{16}O$	0	1293,1324
2.95391		vacuum	HF	0	1638,1639
2.95487		vacuum	HF	0	1638,1639
2.9555279		vacuum	$^{12}C^{16}O$	0	1293,1324
2.95727		vacuum	HF	0	1638,1639
2.9598610		vacuum	$^{12}C^{16}O$	0	1293,1324
2.96432		vacuum	HF	0	1638,1639
2.9663		air	Sm	0	247

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
2.9676035		vacuum	Ne	0	195,564
2.969		vacuum	OH	0	1288
2.9706062		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9724809		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9745386		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9756629		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9785412		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9789128		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9796792		vacuum	Ar	0	195,564
2.98		air	Ba	0	1502
2.9812503		vacuum	Ne	0	195,564
2.9812503		vacuum	Ne	0	195,564
2.9813368		vacuum	As	0	175
2.9826142		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9844656		vacuum	Kr	0	195,564
2.9867581		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9878091		vacuum	Kr	0	195,564
2.98961		vacuum	HF	0	1638,1639
2.9909732		vacuum	$^{12}C^{16}O$	0	1293,1324
2.9952601		vacuum	$^{12}C^{16}O$	0	1293,1324
2.99891		vacuum	HF	0	1638,1639
2.9996191		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0040507		vacuum	$^{12}C^{16}O$	0	1293,1324
3.00505		vacuum	HF	0	1638,1639
3.00642		vacuum	HF	0	1638,1639
3.0085555		vacuum	$^{12}C^{16}O$	0	1293,1324
3.01			Cs	0	1835
3.01033		air	Cs	0	350
3.0111339		vacuum	Cs	0	796
3.0118377		vacuum	Sr	0	143,144
3.0131337		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0173828		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0206297		vacuum	$^{12}C^{16}O$	0	1293,1324
3.02635		vacuum	HF	0	1638,1639
3.0267787		vacuum	Ne	0	185,195,564
3.0274972		vacuum	$^{12}C^{16}O$	0	1293,1324

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
3.0275836		vacuum	Ne	0	185,195,564
3.0317345		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0360451		vacuum	$^{12}C^{16}O$	0	1293,1324
3.036119		air	I	0	401,402
3.0404296		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0448885		vacuum	$^{12}C^{16}O$	0	1293,1324
3.04612		vacuum	HF	0	1638,1639
3.046207		vacuum	Ar	0	195,564
3.04819		vacuum	HF	0	1638,1639
3.0494222		vacuum	$^{12}C^{16}O$	0	1293,1324
3.05		air	Ba	0	1502
3.0536574		vacuum	Kr	0	195,564
3.0540311		vacuum	$^{12}C^{16}O$	0	1293,1324
3.05820		vacuum	HF	0	1638,1639
3.0587159		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0634769		vacuum	$^{12}C^{16}O$	0	1293,1324
3.06517		vacuum	HF	0	1638,1639
3.066080		air	Cl	0	264
3.0663542		air	Kr	0	428,559,564
3.0668182		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0670208		vacuum	Sr	0	143,144
3.0683147		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0720016		vacuum	Ne	0	571
3.0732299		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0779257		vacuum	$^{12}C^{16}O$	0	1293,1324
3.078		vacuum	OH	0	1288
3.0823354		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0868211		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0913834		vacuum	$^{12}C^{16}O$	0	1293,1324
3.09350		vacuum	HF	0	1638,1639
3.09580		vacuum	HF	0	1638,1639
3.0960229		vacuum	$^{12}C^{16}O$	0	1293,1324
3.0961401		vacuum	Cs	0	183,796
3.09821		vacuum	HF	0	1638,1639
3.0996226		vacuum	Ar	0	195,564

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
3.1007399		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1055351		vacuum	$^{12}C^{16}O$	0	1293,1324
3.10616		vacuum	HF	0	1638,1639
3.10692302		air	Xe	0	550,559,582
3.1104089		vacuum	$^{12}C^{16}O$	0	1293,1324
3.11255		vacuum	HF	0	1638,1639
3.115		vacuum	OH	0	1288
3.1153618		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1203946		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1255075		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1333028		vacuum	Ar	0	564
3.1344849		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1345761		vacuum	Ar	0	195
3.13495		vacuum	HF	0	1638,1639
3.1391545		vacuum	$^{12}C^{16}O$	0	1293,1324
3.14110		vacuum	HF	0	1638,1639
3.1415224		vacuum	K	0	350,772
3.1439037		vacuum	$^{12}C^{16}O$	0	1293,1324
3.14802		vacuum	HF	0	1638,1639
3.1487329		vacuum	$^{12}C^{16}O$	0	1293,1324
3.14939		vacuum	HF	0	1638,1639
3.1514572		vacuum	Kr	0	195,564
3.1536426		vacuum	$^{12}C^{16}O$	0	1293,1324
3.157		vacuum	OH	0	1288
3.1586333		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1601267		vacuum	K	0	350,796
3.1637058		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1653653		vacuum	Te	0	155
3.1688605		vacuum	$^{12}C^{16}O$	0	1293,1324
3.16962		vacuum	HF	0	1638,1639
3.17387		vacuum	HF	0	1638,1639
3.1740979		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1748096		vacuum	Pb	0	175
3.1834750		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1882559		vacuum	$^{12}C^{16}O$	0	1293,1324
3.19117		vacuum	HF	0	1638,1639

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
3.1931188		vacuum	$^{12}C^{16}O$	0	1293,1324
3.1980643		vacuum	$^{12}C^{16}O$	0	1293,1324
3.20293		vacuum	HF	0	1638,1639
3.2030929		vacuum	$^{12}C^{16}O$	0	1293,1324
3.2050778		vacuum	Cs	0	184–186
3.2082052		vacuum	$^{12}C^{16}O$	0	1293,1324
3.2134017		vacuum	$^{12}C^{16}O$	0	1293,1324
3.21501		vacuum	HF	0	1638,1639
3.2186830		vacuum	$^{12}C^{16}O$	0	1293,1324
3.2240498		vacuum	$^{12}C^{16}O$	0	1293,1324
3.22933		vacuum	HF	0	1638,1639
3.234		vacuum	OH	0	1288
3.236285		air	I	0	164,263,265
3.24381		vacuum	HF	0	1638,1639
3.25849		vacuum	HF	0	1638,1639
3.26028		vacuum	HF	0	1638,1639
3.27392788		air	Xe	0	427,550,632
3.274		vacuum	OH	0	1288
3.289000	±0.000200	air	Cd	1	155
3.29196		vacuum	HF	0	1638,1639
3.29463		air	N_2	0	107,128
3.29913		vacuum	HF	0	1638,1639
3.30149		air	N_2	0	107,128
3.30438		vacuum	HF	0	1638,1639
3.30734		air	N_2	0	107,128
3.3094055		vacuum	Xe	0	601
3.30989		air	N_2	0	107,128
3.31221		air	N_2	0	107,128
3.31426		air	N_2	0	107,128
3.31607		air	N_2	0	107,128
3.31760		air	N_2	0	107,128
3.3182141		vacuum	Ne	0	559,564,570
3.31889		air	N_2	0	107,128
3.32059		vacuum	HF	0	1638,1639
3.32069		air	N_2	0	107,128

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
3.33348		vacuum	HF	0	1638,1639
3.3341754		vacuum	Ne	0	559,564,570
3.3361448		vacuum	Ne	0	559,564,570
3.3409635		air	Kr	0	195,564,570
3.3510469		vacuum	Ne	0	432
3.3520466		vacuum	Ne	0	432
3.36666991		air	Xe	0	550,582,623
3.37720		vacuum	HF	0	1638,1639
3.3813942		vacuum	Ne	0	195,564
3.3849653		vacuum	Ne	0	195,564
3.389503		vacuum	S	0	242
3.3912244		vacuum	Ne	0	559,564,578–0
3.3922348		vacuum	Ne	0	456,556,572
3.4023945		vacuum	Xe	0	601
3.407422		vacuum	C	0	195
3.408		air	Na	0	1500
3.41		air	Na	0	1500
3.428		vacuum	^{12}COS	0	1316
3.429573		air	I	0	164,263,265
3.4344638		vacuum	Xe	0	564,627,630
3.4480843		vacuum	Ne	0	525,559,570
3.45184		air	N_2	0	107,128
3.45832		air	N_2	0	107,128
3.46114		air	N_2	0	107,128
3.46368		air	N_2	0	107,128
3.4654		air	Sm	0	247
3.46596		air	N_2	0	107,128
3.46795		air	N_2	0	107,128
3.4679986		vacuum	Kr	0	564,195
3.46967		air	N_2	0	107,128
3.47109		air	N_2	0	107,128
3.4789495		vacuum	Ne	0	432,525
3.4882957		vacuum	Kr	0	195,564
3.4894892		vacuum	Kr	0	195,564
3.4909363		vacuum	Cs	0	796
3.49327		vacuum	DF	0	1281

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
3.5117661		vacuum	C	0	195
3.52140		vacuum	DF	0	1281
3.5361		air	Sm	0	247
3.543052		air	Cl	0	197
3.55068		vacuum	DF	0	1281
3.572781		vacuum	$H^{35}Cl$	0	1256
3.58110		vacuum	DF	0	1281
3.5844556		vacuum	Ne	0	559,564,570
3.601		air	B	0	176
3.602617		vacuum	$H^{35}Cl$	0	1256
3.61283		vacuum	DF	0	1281
3.6219081		vacuum	Xe	0	559
3.62349		air	N_2	0	108
3.62614		air	N_2	0	108
3.62910		air	N_2	0	108
3.631236		vacuum	Ar	0	602
3.633673		vacuum	$H^{35}Cl$	0	1256
3.636190		vacuum	$H^{37}Cl$	0	1256
3.63630		vacuum	DF	0	1281
3.64313		air	N_2	0	108
3.64472		air	N_2	0	108
3.64560		vacuum	DF	0	1281
3.64662		air	N_2	0	108
3.64883		air	N_2	0	108
3.65138		air	N_2	0	108
3.6518315		vacuum	Xe	0	564,611–3,625
3.65424		air	N_2	0	108
3.65745		air	N_2	0	108
3.66095		air	N_2	0	108
3.66483		air	N_2	0	108
3.665989		vacuum	$H^{35}Cl$	0	1256
3.66652		vacuum	DF	0	1281
3.668485		vacuum	$H^{37}Cl$	0	1256
3.66899		air	N_2	0	108
3.67352		air	N_2	0	108

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
3.67834		air	N_2	0	108
3.6789254		vacuum	Mg	0	136
3.6789565		vacuum	Mg	0	136
3.67980		vacuum	DF	0	1256,1282
3.6798859		vacuum	Xe	0	559,582,632
3.6825364		vacuum	Mg	0	136
3.6858866		vacuum	Xe	0	559,611,623
3.69825		vacuum	DF	0	1281
3.699583		vacuum	$H^{35}Cl$	0	1256
3.7013512		vacuum	Ar	0	602
3.702069		vacuum	$H^{37}Cl$	0	1256
3.70711		vacuum	$H^{35}Cl$	0	1256
3.7086023		vacuum	Ar	0	604
3.70971		vacuum	$H^{37}Cl$	0	1256
3.7143477		vacuum	Ar	0	602
3.71552		vacuum	DF	0	1256,1282
3.726		air	Cu	0	1499
3.7265		air	Xe	0	1498
3.73095		vacuum	DF	0	1281
3.734504		vacuum	$H^{35}Cl$	0	1256
3.736975		vacuum	$H^{37}Cl$	0	1256
3.73830		vacuum	$H^{35}Cl$	0	1256
3.74079		vacuum	$H^{37}Cl$	0	1256
3.75199		vacuum	DF	0	1256,1282
3.75633		vacuum	DF	0	1256,1282
3.76510		vacuum	DF	0	1256,1282
3.770787		vacuum	$H^{35}Cl$	0	1256
3.77100		vacuum	$H^{35}Cl$	0	1256
3.77347		vacuum	$H^{37}Cl$	0	1256
3.7742128		vacuum	Kr	0	604
3.7746325		vacuum	Ne	0	559,564
3.78782		vacuum	DF	0	1256,1282
3.79018		vacuum	DF	0	1256,1282
3.7942		air	N	0	215
3.796602		air	Cl	0	197
3.80071		vacuum	DF	0	1256,1282

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
3.80499		vacuum	$H^{35}Cl$	0	1256
3.80742		vacuum	$H^{37}Cl$	0	1256
3.808469		vacuum	$H^{35}Cl$	0	1256
3.8135916		vacuum	Tl	0	175
3.8154		air	N	0	215
3.82057		vacuum	DF	0	1256,1282
3.82980		vacuum	DF	0	1256,1282
3.83749		vacuum	DF	0	1256,1282
3.84011		vacuum	$H^{35}Cl$	0	1256
3.84249		vacuum	$H^{37}Cl$	0	1256
3.85		vacuum	HCN	0	1327
3.8502		vacuum	DF	0	1256,1282
3.85091		vacuum	$H^{35}Cl$	0	1256
3.85361		vacuum	$H^{37}Cl$	0	1256
3.85471		vacuum	DF	0	1256,1282
3.863		air	Al	0	1499
3.86573		air	Mg	0	136
3.8696535		vacuum	Xe	0	559,632
3.8704		vacuum	DF	0	1256,1282
3.87573		vacuum	DF	0	1256,1282
3.87684		vacuum	$H^{35}Cl$	0	1256
3.8817		vacuum	DF	0	1256,1282
3.88395		vacuum	$H^{35}Cl$	0	1256
3.88641		vacuum	$H^{37}Cl$	0	1256
3.89028		vacuum	DF	0	1256,1282
3.8950221		vacuum	Xe	0	559,582,611
3.9128		vacuum	DF	0	1256,1282
3.9145		vacuum	DF	0	1256,1282
3.91491		vacuum	$H^{35}Cl$	0	1256
3.91547		vacuum	DF	0	1256,1282
3.92049		vacuum	$H^{37}Cl$	0	1256
3.92716		vacuum	DF	0	1256,1282
3.928361		air	Hg	0	161,167
3.94867		vacuum	DF	0	1256,1282
3.95365		vacuum	$H^{35}Cl$	0	1256

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
3.9557248		air	Kr	0	604
3.95602		vacuum	$H^{37}Cl$	0	1256
3.95653		vacuum	DF	0	1256,1282
3.95717		vacuum	DF	0	1256,1282
3.9589222		vacuum	Ba	0	146
3.96541		vacuum	DF	0	1256,1282
3.980630		air	Ne	0	195,564
3.98429		vacuum	DF	0	1256,1282
3.99093		vacuum	$H^{35}Cl$	0	1256
3.9966035		vacuum	Xe	0	559,611,623–4
3.99949		vacuum	DF	0	1256,1282
4.00317		vacuum	DF	0	1256,1282
4.00543		vacuum	DF	0	1256,1274
4.00590		vacuum	$H^{35}Cl$	0	1256,1259
4.0079678		vacuum	Ba	0	146
4.01703		vacuum	$H^{79}Br$	0	1255–1257
4.01760		vacuum	$H^{81}Br$	0	1255–1257
4.0207278		vacuum	Xe	0	601,651
4.02118		vacuum	DF	0	1256,1274
4.029		air	Li	0	1499
4.02951		vacuum	$H^{35}Cl$	0	1256,1259
4.04042		vacuum	$H^{35}Cl$	0	1256,1259
4.0433		vacuum	DF	0	1256,1274
4.04639		vacuum	DF	0	1256,1274
4.04699		vacuum	$H^{79}Br$	0	1255–1257
4.04755		vacuum	$H^{81}Br$	0	1255–1257
4.0491		vacuum	DF	0	1256,1274
4.0594		vacuum	DF	0	1256,1274
4.0685162		air	Kr	0	604
4.07644		vacuum	$H^{35}Cl$	0	1256,1259
4.07825		vacuum	$H^{79}Br$	0	1255–1257
4.07884		vacuum	$H^{81}Br$	0	1255–1257
4.0891		vacuum	DF	0	1256,1274
4.08949		vacuum	DF	0	1256,1274
4.11066		vacuum	$H^{79}Br$	0	1255–1257
4.11123		vacuum	$H^{81}Br$	0	1255–1257

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
4.11399		vacuum	$H^{35}Cl$	0	1256,1259
4.1336		vacuum	DF	0	1256,1274
4.1368		air	Sm	0	247
4.13690		vacuum	DF	0	1256,1274
4.14424		vacuum	$H^{79}Br$	0	1255–1257
4.14477		vacuum	$H^{81}Br$	0	1255–1257
4.1526299		vacuum	Xe	0	559
4.1526711		vacuum	Kr	0	604
4.16531		vacuum	$H^{79}Br$	0	1255–1257
4.16585		vacuum	$H^{81}Br$	0	1255–1257
4.17962		vacuum	$H^{81}Br$	0	1255–1257
4.17980		vacuum	DF	0	1256,1274
4.182		vacuum	Xe	0	601
4.18622		vacuum	DF	0	1256,1274
4.19695		vacuum	$H^{79}Br$	0	1255–1257
4.19754		vacuum	$H^{81}Br$	0	1255–1257
4.2013276		vacuum	Mg	0	136
4.2044098		vacuum	Ar	0	601
4.2181082		vacuum	Cs	0	350
4.2182950		vacuum	Ne	0	571
4.22947		vacuum	$H^{79}Br$	0	1255–1257
4.26334		vacuum	$H^{79}Br$	0	1255–1257
4.26392		vacuum	$H^{81}Br$	0	1255–1257
4.29880		vacuum	$H^{79}Br$	0	1255–1257
4.29937		vacuum	$H^{81}Br$	0	1255–1257
4.3131086		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.314		vacuum	$^{12}C^{16}O^{18}O$	0	1312
4.3162577		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.3178659		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.32031		vacuum	$^{12}C^{16}O_2$	0	1297
4.3211010		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.3213904		vacuum	Eu	0	247
4.3227096		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.3243851		vacuum	$^{12}C^{16}O_2$	0	1297
4.32492		vacuum	$^{12}C^{16}O_2$	0	1294,1295

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
4.32498		vacuum	$H^{79}Br$	0	1255–1257
4.32554		vacuum	$H^{81}Br$	0	1255–1257
4.3260126		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.32764		vacuum	$^{12}C^{16}O_2$	0	1297
4.3277182		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.3285152		vacuum	Ba	0	147
4.3293670		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.3311007		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.3321362		vacuum	I	0	400
4.3327731		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.3345326		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.33539		vacuum	$H^{79}Br$	0	1255–1257
4.33595		vacuum	$H^{81}Br$	0	1255–1257
4.3362312		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.3380141		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.3397413		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.340		vacuum	$^{12}C^{16}O^{18}O$	0	1312
4.3415456		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.3433038		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.3451268		vacuum	$^{12}C^{16}O_2$	0	1294,1295
4.346		vacuum	$^{12}C^{18}O_2$	0	1312
4.3505861		vacuum	$^{12}C^{16}O_2$	0	1295,1296
4.354		vacuum	$^{12}C^{16}O^{18}O$	0	1312
4.35493		vacuum	$^{12}C^{16}O_2$	0	1297
4.35791		vacuum	$H^{79}Br$	0	1255–1257
4.35802		vacuum	$^{12}C^{16}O_2$	0	1297
4.35846		vacuum	$H^{81}Br$	0	1255–1257
4.36121		vacuum	$^{12}C^{16}O_2$	0	1297
4.3638859		vacuum	Mg	0	136
4.36443		vacuum	$^{12}C^{16}O_2$	0	1297
4.36775		vacuum	$^{12}C^{16}O_2$	0	1297
4.371		vacuum	$^{12}C^{18}O_2$	0	1312
4.37109		vacuum	$^{12}C^{16}O_2$	0	1297
4.37445		vacuum	$^{12}C^{16}O_2$	0	1297
4.3747938		vacuum	Kr	0	564,570,604
4.376		vacuum	$^{12}C^{18}O_2$	0	1312

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
4.3766712		vacuum	Kr	0	195
4.37790		vacuum	$^{12}C^{16}O_2$	0	1297
4.38139		vacuum	$^{12}C^{16}O_2$	0	1297
4.382		vacuum	$^{12}C^{18}O_2$	0	1312
4.384		vacuum	$^{12}C^{18}O_2$	0	1312
4.38495		vacuum	$^{12}C^{16}O_2$	0	1297
4.39012		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.392		vacuum	$^{12}C^{18}O_2$	0	1312
4.39250		vacuum	$H^{79}Br$	0	1255–1257
4.39267		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.39306		vacuum	$H^{81}Br$	0	1255–1257
4.39789		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.398		vacuum	$^{12}C^{18}O_2$	0	1312
4.40056		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.42813		vacuum	$H^{79}Br$	0	1255–1257
4.42870		vacuum	$H^{81}Br$	0	1255–1257
4.44858		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.45210		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.45931		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.46299		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.46524		vacuum	$H^{79}Br$	0	1255–1257
4.46576		vacuum	$H^{81}Br$	0	1255–1257
4.46672		vacuum	$^{13}C^{16}O_2$	0	1643,1644
4.473		vacuum	$^{13}C^{16}O^{18}O$	0	1626
4.50410		vacuum	$H^{79}Br$	0	1255–1257
4.50467		vacuum	$H^{81}Br$	0	1255–1257
4.528		vacuum	$^{13}C^{16}O^{18}O$	0	1626
4.53295		vacuum	$H^{79}Br$	0	1255–1257
4.53348		vacuum	$H^{81}Br$	0	1255–1257
4.5393674		vacuum	Xe	0	571,601,632
4.5615027		vacuum	O	0	235,237,1698
4.5678667		vacuum	Xe	0	601
4.56911		vacuum	$H^{79}Br$	0	1255–1257
4.56965		vacuum	$H^{81}Br$	0	1255–1257
4.5706441		vacuum	Xe	0	601

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
4.5851		vacuum	$^{15}N^{14}NO$	0	1335
4.6		vacuum	$N_2{}^{15}O$	0	1335
4.60535		air	He	0	432,433
4.6056		air	He	0	433
4.60700		vacuum	$H^{79}Br$	0	1255–1257
4.60755		vacuum	$H^{81}Br$	0	1255–1257
4.6109078		vacuum	Xe	0	559
4.6157396		vacuum	Sn	0	155
4.6189		vacuum	$^{15}N^{14}NO$	0	1335
4.6204		vacuum	$^{14}N^{15}NO$	0	1335
4.64626		vacuum	$H^{79}Br$	0	1255–1257
4.64675		vacuum	$H^{81}Br$	0	1255–1257
4.6699795		vacuum	Ba	0	146,147
4.6812		vacuum	$^{14}N^{15}NO$	0	1335
4.694835		vacuum	Eu	0	247
4.7151680		vacuum	Ar	0	601
4.7169143		vacuum	Ba	0	146
4.7184144		vacuum	Ba	0	146,147
4.7451305		vacuum	$^{12}C^{16}O$	0	1179,1187
4.7545011		vacuum	$^{12}C^{16}O$	0	1179,1187
4.7639848		vacuum	$^{12}C^{16}O$	0	1179,1187
4.771		vacuum	H_2O	0	1328
4.7735825		vacuum	$^{12}C^{16}O$	0	1179,1187
4.7768928		vacuum	$^{12}C^{16}O$	0	1179,1187
4.7832950		vacuum	$^{12}C^{16}O$	0	1179,1187
4.7860767		vacuum	$^{12}C^{16}O$	0	1179,1187
4.7931233		vacuum	$^{12}C^{16}O$	0	1179,1187
4.7953740		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8021974		vacuum	Yb	0	247
4.8030680		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8047856		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8131300		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8143122		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8233101		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8239548		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8336095		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
4.8337142		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8435910		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8440288		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8535862		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8545692		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8562339		vacuum	$^{12}C^{16}O$	0	1179,1187
4.858472		vacuum	I	0	401,402
4.862914		vacuum	I	0	401,402
4.8637009		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8652314		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8656		air	Sm	0	247
4.8658033		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8739354		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8754905		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8773393		vacuum	Kr	0	195,564
4.8831334		vacuum	Kr	0	195,564
4.8842914		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8852962		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8947691		vacuum	$^{12}C^{16}O$	0	1179,1187
4.8952217		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9052675		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9053698		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9088830		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9154344		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9160256		vacuum	Ar	0	195,564
4.9160943		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9184946		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9207077		vacuum	Ar	0	195,564
4.9257235		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9282261		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9361360		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9380782		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9466722		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9480521		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9573335		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
4.9581483		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9627720		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9681208		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9683676		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9724254		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9787115		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9790348		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9822006		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9891802		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9900770		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9920988		vacuum	$^{12}C^{16}O$	0	1179,1187
4.9996952		vacuum	Kr	0	601,605
4.9997753		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0012478		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0021206		vacuum	$^{12}C^{16}O$	0	1179,1187
5.00310		vacuum	$D^{35}Cl$	0	1255–56,1265
5.00984		vacuum	$D^{37}Cl$	0	1255–56,1265
5.0104972		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0122670		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0125487		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0179406		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0213475		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0225389		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0235584		vacuum	Ar	0	602
5.0239807		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0243255		vacuum	Xe	0	601,602
5.0276354		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0322846		vacuum	Ba	0	146
5.0323267		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0329370		vacuum	$^{12}C^{16}O$	0	1179,1187
5.03438		vacuum	$D^{35}Cl$	0	1255–56,1265
5.0355449		vacuum	$^{12}C^{16}O$	0	1179,1187
5.03723		vacuum	CN	0	58
5.0374540		vacuum	$^{12}C^{16}O$	0	1179,1187
5.04124		vacuum	$D^{37}Cl$	0	1255–56,1265
5.0434358		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.0434625		vacuum	$^{12}C^{16}O$	0	1179,1187
5.04452		vacuum	$D^{35}Cl$	0	1255–56,1265
5.0472422		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0473978		vacuum	$^{12}C^{16}O$	0	1179,1187
5.04745		vacuum	CN	0	58
5.05140		vacuum	$D^{37}Cl$	0	1255–56,1265
5.0541162		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0546759		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0574675		vacuum	$^{12}C^{16}O$	0	1179,1187
5.05779		vacuum	CN	0	58
5.0590735		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0648991		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0660484		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0660871		vacuum	Eu	0	247
5.06673		vacuum	$D^{35}Cl$	0	1255–56,1265
5.0676637		vacuum	$^{12}C^{16}O$	0	1179,1187
5.06827		vacuum	CN	0	58
5.0710407		vacuum	$^{12}C^{16}O$	0	1179,1187
5.07357		vacuum	$D^{37}Cl$	0	1255–56,1265
5.07429		vacuum	$D^{35}Cl$	0	1255–56,1265
5.0758123		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0779877		vacuum	$^{12}C^{16}O$	0	1179,1187
5.07887		vacuum	CN	0	58
5.08109		vacuum	$D^{37}Cl$	0	1255–56,1265
5.0831442		vacuum	$^{12}C^{16}O$	0	1179,1187
5.08375		vacuum	CN	0	58
5.0841666		vacuum	$^{12}C^{16}O$	0	1179,1187
5.086000	±0.000400	air	Zn	1	155,1145
5.0868568		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0884401		vacuum	$^{12}C^{16}O$	0	1179,1187
5.08960		vacuum	CN	0	58
5.0920023		vacuum	$^{12}C^{16}O$	0	1179,1187
5.09391		vacuum	CN	0	58
5.0940281		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0953859		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.0968277		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0980334		vacuum	$^{12}C^{16}O$	0	1179,1187
5.0990222		vacuum	$^{12}C^{16}O$	0	1179,1187
5.10001		vacuum	$D^{35}Cl$	0	1255–56,1265
5.1004300		vacuum	$^{12}C^{16}O$	0	1179,1187
5.103		vacuum	Ne	0	432
5.1040171		vacuum	$^{12}C^{16}O$	0	1179,1187
5.10418		vacuum	CN	0	58
5.1044128		vacuum	$^{12}C^{16}O$	0	1179,1187
5.10491		vacuum	$D^{35}Cl$	0	1255–56,1265
5.10673		vacuum	$D^{37}Cl$	0	1255–56,1265
5.1072522		vacuum	Tl	0	175
5.1077662		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1089799		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1093435		vacuum	$^{12}C^{16}O$	0	1179,1187
5.10973514		vacuum	$^{12}C^{16}O$	0	1179,1187
5.11182		vacuum	$D^{37}Cl$	0	1255–56,1265
5.1121182		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1141339		vacuum	$^{12}C^{16}O$	0	1179,1187
5.11459		vacuum	CN	0	58
5.1199442		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1202868		vacuum	$^{12}C^{16}O$	0	1179,1187
5.12057825		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1207879		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1216467		vacuum	Ar	0	195,564
5.1222		vacuum	$D^{35}Cl$	0	1255–56,1265
5.1227527		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1243800		vacuum	$^{12}C^{16}O$	0	1179,1187
5.12513		vacuum	CN	0	58
5.1278917		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1297256		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1311509		vacuum	Kr	0	601
5.1315551		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1323676		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1329488		vacuum	$^{12}C^{16}O$	0	1179,1187
5.13408		vacuum	$D^{35}Cl$	0	1255–56,1265

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.1347558		vacuum	$^{12}C^{16}O$	0	1179,1187
5.13579		vacuum	CN	0	58
5.1359612		vacuum	$^{12}C^{16}O$	0	1179,1187
5.13627		vacuum	$D^{35}Cl$	0	1255–56,1265
5.1368187		vacuum	$^{12}C^{16}O$	0	1179,1187
5.14070		vacuum	$D^{37}Cl$	0	1255–56,1265
5.14221		vacuum	CN	0	58
5.1426650		vacuum	$^{12}C^{16}O$	0	1179,1187
5.14311		vacuum	$D^{37}Cl$	0	1255–56,1265
5.1440321		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1440840		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1452623		vacuum	$^{12}C^{16}O$	0	1179,1187
5.14660		vacuum	CN	0	58
5.15105		vacuum	$D^{35}Cl$	0	1255–56,1265
5.1513665		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1519668		vacuum	$^{12}C^{16}O$	0	1179,1187
5.15241		vacuum	CN	0	58
5.1539094		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1559008		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1559383		vacuum	$^{12}C^{16}O$	0	1179,1187
5.15754		vacuum	CN	0	58
5.1578		vacuum	$D^{37}Cl$	0	1255–56,1265
5.1588221		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1620001		vacuum	$^{12}C^{16}O$	0	1179,1187
5.16273		vacuum	CN	0	58
5.1652895		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1663999		vacuum	$^{12}C^{16}O$	0	1179,1187
5.16667260		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1679311		vacuum	$^{12}C^{16}O$	0	1179,1187
5.16863		vacuum	CN	0	58
5.16884		vacuum	$D^{35}Cl$	0	1255–56,1265
5.16908		vacuum	$D^{35}Cl$	0	1255–56,1265
5.1711388		vacuum	Ne	0	432
5.1721640		vacuum	$^{12}C^{16}O$	0	1179,1187
5.17320		vacuum	CN	0	58

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.1741002		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1757		vacuum	$D^{37}Cl$	0	1255–56,1265
5.1768063		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1775769		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1796081		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1800642		vacuum	$^{12}C^{16}O$	0	1179,1187
5.18108		vacuum	$D^{35}Cl$	0	1255–56,1265
5.1819239		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1824591		vacuum	$^{12}C^{16}O$	0	1179,1187
5.18382		vacuum	CN	0	58
5.1864363		vacuum	$^{12}C^{16}O$	0	1179,1187
5.18791		vacuum	$D^{37}Cl$	0	1255–56,1265
5.1884610		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1886169		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1898712		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1923382		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1928864		vacuum	$^{12}C^{16}O$	0	1179,1187
5.1933867		vacuum	$^{12}C^{16}O$	0	1179,1187
5.19454		vacuum	CN	0	58
5.1997924		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2002543		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2004592		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2021		vacuum	$D^{35}Cl$	0	1255–56,1265
5.2034470		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2047548		vacuum	$^{12}C^{16}O$	0	1179,1187
5.20541		vacuum	CN	0	58
5.2076547		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2089		vacuum	$D^{37}Cl$	0	1255–56,1265
5.2111050		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2113155		vacuum	$^{12}C^{16}O$	0	1179,1187
5.21178		vacuum	$D^{35}Cl$	0	1255–56,1265
5.2121879		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2141417		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2149737		vacuum	$^{12}C^{16}O$	0	1179,1187
5.21643		vacuum	CN	0	58
5.2173153		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.21855		vacuum	$D^{37}Cl$	0	1255–56,1265
5.2213928		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2224167		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2225555		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2242624		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2249713		vacuum	$^{12}C^{16}O$	0	1179,1187
5.22756		vacuum	CN	0	58
5.2299844		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2300202		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2316028		vacuum	$^{12}C^{16}O$	0	1179,1187
5.23366		vacuum	CN	0	58
5.2341450		vacuum	$^{12}C^{16}O$	0	1179,1187
5.23593867		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2364797		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2376769		vacuum	$^{12}C^{16}O$	0	1179,1187
5.23887		vacuum	CN	0	58
5.2419468		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2428716		vacuum	$^{12}C^{16}O$	0	1179,1187
5.24348		vacuum	$D^{35}Cl$	0	1255–56,1265
5.24431		vacuum	CN	0	58
5.2454955		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2458747		vacuum	$^{12}C^{16}O$	0	1179,1187
5.24704097		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2488404		vacuum	$^{12}C^{16}O$	0	1179,1187
5.25025		vacuum	$D^{37}Cl$	0	1255–56,1265
5.25028		vacuum	CN	0	58
5.2524253		vacuum	$^{12}C^{16}O$	0	1179,1187
5.25511		vacuum	CN	0	58
5.2558705		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2577457		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2582821		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2613461		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2630393		vacuum	$^{12}C^{16}O$	0	1179,1187
5.26607		vacuum	CN	0	58
5.2690182		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.2696629		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2697592		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2737899		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2739976		vacuum	$^{12}C^{16}O$	0	1179,1187
5.27601		vacuum	$D^{35}Cl$	0	1255–56,1265
5.27713		vacuum	CN	0	58
5.28118318		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2819162		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2822426		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2825643		vacuum	Eu	0	247
5.28287		vacuum	$D^{37}Cl$	0	1255–56,1265
5.28467933		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2867966		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2879276		vacuum	As	0	175
5.28838		vacuum	CN	0	58
5.2924984		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2928466		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2942182		vacuum	$^{12}C^{16}O$	0	1179,1187
5.29570628		vacuum	$^{12}C^{16}O$	0	1179,1187
5.29973		vacuum	CN	0	58
5.2997443		vacuum	$^{12}C^{16}O$	0	1179,1187
5.2999768		vacuum	Kr	0	195,559,564
5.3019553		vacuum	Kr	0	195,559,564
5.3028905		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3032817		vacuum	$^{13}C^{16}O$	0	1253,1254
5.30465169		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3066664		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3068717		vacuum	$^{12}C^{16}O$	0	1179,1187
5.30969		vacuum	$D^{35}Cl$	0	1255–56,1265
5.31121		vacuum	CN	0	58
5.3128419		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3134195		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3145120		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3163		vacuum	$D^{37}Cl$	0	1255–56,1265
5.31660104		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3181789		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.3192618		vacuum	$^{12}C^{16}O$	0	1179,1187
5.32286		vacuum	CN	0	58
5.3240867		vacuum	$^{12}C^{16}O$	0	1179,1187
5.32445		vacuum	$D^{35}Cl$	0	1179,1187
5.3258685		vacuum	Ne	0	432
5.3258763		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3260910		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3264331		vacuum	Ne	0	432
5.3284263		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3286950		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3296279		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3297517		vacuum	Bi	0	175
5.3320059		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3348931		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3373755		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3393194		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3394927		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3409351		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3412198		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3432570		vacuum	$^{12}C^{16}O$	0	1179,1187
5.34431		vacuum	$D^{35}Cl$	0	1255–56,1265
5.3448997		vacuum	$^{12}C^{16}O$	0	1179,1187
5.34583895		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3517193		vacuum	$^{12}C^{16}O$	0	1179,1187
5.35295470		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3533228		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3546483		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3549012		vacuum	$^{12}C^{16}O$	0	1179,1187
5.35616		vacuum	$D^{35}Cl$	0	1255–56,1265
5.3566973		vacuum	Xe	0	571,601
5.3569272		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3579450		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3603139		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3615063		vacuum	$^{13}C^{16}O$	0	1179,1187
5.3621859		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.36294		vacuum	$D^{37}Cl$	0	1255–56,1265
5.3648371		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3653405		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3658590		vacuum	$^{12}C^{16}O$	0	1179,1187
5.36815606		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3690416		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3698544		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3711427		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3728021		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3744795		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3759198		vacuum	$^{12}C^{16}O$	0	1179,1187
5.37686330		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3770194		vacuum	$^{13}C^{16}O$	0	1179,1187
5.3776541		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3779031		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3785452		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3795302		vacuum	$^{12}C^{16}O$	0	1179,1187
5.37990		vacuum	$D^{35}Cl$	0	1255–56,1265
5.3810786		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3842343		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3844944		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3855853		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3866395		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3868992		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3878074		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3878364		vacuum	$^{13}C^{16}O$	0	1253,1254
5.38892		vacuum	$D^{35}Cl$	0	1255–56,1265
5.3890399		vacuum	$^{12}C^{16}O$	0	1179,1187
5.39104599		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3912471		vacuum	Ar	0	601
5.3913826		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3936490		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3946662		vacuum	$^{12}C^{16}O$	0	1179,1187
5.39561		vacuum	$D^{37}Cl$	0	1255–56,1265
5.3958038		vacuum	$^{13}C^{16}O$	0	1253,1254
5.3960306		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.3975011		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3980014		vacuum	$^{12}C^{16}O$	0	1179,1187
5.3987880		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4			NO	0	1859
5.4013637		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4016561		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4018460		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4027105		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4043724		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4048094		vacuum	Ne	0	525,564,570
5.4052982		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4075114		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4085055		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4087770		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4098751		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4101766		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4138378		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4145202		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4147029		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4160296		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4175163		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4186415		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4196535		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4227		vacuum	$D^{35}Cl$	0	1255–56,1265
5.4234147		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4242451		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4264630		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4264777		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4272417		vacuum	$^{12}C^{16}O$	0	1179,1187
5.42950		vacuum	$D^{37}Cl$	0	1255–56,1265
5.4306800		vacuum	Eu	0	247
5.4308152		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4309325		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4309464		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4324602		vacuum	$^{13}C^{16}O$	0	1253,1254

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.4339262		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4359776		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4377867		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4385837		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4385843		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4392407		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4399784		vacuum	$^{12}C^{16}O$	0	1179,1187
5.44238556		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4439604		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4442707		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4448503		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4463689		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4486595		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4507500		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4508410		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4521724		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4539711		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4542888		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4556237		vacuum	$^{13}C^{16}O$	0	1253,1254
5.45771		vacuum	$D^{35}Cl$	0	1255–56,1265
5.4578843		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4596692		vacuum	$^{13}C^{16}O$	0	1253,1254
5.460		air	Cu	0	1499
5.4616665		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4623443		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4632491		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4652592		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4657051		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4673804		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4676586		vacuum	Ar	0	559,564
5.4677812		vacuum	Ar	0	559,564
5.4705352		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4708172		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4716574		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4727279		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4749269		vacuum	Xe	0	601

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
5.4758098		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4775888		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4785025		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4798		air	Ba	0	146
5.4821042		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4839363		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4855914		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4885248		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4896227		vacuum	$^{12}C^{16}O$	0	1179,1187
5.4913685		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4919041		vacuum	$^{12}C^{16}O$	0	1179,1187
5.49348		vacuum	$D^{35}Cl$	0	1255–56,1265
5.4935308		vacuum	$^{13}C^{16}O$	0	1253,1254
5.4952920		vacuum	$^{12}C^{16}O$	0	1179,1187
5.498705		vacuum	I	0	401,402
5.5000140		vacuum	$^{13}C^{16}O$	0	1253,1254
5.501		vacuum	Xe	0	601
5.5013949		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5018084		vacuum	$^{12}C^{16}O$	0	1179,1187
5.504		vacuum	NO	0	1285–1287
5.5035779		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5050989		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5054647		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5067965		vacuum	$^{12}C^{16}O$	0	1179,1187
5.50849		vacuum	$D^{35}Cl$	0	1255–56,1265
5.5109423		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5141471		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5144216		vacuum	$^{12}C^{16}O$	0	1179,1187
5.515		vacuum	Ne	0	432
5.5164741		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5168092		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5184507		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5191863		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5220103		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5266402		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.5274442		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5276064		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5286626		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5302559		vacuum	$^{12}C^{16}O$	0	1179,1187
5.53036		vacuum	$D^{35}Cl$	0	1255–56,1265
5.5330701		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5332186		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5385629		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5392885		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5406607		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5409505		vacuum	$^{12}C^{16}O$	0	1179,1187
5.54221360		vacuum	$^{12}C^{16}O$	0	1179,1187
5.54228		vacuum	$D^{35}Cl$	0	1255–56,1265
5.5445687		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5471178		vacuum	$^{12}C^{16}O$	0	1179,1187
5.547327		vacuum	Ca	0	138–141
5.5498306		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5520938		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5528041		vacuum	$^{13}C^{16}O$	0	1253,1254
5.55432395		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5544555		vacuum	$^{12}C^{16}O$	0	1220,1230
5.5560612		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5612490		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5613304		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5636		air	Ba	0	146
5.5650570		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5665892		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5676972		vacuum	$^{13}C^{16}O$	0	1253,1254
5.56886		vacuum	$D^{79}Br$	0	1255–56,1258
5.5699805		vacuum	Kr	0	185,195,564
5.57038		vacuum	$D^{81}Br$	0	1255–56,1258
5.5728186		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5747348		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5754726		vacuum	Xe	0	570,582,632
5.57759		vacuum	$D^{35}Cl$	0	1255–56,1265
5.5781797		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
5.5790103		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5794779		vacuum	$^{13}C^{16}O$	0	1253,1254
5.58454162		vacuum	$^{12}C^{16}O$	0	1253,1254
5.5858604		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5862769		vacuum	Kr	0	559,564,570
5.5914045		vacuum	$^{13}C^{16}O$	0	1253,1254
5.5914636		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5915884		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5948932		vacuum	$^{12}C^{16}O$	0	1179,1187
5.59641727		vacuum	$^{12}C^{16}O$	0	1179,1187
5.5971292		vacuum	$^{13}C^{16}O$	0	1253,1254
5.59785		vacuum	$D^{79}Br$	0	1255–56,1258
5.5983205		vacuum	C	0	185,195
5.59939		vacuum	$D^{81}Br$	0	1255–56,1258
5.6034328		vacuum	Xe	0	601
5.6034784		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6043250		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6049096		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6060681		vacuum	$^{12}C^{16}O$	0	1179,1187
5.60844849		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6085416		vacuum	$^{13}C^{16}O$	0	1253,1254
5.61369		vacuum	$D^{35}Cl$	0	1255–56,1265
5.6172214		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6173950		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6185192		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6200996		vacuum	$^{13}C^{16}O$	0	1253,1254
5.62063454		vacuum	$^{12}C^{16}O$	0	1179,1187
5.62762		vacuum	$D^{79}Br$	0	1255–56,1258
5.6280714		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6288754		vacuum	$^{12}C^{16}O$	0	1179,1187
5.62914		vacuum	$D^{81}Br$	0	1255–56,1258
5.6302787		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6305126		vacuum	Kr	0	559,564,570
5.6322937		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6329815		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.6434982		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6436555		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6454853		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6512718		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6523006		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6568816		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6581491		vacuum	$^{12}C^{16}O$	0	1179,1187
5.65822		vacuum	$D^{79}Br$	0	1255–56,1258
5.65973		vacuum	$D^{81}Br$	0	1255–56,1258
5.6626004		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6642477		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6660928		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6667372		vacuum	Ne	0	195,564,570
5.6678052		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6704306		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6709741		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6740756		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6763531		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6801058		vacuum	$^{13}C^{16}O$	0	1179,1187
5.6839619		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6841461		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6856987		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6866913		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6886174		vacuum	$^{12}C^{16}O$	0	1179,1187
5.68961		vacuum	$D^{79}Br$	0	1255–56,1258
5.69113		vacuum	$D^{81}Br$	0	1255–56,1258
5.692		vacuum	Xe	0	601
5.6971140		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6974710		vacuum	$^{13}C^{16}O$	0	1253,1254
5.6980297		vacuum	$^{12}C^{16}O$	0	1179,1187
5.6982330		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7		vacuum	HCOOH	0	1325,1326
5.7010424		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7051640		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7067951		vacuum	Ne	0	432
5.7104313		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.7110		vacuum	$D^{79}Br$	0	1255–56,1258
5.7127		vacuum	$D^{81}Br$	0	1255–56,1258
5.7136291		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7214666		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7217904		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7239156		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7263792		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7296871		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7308403		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7336925		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7338082		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7375681		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7392933		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7409		vacuum	$D^{79}Br$	0	1253,1254
5.7412249		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7435		vacuum	$D^{81}Br$	0	1253,1254
5.7459875		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7460720		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7513904		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7523733		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7529127		vacuum	$^{13}C^{16}O$	0	1253,1254
5.754965		vacuum	Ga	0	175
5.7577843		vacuum	$^{12}C^{16}O$	0	1198
5.7583287		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7586063		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7653841		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7656205		vacuum	$^{12}C^{16}O$	0	1220,1230
5.7708336		vacuum	$^{12}C^{16}O$	0	1220,1230
5.7712966		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7717		vacuum	$D^{79}Br$	0	1255–56,1258
5.772238		vacuum	Eu	0	247
5.7733		vacuum	$D^{81}Br$	0	1255–56,1258
5.7767459		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7773913		vacuum	Ne	0	432
5.7790363		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.7795507		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7811505		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7835037		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7841443		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7888926		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7926222		vacuum	$^{12}C^{16}O$	0	1220,1230
5.7930755		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7938915		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7963397		vacuum	$^{12}C^{16}O$	0	1179,1187
5.7971505		vacuum	$^{13}C^{16}O$	0	1253,1254
5.7984477		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8011949		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8025		vacuum	$D^{79}Br$	0	1255–56,1258
5.8035		vacuum	$D^{79}Br$	0	1255–56,1258
5.8037601		vacuum	Ar	0	428,601,603
5.8042		vacuum	$D^{81}Br$	0	1255–56,1258
5.8051641		vacuum	$^{12}C^{16}O$	0	1179,1187
5.80528		vacuum	$D^{81}Br$	0	1255–56,1258
5.8063795		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8084085		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8093435		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8100469		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8103166		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8136537		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8174165		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8203098		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8225163		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8262700		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8298347		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8319		vacuum	$D^{79}Br$	0	1255–56,1258
5.8336		vacuum	$D^{81}Br$	0	1255–56,1258
5.8337074		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8344146		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8358593		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8360		vacuum	$D^{79}Br$	0	1255–56,1258
5.8374		vacuum	$D^{81}Br$	0	1255–56,1258

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.8390454		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8424197		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8457708		vacuum	$^{13}C^{16}O$	0	1253,1254
5.84618		vacuum	NO	0	1285–1287
5.8477292		vacuum	Ar	0	559,564
5.8486958		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8493742		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8519808		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8542337		vacuum	$^{12}C^{16}O$	0	1198
5.85487		vacuum	NO	0	1285–1287
5.8551729		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8579913		vacuum	$^{13}C^{16}O$	0	1253,1254
5.85840		vacuum	NO	0	1285–1287
5.86197		vacuum	$D^{79}Br$	0	1255–56,1258
5.8630624		vacuum	$^{12}C^{16}O$	0	1220,1230
5.86362		vacuum	$D^{81}Br$	0	1255–56,1258
5.8648		vacuum	Hg	0	161,166,167
5.8650779		vacuum	$^{13}C^{16}O$	0	1253,1254
5.8662257		vacuum	$^{12}C^{16}O$	0	1198
5.8665236		vacuum	Ar	0	195
5.8680955		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8703698		vacuum	$^{13}C^{16}O$	0	1253,1254
5.87058		vacuum	NO	0	1285–1287
5.8769258		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8783840		vacuum	$^{12}C^{16}O$	0	1179,1187
5.87893		vacuum	NO	0	1285–1287
5.8858082		vacuum	Ne	0	432
5.8899		air	Ba	0	146,147
5.8907098		vacuum	$^{12}C^{16}O$	0	1179,1187
5.8909648		vacuum	$^{12}C^{16}O$	0	1220,1230
5.8924207		vacuum	$^{13}C^{16}O$	0	1253,1254
5.89282		vacuum	$D^{79}Br$	0	1255–56,1258
5.89442		vacuum	$D^{81}Br$	0	1255–56,1258
5.8944550		vacuum	$^{12}C^{16}O$	0	1179,1187
5.9032044		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.90361		vacuum	NO	0	1285–1287
5.9043954		vacuum	$^{13}C^{16}O$	0	1253,1254
5.9051820		vacuum	$^{12}C^{16}O$	0	1220,1230
5.9078949		vacuum	$^{12}C^{16}O$	0	1220,1230
5.90831		vacuum	NO	0	1285–1287
5.9084670		vacuum	$^{13}C^{16}O$	0	1253,1254
5.913		vacuum	Xe	0	601
5.9158695		vacuum	$^{12}C^{16}O$	0	1179,1187
5.9195787		vacuum	$^{12}C^{16}O$	0	1220,1230
5.9214909		vacuum	$^{13}C^{16}O$	0	1253,1254
5.9215094		vacuum	$^{12}C^{16}O$	0	1253,1254
5.92456		vacuum	$D^{79}Br$	0	1255–56,1258
5.92610		vacuum	$D^{81}Br$	0	1255–56,1258
5.9287060		vacuum	$^{12}C^{16}O$	0	1179,1187
5.9288227		vacuum	$^{13}C^{16}O$	0	1253,1254
5.9353011		vacuum	$^{12}C^{16}O$	0	1220,1230
5.94234		vacuum	NO	0	1285–1287
5.9480336		vacuum	$^{13}C^{16}O$	0	1253,1254
5.9492707		vacuum	$^{12}C^{16}O$	0	1220,1230
5.9495478		vacuum	Eu	0	247
5.9535415		vacuum	$^{12}C^{16}O$	0	1179,1187
5.9538949		vacuum	$^{13}C^{16}O$	0	1253,1254
5.95461		vacuum	NO	0	1285–1287
5.9549		vacuum	NO	0	1285–1287
5.9548990		vacuum	$^{12}C^{16}O$	0	1179,1187
5.95735		vacuum	$D^{79}Br$	0	1255–56,1258
5.9578742		vacuum	Ne	0	432
5.95901		vacuum	$D^{81}Br$	0	1255–56,1258
5.9615550		vacuum	$^{13}C^{16}O$	0	1253,1254
5.96317		vacuum	NO	0	1285–1287
5.9634200		vacuum	$^{12}C^{16}O$	0	1220,1230
5.9648404		vacuum	$^{13}C^{16}O$	0	1179,1187
5.9659403		vacuum	$^{12}C^{16}O$	0	1179,1187
5.9666761		vacuum	$^{13}C^{16}O$	0	1253,1254
5.96726		vacuum	NO	0	1285–1287
5.9682587		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
5.9752452		vacuum	$^{13}C^{16}O$	0	1253,1254
5.97564		vacuum	NO	0	1285–1287
5.9768819		vacuum	$^{13}C^{16}O$	0	1253,1254
5.9777508		vacuum	$^{12}C^{16}O$	0	1220,1230
5.9785113		vacuum	$^{12}C^{16}O$	0	1179,1187
5.9796224		vacuum	$^{13}C^{16}O$	0	1253,1254
5.97990		vacuum	NO	0	1285–1287
5.9817950		vacuum	$^{12}C^{16}O$	0	1179,1187
5.9830082		vacuum	O	0	235,1698
5.9833948		vacuum	Hg	0	175
5.98817		vacuum	NO	0	1285–1287
5.9909		vacuum	$D^{79}Br$	0	1255–56,1258
5.9927		vacuum	$D^{81}Br$	0	1255–56,1258
5.9927349		vacuum	$^{13}C^{16}O$	0	1253,1254
5.99308		vacuum	NO	0	1285–1287
5.9955104		vacuum	$^{12}C^{16}O$	0	1220,1230
6.00100		vacuum	NO	0	1285–1287
6.0014521		vacuum	$^{13}C^{16}O$	0	1253,1254
6.0041759		vacuum	$^{12}C^{16}O$	0	1179,1187
6.00536		vacuum	NO	0	1285–1287
6.0060150		vacuum	$^{13}C^{16}O$	0	1253,1254
6.0094059		vacuum	$^{12}C^{16}O$	0	1220,1230
6.0172722		vacuum	$^{12}C^{16}O$	0	1179,1187
6.01917		vacuum	NO	0	1285–1287
6.0194643		vacuum	$^{13}C^{16}O$	0	1253,1254
6.02090		vacuum	$D^{79}Br$	0	1255–56,1258
6.02246		vacuum	$D^{81}Br$	0	1255–56,1258
6.0234832		vacuum	$^{12}C^{16}O$	0	1220,1230
6.0255		vacuum	$D^{79}Br$	0	1255–56,1258
6.02667		vacuum	NO	0	1285–1287
6.0266802		vacuum	$^{13}C^{16}O$	0	1253,1254
6.0274		vacuum	$D^{81}Br$	0	1255–56,1258
6.0305462		vacuum	$^{12}C^{16}O$	0	1179,1187
6.03242		vacuum	NO	0	1285–1287
6.0330839		vacuum	$^{13}C^{16}O$	0	1285–1287

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
6.0377435		vacuum	$^{12}C^{16}O$	0	1220,1230
6.0386		vacuum	NO	0	1285–1287
6.0395438		vacuum	$^{13}C^{16}O$	0	1253,1254
6.04018		vacuum	NO	0	1285–1287
6.04186		vacuum	NO	0	1285–1287
6.0431867		vacuum	$^{12}C^{16}O$	0	1179,1187
6.05290		vacuum	$D^{79}Br$	0	1255–56,1258
6.0530155		vacuum	Ar	0	195,564
6.05429		vacuum	NO	0	1285–1287
6.05440		vacuum	$D^{81}Br$	0	1255–56,1258
6.0558337		vacuum	$^{12}C^{16}O$	0	1179,1187
6.0576338		vacuum	$^{12}C^{16}O$	0	1179,1187
6.0592473		vacuum	Eu	0	247
6.06281		vacuum	NO	0	1285–1287
6.0635085		vacuum	$^{13}C^{16}O$	0	1253,1254
6.0657774		vacuum	$^{13}C^{16}O$	0	1253,1254
6.06726		vacuum	NO	0	1285–1287
6.0686579		vacuum	$^{12}C^{16}O$	0	1179,1187
6.0714500		vacuum	$^{12}C^{16}O$	0	1179,1187
6.0791497		vacuum	$^{13}C^{16}O$	0	1253,1254
6.08010		vacuum	NO	0	1285–1287
6.0816611		vacuum	$^{12}C^{16}O$	0	1179,1187
6.0854502		vacuum	$^{12}C^{16}O$	0	1220,1230
6.08576		vacuum	$D^{79}Br$	0	1255–56,1258
6.08732		vacuum	$D^{81}Br$	0	1255–56,1258
6.08839		vacuum	NO	0	1285–1287
6.0885551		vacuum	$^{13}C^{16}O$	0	1253,1254
6.0926946		vacuum	$^{13}C^{16}O$	0	1253,1254
6.09336		vacuum	NO	0	1285–1287
6.0948439		vacuum	$^{12}C^{16}O$	0	1179,1187
6.0996356		vacuum	$^{12}C^{16}O$	0	1220,1230
6.1013312		vacuum	$^{13}C^{16}O$	0	1253,1254
6.10147		vacuum	NO	0	1285–1287
6.1082086		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1099892		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1140080		vacuum	$^{12}C^{16}O$	0	1220,1230

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
6.11995		vacuum	$D^{79}Br$	0	1255–56,1258
6.1203065		vacuum	$^{13}C^{16}O$	0	1179,1187
6.12044		vacuum	NO	0	1285–1287
6.12156		vacuum	$D^{81}Br$	0	1255–56,1258
6.1217561		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1225323		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1273954		vacuum	$^{13}C^{16}O$	0	1253,1254
6.1285693		vacuum	$^{12}C^{16}O$	0	1220,1230
6.132		vacuum	Xe	0	601
6.1352546		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1354880		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1398711		vacuum	$^{13}C^{16}O$	0	1253,1254
6.1406862		vacuum	$^{13}C^{16}O$	0	1253,1254
6.14168		vacuum	NO	0	1285–1287
6.1477551		vacuum	Ga	0	175
6.1481584		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1494061		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1523828		vacuum	$^{13}C^{16}O$	0	1253,1254
6.15377		vacuum	NO	0	1285–1287
6.1541514		vacuum	$^{13}C^{16}O$	0	1253,1254
6.15460		vacuum	$D^{79}Br$	0	1255–56,1258
6.1546		vacuum	NO	0	1285–1287
6.15616		vacuum	$D^{81}Br$	0	1255–56,1258
6.15764		vacuum	NO	0	1285–1287
6.1612442		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1650658		vacuum	$^{13}C^{16}O$	0	1253,1254
6.16629		vacuum	NO	0	1285–1287
6.1677922		vacuum	$^{13}C^{16}O$	0	1253,1254
6.1745142		vacuum	$^{12}C^{16}O$	0	1179,1187
6.1779214		vacuum	$^{13}C^{16}O$	0	1253,1254
6.17917		vacuum	NO	0	1285–1287
6.1816101		vacuum	$^{13}C^{16}O$	0	1253,1254
6.18383		vacuum	NO	0	1285–1287
6.1879691		vacuum	$^{12}C^{16}O$	0	1179,1187
6.19034		vacuum	$D^{79}Br$	0	1255–56,1258

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
6.1909503		vacuum	$^{13}C^{16}O$	0	1253,1254
6.19184		vacuum	$D^{81}Br$	0	1255–56,1258
6.19214		vacuum	NO	0	1285–1287
6.1956064		vacuum	$^{13}C^{16}O$	0	1253,1254
6.19721		vacuum	NO	0	1285–1287
6.1973		vacuum	NO	0	1285–1287
6.2016112		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2040666		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2041540		vacuum	$^{13}C^{16}O$	0	1253,1254
6.20548		vacuum	NO	0	1285–1287
6.2097831		vacuum	$^{13}C^{16}O$	0	1253,1254
6.21095		vacuum	NO	0	1285–1287
6.2154414		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2168641		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2175344		vacuum	$^{13}C^{16}O$	0	1253,1254
6.21914		vacuum	NO	0	1285–1287
6.22374		vacuum	$D^{81}Br$	0	1255–56,1258
6.22487		vacuum	NO	0	1285–1287
6.22723		vacuum	$D^{79}Br$	0	1255–56,1258
6.22886		vacuum	$D^{81}Br$	0	1255–56,1258
6.2294615		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2298468		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2308351		vacuum	$^{13}C^{16}O$	0	1253,1254
6.2310925		vacuum	$^{13}C^{16}O$	0	1253,1254
6.23807		vacuum	NO	0	1285–1287
6.2430152		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2435937		vacuum	$^{13}C^{16}O$	0	1253,1254
6.2436728		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2448297		vacuum	$^{13}C^{16}O$	0	1253,1254
6.25113		vacuum	NO	0	1285–1287
6.2563717		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2565279		vacuum	$^{13}C^{16}O$	0	1253,1254
6.25657		vacuum	$D^{79}Br$	0	1255–56,1258
6.25810		vacuum	$D^{81}Br$	0	1255–56,1258
6.2587474		vacuum	$^{13}C^{16}O$	0	1253,1254
6.26021		vacuum	NO	0	1285–1287

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
6.26449		vacuum	NO	0	1285–1287
6.270		vacuum	$^{14}NH_3$	0	1203,1204
6.2696393		vacuum	$^{13}C^{16}O$	0	1253,1254
6.2699176		vacuum	$^{12}C^{16}O$	0	1179,1187
6.2728473		vacuum	$^{13}C^{16}O$	0	1253,1254
6.27782		vacuum	NO	0	1285–1287
6.2829292		vacuum	$^{13}C^{16}O$	0	1253,1254
6.2836541		vacuum	$^{12}C^{16}O$	0	1179,1187
6.28650		vacuum	NO	0	1285–1287
6.2909		vacuum	$D^{79}Br$	0	1255–56,1258
6.29129		vacuum	NO	0	1285–1287
6.29164		vacuum	$D^{79}Br$	0	1255–56,1258
6.2925		vacuum	$D^{81}Br$	0	1255–56,1258
6.29323		vacuum	$D^{81}Br$	0	1255–56,1258
6.2963990		vacuum	$^{13}C^{16}O$	0	1253,1254
6.2975826		vacuum	$^{12}C^{16}O$	0	1179,1187
6.29977		vacuum	NO	0	1285–1287
6.3007581		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3015999		vacuum	$^{13}C^{16}O$	0	1253,1254
6.30509		vacuum	NO	0	1285–1287
6.3100504		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3117052		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3120378		vacuum	Xe	0	601
6.31361		vacuum	NO	0	1285–1287
6.3138189		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3154334		vacuum	Xe	0	601
6.31912		vacuum	NO	0	1285–1287
6.3238843		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3260230		vacuum	$^{12}C^{16}O$	0	1179,1187
6.32699		vacuum	NO	0	1285–1287
6.3270696		vacuum	$^{12}C^{16}O$	0	1179,1187
6.32787		vacuum	$D^{79}Br$	0	1255–56,1258
6.32943		vacuum	$D^{81}Br$	0	1255–56,1258
6.33356		vacuum	NO	0	1285–1287
6.3372336		vacuum	$^{13}C^{16}O$	0	1253,1254

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
6.3379027		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3405128		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3405381		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3504272		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3521065		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3541489		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3552521		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3638031		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3664982		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3679796		vacuum	$^{12}C^{16}O$	0	1179,1187
6.3687777		vacuum	Se	0	155
6.3701664		vacuum	$^{12}C^{16}O$	0	1179,1187
6.37637		vacuum	NO	0	1285–1287
6.3773627		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3810785		vacuum	$^{13}C^{16}O$	0	1253,1254
6.3820070		vacuum	$^{12}C^{16}O$	0	1179,1187
6.38941		vacuum	NO	0	1285–1287
6.3962327		vacuum	$^{12}C^{16}O$	0	1179,1187
6.39799		vacuum	NO	0	1285–1287
6.4001778		vacuum	$^{12}C^{16}O$	0	1179,1187
6.40311		vacuum	NO	0	1285–1287
6.4050388		vacuum	$^{13}C^{16}O$	0	1253,1254
6.4135104		vacuum	$^{12}C^{16}O$	0	1179,1187
6.422525		vacuum	K	0	131,142
6.4252842		vacuum	$^{12}C^{16}O$	0	1179,1187
6.42616		vacuum	NO	0	1285–1287
6.4270392		vacuum	$^{12}C^{16}O$	0	1179,1187
6.43207		vacuum	NO	0	1285–1287
6.4401134		vacuum	$^{12}C^{16}O$	0	1179,1187
6.4407658		vacuum	$^{12}C^{16}O$	0	1179,1187
6.4468647		vacuum	$^{13}C^{16}O$	0	1253,1254
6.4479667		vacuum	$^{13}C^{16}O$	0	1253,1254
6.4546		air	Ba	0	146
6.4546912		vacuum	$^{12}C^{16}O$	0	1179,1187
6.4551478		vacuum	$^{12}C^{16}O$	0	1179,1187
6.4566866		vacuum	Sr	0	139,141

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
6.4575288		vacuum	K	0	131,142
6.4605142		vacuum	$^{13}C^{16}O$	0	1253,1254
6.4626595		vacuum	$^{13}C^{16}O$	0	1253,1254
6.4688175		vacuum	$^{12}C^{16}O$	0	1179,1187
6.4703883		vacuum	$^{12}C^{16}O$	0	1179,1187
6.4743525		vacuum	$^{13}C^{16}O$	0	1253,1254
6.4774391		vacuum	Hg	0	161,166,169
6.4831461		vacuum	$^{12}C^{16}O$	0	1179,1187
6.4883811		vacuum	$^{13}C^{16}O$	0	1253,1254
6.4887747		vacuum	Hg	0	161,166,169
6.5024478		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5026017		vacuum	$^{13}C^{16}O$	0	1253,1254
6.5124170		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5160626		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5170156		vacuum	$^{13}C^{16}O$	0	1253,1254
6.5273627		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5298788		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5316249		vacuum	$^{13}C^{16}O$	0	1253,1254
6.5425180		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5438988		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5578840		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5581240		vacuum	$^{12}C^{16}O$	0	1179,1187
6.5598797		vacuum	$^{13}C^{16}O$	0	1253,1254
6.5614352		vacuum	$^{13}C^{16}O$	0	1253,1254
6.5871970		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6		vacuum	$^{12}CS_2$	0	1317
6.6020476		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6028484		vacuum	$^{13}C^{16}O$	0	1253,1254
6.6077013		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6171107		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6175674		vacuum	$^{13}C^{16}O$	0	1253,1254
6.6216075		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6357216		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6478798		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6500460		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
6.6645815		vacuum	$^{12}C^{16}O$	0	1179,1187
6.6793307		vacuum	$^{12}C^{16}O$	0	1179,1187
6.689		vacuum	$^{14}NH_3$	0	1203,1204
6.6942949		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7020845		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7094754		vacuum	$^{12}C^{16}O$	0	1179,1187
6.721966		vacuum	I	0	401,402
6.7248749		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7302881		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7404949		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7447115		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7463414		vacuum	Ar	0	601
6.7563372		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7593509		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7631543		vacuum	Te	0	155
6.7724038		vacuum	$^{12}C^{16}O$	0	1179,1187
6.7788016		vacuum	Ne	0	432
6.7892862		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8045856		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8129		air	Ar	0	1498
6.8175155		vacuum	O	0	215
6.8201087		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8358573		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8422596		vacuum	$^{12}C^{16}O$	0	1179,1187
6.848705		vacuum	Fe	0	155
6.8518334		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8598868		vacuum	O	0	235,1698
6.8680385		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8719695		vacuum	$^{12}C^{16}O$	0	1179,1187
6.874553		vacuum	O	0	215
6.8844754		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8871614		vacuum	$^{12}C^{16}O$	0	1179,1187
6.8884755		vacuum	Ne	0	432
6.9		vacuum	$^{13}CS_2$	0	1325,1326
6.9025798		vacuum	$^{12}C^{16}O$	0	1179,1187
6.903502		vacuum	I	0	401,402

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
6.9182277		vacuum	$^{12}C^{16}O$	0	1179,1187
6.9341059		vacuum	$^{12}C^{16}O$	0	1179,1187
6.9428408		vacuum	$^{12}C^{16}O$	0	1179,1187
6.9428548		vacuum	Ar	0	195,564
6.9448712		vacuum	Ar	0	195,564
6.9502170		vacuum	$^{12}C^{16}O$	0	1179,1187
6.9665623		vacuum	$^{12}C^{16}O$	0	1179,1187
6.9727640		vacuum	$^{12}C^{16}O$	0	1179,1187
6.9831451		vacuum	$^{12}C^{16}O$	0	1179,1187
6.9876797		vacuum	Ne	0	432
6.9880704		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0036089		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0193822		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0353910		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0516387		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0580595		vacuum	Kr	0	195,564
7.0681263		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0767557		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0848565		vacuum	$^{12}C^{16}O$	0	1179,1187
7.0921770		vacuum	$^{12}C^{16}O$	0	1179,1187
7.093		vacuum	H_2O	0	1284,1329–31
7.098		vacuum	Ne	0	432
7.1018309		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1078363		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1190526		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1237355		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1398768		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1562618		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1728931		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1764192		vacuum	Pb	0	175
7.1853791		vacuum	Cs	0	184–186,335
7.1897725		vacuum	$^{12}C^{16}O$	0	1179,1187
7.1996583		vacuum	$^{12}C^{16}O$	0	1179,1187
7.204		vacuum	H_2O	0	1284,1329–31
7.2069023		vacuum	$^{12}C^{16}O$	0	1179,1187

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
7.2154388		vacuum	$^{12}C^{16}O$	0	1179,1187
7.2168093		vacuum	Ar	0	559,564
7.2242852		vacuum	$^{12}C^{16}O$	0	1179,1187
7.2314653		vacuum	$^{12}C^{16}O$	0	1179,1187
7.240		vacuum	Xe	0	601
7.2419225		vacuum	$^{12}C^{16}O$	0	1179,1187
7.2477397		vacuum	$^{12}C^{16}O$	0	1179,1187
7.25		vacuum	HCN	0	1327
7.2642643		vacuum	$^{12}C^{16}O$	0	1179,1187
7.2810409		vacuum	$^{12}C^{16}O$	0	1179,1187
7.285		vacuum	H_2O	0	1284,1329–31
7.2932		air	Ar	0	428
7.297		vacuum	H_2O	0	1284,1329–31
7.2980715		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3107084		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3153591		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3168036		vacuum	Xe	0	559,582,623
7.3228367		vacuum	Ne	0	195,564,570
7.3266112		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3329051		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3427655		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3507122		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3591743		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3625232		vacuum	Kr	0	601
7.3687835		vacuum	$^{12}C^{16}O$	0	1179,1187
7.3758394		vacuum	$^{12}C^{16}O$	0	1179,1187
7.390		vacuum	H_2O	0	1284,1329–31
7.3927632		vacuum	$^{12}C^{16}O$	0	1179,1187
7.405131		vacuum	Ne	0	432
7.4099471		vacuum	$^{12}C^{16}O$	0	1179,1187
7.4222794		vacuum	Ne	0	195,564
7.4235357		vacuum	Ne	0	195,564
7.425		vacuum	H_2O	0	1284,1329–31
7.4273943		vacuum	$^{12}C^{16}O$	0	1179,1187
7.4313142		vacuum	Xe	0	601
7.435		air	F	0	155

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
7.4415636		vacuum	$^{12}C^{16}O$	0	1179,1187
7.4451067		vacuum	$^{12}C^{16}O$	0	1179,1187
7.453		vacuum	H_2O	0	1284,1329–31
7.4578473		vacuum	$^{12}C^{16}O$	0	1179,1187
7.45879		vacuum	H_2O	0	1284,1329–31
7.4699904		vacuum	Ne	0	195
7.4743918		vacuum	$^{12}C^{16}O$	0	1179,1187
7.4799887		vacuum	Ne	0	559,564,570
7.4911995		vacuum	$^{12}C^{16}O$	0	1179,1187
7.4995237		vacuum	Ne	0	185,195,559
7.5082719		vacuum	$^{12}C^{16}O$	0	1179,1187
7.5256113		vacuum	$^{12}C^{16}O$	0	1179,1187
7.5313000		vacuum	Ne	0	185,570
7.543		vacuum	H_2O	0	1284,1329–31
7.5432206		vacuum	$^{12}C^{16}O$	0	1179,1187
7.5709798		vacuum	Ne	0	432
7.5885028		vacuum	Ne	0	432
7.590		vacuum	H_2O	0	1284,1329–31
7.5936233		vacuum	$^{12}C^{16}O$	0	1179,1187
7.59659		vacuum	H_2O	0	1284,1329–31
7.6105742		vacuum	$^{12}C^{16}O$	0	1179,1187
7.6163805		vacuum	Ne	0	195,564,570
7.6277976		vacuum	$^{12}C^{16}O$	0	1179,1187
7.6452950		vacuum	$^{12}C^{16}O$	0	1179,1187
7.6458386		vacuum	Ne	0	195
7.6511521		vacuum	Ne	0	559,564,570
7.6630690		vacuum	$^{12}C^{16}O$	0	1179,1187
7.6811222		vacuum	$^{12}C^{16}O$	0	1198
7.6926284		vacuum	Ne	0	195
7.7016367		vacuum	Ne	0	559,564,570
7.70897		vacuum	H_2O	0	1284,1329–31
7.7342182		vacuum	$^{12}C^{16}O$	0	1198
7.740		vacuum	H_2O	0	1284,1329–31
7.7408259		vacuum	Ne	0	195
7.7515937		vacuum	$^{12}C^{16}O$	0	1198

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
7.7655499		vacuum	Ne	0	559,570
7.7665		air	Xe	0	1498
7.7692514		vacuum	$^{12}C^{16}O$	0	1198
7.7813		air	Xe	0	1498
7.7815561		vacuum	Ne	0	195,564
7.7871934		vacuum	$^{12}C^{16}O$	0	1198
7.8001903		vacuum	Ar	0	564
7.8026187		vacuum	Ar	0	564
7.8054215		vacuum	$^{12}C^{16}O$	0	1198
7.8065353		vacuum	Ar	0	195
7.8071691		vacuum	Te	0	155
7.809		vacuum	Ne	0	432
7.8239388		vacuum	$^{12}C^{16}O$	0	1198
7.8369230		vacuum	Ne	0	195,564,570
7.8716418		vacuum	Ne	0	432
7.8799387		vacuum	$^{12}C^{16}O$	0	1198
7.8953393		vacuum	K	0	131,142
7.8977594		vacuum	$^{12}C^{16}O$	0	1198
7.90202		vacuum	SiH_4	0	1186
7.9158714		vacuum	$^{12}C^{16}O$	0	1198
7.92198		vacuum	SiH_4	0	1186
7.9423392		vacuum	Pb	0	175
7.9429190		vacuum	Ne	0	432
7.94900		vacuum	SiH_4	0	1186
7.9529813		vacuum	$^{12}C^{16}O$	0	1198
7.95482		vacuum	SiH_4	0	1186
7.955		air	Ar	0	1498
7.96902		vacuum	SiH_4	0	1186
7.9846694		vacuum	Ne	0	432
7.99201		vacuum	SiH_4	0	1186
8.0088892		vacuum	Ne	0	195,564,570
8.0311235		vacuum	$^{12}C^{16}O$	0	1198
8.03406		vacuum	C_2H_2	0	1184–86,1317
8.03523		vacuum	C_2H_2	0	1184–86,1317
8.03561		vacuum	C_2H_2	0	1184–86,1317
8.03781		vacuum	C_2H_2	0	1184–86,1317

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
8.03800		vacuum	C_2H_2	0	1184–86,1317
8.04020		vacuum	C_2H_2	0	1184–86,1317
8.04091		vacuum	C_2H_2	0	1184–86,1317
8.04428		vacuum	C_2H_2	0	1184–86,1317
8.04453		vacuum	C_2H_2	0	1184–86,1317
8.0494092		vacuum	$^{12}C^{16}O$	0	1198
8.0621949		vacuum	Ne	0	195,564,570
8.0679977		vacuum	$^{12}C^{16}O$	0	1198
8.0868914		vacuum	$^{12}C^{16}O$	0	1198
8.1060932		vacuum	$^{12}C^{16}O$	0	1198
8.1151		air	Kr	0	1498
8.116		vacuum	Ne	0	432
8.1483		air	N_2	0	107,128
8.1736588		vacuum	Ne	0	432
8.1827		air	N_2	0	107,128
8.1893		vacuum	^{12}COS	0	1317–1319
8.1913		vacuum	^{12}COS	0	1317–1319
8.1934		vacuum	^{12}COS	0	1317–1319
8.1960		vacuum	^{12}COS	0	1317–1319
8.197		vacuum	C_2H_2	0	1184–86,1317
8.1981		vacuum	^{12}COS	0	1317–1319
8.2008		vacuum	^{12}COS	0	1317–1319
8.2028		vacuum	^{12}COS	0	1317–1319
8.2055		vacuum	^{12}COS	0	1317–1319
8.2069181		vacuum	$^{12}C^{16}O$	0	1198
8.2075		vacuum	^{12}COS	0	1317–1319
8.2102		vacuum	^{12}COS	0	1317–1319
8.2102		air	N_2	0	107,128
8.2122		vacuum	^{12}COS	0	1317–1319
8.2149		vacuum	^{12}COS	0	1317–1319
8.2169		vacuum	^{12}COS	0	1317–1319
8.2196		vacuum	^{12}COS	0	1317–1319
8.2217		vacuum	^{12}COS	0	1317–1319
8.2244		vacuum	^{12}COS	0	1317–1319
8.2260066		vacuum	$^{12}C^{16}O$	0	1198

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
8.2271		vacuum	^{12}COS	0	1317–1319
8.2291		vacuum	^{12}COS	0	1317–1319
8.2318		vacuum	^{12}COS	0	1317–1319
8.2338		vacuum	^{12}COS	0	1317–1319
8.2366		vacuum	^{12}COS	0	1317–1319
8.23886		vacuum	^{12}COS	0	1317–1319
8.24165		vacuum	^{12}COS	0	1317–1319
8.24389		vacuum	^{12}COS	0	1317–1319
8.2454111		vacuum	$^{12}C^{16}O$	0	1198
8.2467		vacuum	^{12}COS	0	1317–1319
8.2495		vacuum	^{12}COS	0	1317–1319
8.25178		vacuum	^{12}COS	0	1317–1319
8.25437		vacuum	^{12}COS	0	1317–1319
8.25709		vacuum	^{12}COS	0	1317–1319
8.25948		vacuum	^{12}COS	0	1317–1319
8.26228		vacuum	^{12}COS	0	1317–1319
8.26453		vacuum	^{12}COS	0	1317–1319
8.2651363		vacuum	$^{12}C^{16}O$	0	1198
8.26726		vacuum	^{12}COS	0	1317–1319
8.2699		vacuum	^{12}COS	0	1317–1319
8.2727		vacuum	^{12}COS	0	1317–1319
8.2754		vacuum	^{12}COS	0	1317–1319
8.2781		vacuum	^{12}COS	0	1317–1319
8.2809		vacuum	^{12}COS	0	1317–1319
8.2836		vacuum	^{12}COS	0	1317–1319
8.2857		vacuum	^{12}COS	0	1317–1319
8.299		vacuum	C_2H_2	0	1184–86,1317
8.3278		vacuum	^{12}COS	0	1317–1319
8.3306		vacuum	^{12}COS	0	1317–1319
8.3333		vacuum	^{12}COS	0	1317–1319
8.3361		vacuum	^{12}COS	0	1317–1319
8.3371447		vacuum	Ne	0	195,564
8.3389		vacuum	^{12}COS	0	1317–1319
8.3417		vacuum	^{12}COS	0	1317–1319
8.3452		vacuum	^{12}COS	0	1317–1319
8.3479		vacuum	^{12}COS	0	1317–1319

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
8.3496011		vacuum	Ne	0	195,564
8.3507		vacuum	^{12}COS	0	1317–1319
8.3535		vacuum	^{12}COS	0	1317–1319
8.3563		vacuum	^{12}COS	0	1317–1319
8.3598		vacuum	^{12}COS	0	1317–1319
8.36246		vacuum	^{12}COS	0	1317–1319
8.36540		vacuum	^{12}COS	0	1317–1319
8.36855		vacuum	^{12}COS	0	1317–1319
8.37156		vacuum	^{12}COS	0	1317–1319
8.37458		vacuum	^{12}COS	0	1317–1319
8.37788		vacuum	^{12}COS	0	1317–1319
8.38089		vacuum	^{12}COS	0	1317–1319
8.38392		vacuum	^{12}COS	0	1317–1319
8.38701		vacuum	^{12}COS	0	1317–1319
8.39004		vacuum	^{12}COS	0	1317–1319
8.39306		vacuum	^{12}COS	0	1317–1319
8.39616		vacuum	^{12}COS	0	1317–1319
8.39990		vacuum	^{12}COS	0	1317–1319
8.40237		vacuum	^{12}COS	0	1317–1319
8.4042		air	Xe	0	1498
8.40548		vacuum	^{12}COS	0	1317–1319
8.40852		vacuum	^{12}COS	0	1317–1319
8.41170		vacuum	^{12}COS	0	1317–1319
8.41468		vacuum	^{12}COS	0	1317–1319
8.41786		vacuum	^{12}COS	0	1317–1319
8.42134		vacuum	^{12}COS	0	1317–1319
8.42432		vacuum	^{12}COS	0	1317–1319
8.4274		vacuum	^{12}COS	0	1317–1319
8.4310		vacuum	^{12}COS	0	1317–1319
8.4345		vacuum	^{12}COS	0	1317–1319
8.4374		vacuum	^{12}COS	0	1317–1319
8.4410		vacuum	^{12}COS	0	1317–1319
8.4438		vacuum	^{12}COS	0	1317–1319
8.4474		vacuum	^{12}COS	0	1317–1319
8.4509		vacuum	^{12}COS	0	1317–1319

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
8.4538		vacuum	^{12}COS	0	1317–1319
8.4574		vacuum	^{12}COS	0	1317–1319
8.48		vacuum	HCN	0	1327
8.492785		vacuum	Fe	0	155
8.529294		vacuum	He	0	433
8.6		vacuum	^{13}COS	0	1317–1319
8.8414054		vacuum	Ne	0	195,564
8.8554154		vacuum	Ne	0	195,564
8.987673374		vacuum	$^{12}C^{18}O_2$	0	1640
8.9876733841		vacuum	$^{12}C^{18}O_2$	0	1640
8.994945420		vacuum	$^{12}C^{18}O_2$	0	1640
8.9949454256		vacuum	$^{12}C^{18}O_2$	0	1640
9.002380597		vacuum	$^{12}C^{18}O_2$	0	1640
9.0023805967		vacuum	$^{12}C^{18}O_2$	0	1640
9.0067086		vacuum	Xe	0	185,559,582
9.009980301		vacuum	$^{12}C^{18}O_2$	0	1640
9.0099803044		vacuum	$^{12}C^{18}O_2$	0	1640
9.017745954		vacuum	$^{12}C^{18}O_2$	0	1640
9.0177459554		vacuum	$^{12}C^{18}O_2$	0	1640
9.019572		vacuum	I	0	401,402
9.025678950		vacuum	$^{12}C^{18}O_2$	0	1640
9.0256789526		vacuum	$^{12}C^{18}O_2$	0	1640
9.033780694		vacuum	$^{12}C^{18}O_2$	0	1640
9.0337806978		vacuum	$^{12}C^{18}O_2$	0	1640
9.042052587		vacuum	$^{12}C^{18}O_2$	0	1640
9.0420525890		vacuum	$^{12}C^{18}O_2$	0	1640
9.050496018		vacuum	$^{12}C^{18}O_2$	0	1640
9.0504960196		vacuum	$^{12}C^{18}O_2$	0	1640
9.0591123781		vacuum	$^{12}C^{18}O_2$	0	1640
9.059112381		vacuum	$^{12}C^{18}O_2$	0	1640
9.067903046		vacuum	$^{12}C^{18}O_2$	0	1640
9.0679030476		vacuum	$^{12}C^{18}O_2$	0	1640
9.07505983		vacuum	$^{12}C^{18}O_2$	0	1640
9.0768694044		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.076869410		vacuum	$^{12}C^{18}O_2$	0	1640
9.08316833		vacuum	$^{12}C^{18}O_2$	0	1640
9.0860128178		vacuum	$^{12}C^{18}O_2$	0	1640
9.086012820		vacuum	$^{12}C^{18}O_2$	0	1640
9.0894630		vacuum	Ne	0	195,564,570
9.0903830147		vacuum	$^{12}C^{17}O_2$	0	1640
9.09145210		vacuum	$^{12}C^{18}O_2$	0	1640
9.0934950		vacuum	$^{12}C^{16}O_2$	0	1640
9.0934950		vacuum	$^{12}C^{16}O_2$	0	1640
9.0943359524		vacuum	$^{12}C^{17}O_2$	0	1640
9.0953346501		vacuum	$^{12}C^{18}O_2$	0	1640
9.095334658		vacuum	$^{12}C^{18}O_2$	0	1640
9.0983367323		vacuum	$^{12}C^{17}O_2$	0	1640
9.0997598		vacuum	$^{12}C^{16}O_2$	0	1640
9.0997598		vacuum	$^{12}C^{16}O_2$	0	1640
9.09991271		vacuum	$^{12}C^{18}O_2$	0	1640
9.1023855930		vacuum	$^{12}C^{17}O_2$	0	1640
9.1048362549		vacuum	$^{12}C^{18}O_2$	0	1640
9.104836262		vacuum	$^{12}C^{18}O_2$	0	1640
9.10622908		vacuum	$^{12}C^{16}O_2$	0	1640
9.106232057		vacuum	$^{12}C^{16}O_2$	0	1640
9.1064827734		vacuum	$^{12}C^{17}O_2$	0	1640
9.10855153		vacuum	$^{12}C^{18}O_2$	0	1640
9.1106285129		vacuum	$^{12}C^{17}O_2$	0	1640
9.1129052508		vacuum	$^{12}C^{16}O_2$	0	1640
9.112905275		vacuum	$^{12}C^{16}O_2$	0	1640
9.1145189755		vacuum	$^{12}C^{18}O_2$	0	1640
9.114518985		vacuum	$^{12}C^{18}O_2$	0	1640
9.1148230497		vacuum	$^{12}C^{17}O_2$	0	1640
9.11737010		vacuum	$^{12}C^{18}O_2$	0	1640
9.1190666207		vacuum	$^{12}C^{17}O_2$	0	1640
9.1197909939		vacuum	$^{12}C^{16}O_2$	0	1640
9.119791005		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.1233594639		vacuum	$^{12}C^{17}O_2$	0	1640
9.1243841479		vacuum	$^{12}C^{18}O_2$	0	1640
9.124384150		vacuum	$^{12}C^{18}O_2$	0	1640
9.12636993		vacuum	$^{12}C^{18}O_2$	0	1640
9.1268888458		vacuum	$^{12}C^{16}O_2$	0	1640
9.126888847		vacuum	$^{12}C^{16}O_2$	0	1640
9.1277018147		vacuum	$^{12}C^{17}O_2$	0	1640
9.1320939079		vacuum	$^{12}C^{17}O_2$	0	1640
9.134201369		vacuum	$^{12}C^{16}O_2$	0	1640
9.1342013707		vacuum	$^{12}C^{16}O_2$	0	1640
9.1344330951		vacuum	$^{12}C^{18}O_2$	0	1640
9.134433103		vacuum	$^{12}C^{18}O_2$	0	1640
9.1365359806		vacuum	$^{12}C^{17}O_2$	0	1640
9.1378432636		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.137843272		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1410282644		vacuum	$^{12}C^{17}O_2$	0	1640
9.1417311231		vacuum	$^{12}C^{16}O_2$	0	1640
9.141731124		vacuum	$^{12}C^{16}O_2$	0	1640
9.1423917999		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.142391802		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1446671323		vacuum	$^{12}C^{18}O_2$	0	1640
9.144667139		vacuum	$^{12}C^{18}O_2$	0	1640
9.14491873		vacuum	$^{12}C^{18}O_2$	0	1640
9.1455709948		vacuum	$^{12}C^{17}O_2$	0	1640
9.146991207		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1469912065		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.149480647		vacuum	$^{12}C^{16}O_2$	0	1640
9.1494806499		vacuum	$^{12}C^{16}O_2$	0	1640
9.1501644027		vacuum	$^{12}C^{17}O_2$	0	1640
9.1516417199		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.151641723		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.15447066		vacuum	$^{12}C^{18}O_2$	0	1640
9.1548087203		vacuum	$^{12}C^{17}O_2$	0	1640
9.1550875622		vacuum	$^{12}C^{18}O_2$	0	1640
9.155087570		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.156343568		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1563435701		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.157452485		vacuum	$^{12}C^{16}O_2$	0	1640
9.1574524861		vacuum	$^{12}C^{16}O_2$	0	1640
9.1595041789		vacuum	$^{12}C^{17}O_2$	0	1640
9.1610969896		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.161096994		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.16420944		vacuum	$^{12}C^{18}O_2$	0	1640
9.1642510074		vacuum	$^{12}C^{17}O_2$	0	1640
9.1656491546		vacuum	$^{12}C^{16}O_2$	0	1640
9.165649160		vacuum	$^{12}C^{16}O_2$	0	1640
9.1656956749		vacuum	$^{12}C^{18}O_2$	0	1640
9.165695685		vacuum	$^{12}C^{18}O_2$	0	1640
9.1659022105		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.165902211		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1690494356		vacuum	$^{12}C^{17}O_2$	0	1640
9.170759460		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1707594613		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1738996911		vacuum	$^{12}C^{17}O_2$	0	1640
9.1740731659		vacuum	$^{12}C^{16}O_2$	0	1640
9.174073173		vacuum	$^{12}C^{16}O_2$	0	1640
9.17413644		vacuum	$^{12}C^{18}O_2$	0	1640
9.1756689718		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.175668974		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1764927513		vacuum	$^{12}C^{18}O_2$	0	1640
9.176492758		vacuum	$^{12}C^{18}O_2$	0	1640
9.1788020012		vacuum	$^{12}C^{17}O_2$	0	1640
9.1791962		vacuum	K	0	131,142
9.1806309692		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.180630972		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1827270164		vacuum	$^{12}C^{16}O_2$	0	1640
9.182727020		vacuum	$^{12}C^{16}O_2$	0	1640
9.1837565912		vacuum	$^{12}C^{17}O_2$	0	1640
9.18425316		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
9.1856456819		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.185645690		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1874800577		vacuum	$^{12}C^{18}O_2$	0	1640
9.187480064		vacuum	$^{12}C^{18}O_2$	0	1640
9.1887636870		vacuum	$^{12}C^{17}O_2$	0	1640
9.1907133355		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.190713345		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1916131871		vacuum	$^{12}C^{16}O_2$	0	1640
9.191613190		vacuum	$^{12}C^{16}O_2$	0	1640
9.1938235127		vacuum	$^{12}C^{17}O_2$	0	1640
9.19456080		vacuum	$^{12}C^{18}O_2$	0	1640
9.1958341547		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.195834169		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.1986588474		vacuum	$^{12}C^{18}O_2$	0	1640
9.198658852		vacuum	$^{12}C^{18}O_2$	0	1640
9.1989362908		vacuum	$^{12}C^{17}O_2$	0	1640
9.2007341425		vacuum	$^{12}C^{16}O_2$	0	1640
9.200734148		vacuum	$^{12}C^{16}O_2$	0	1640
9.2010083628		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.201008374		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2041022431		vacuum	$^{12}C^{17}O_2$	0	1640
9.20506088		vacuum	$^{12}C^{18}O_2$	0	1640
9.2062361840		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.206236198		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2091716		vacuum	$^{12}C^{16}O_2$	0	1640
9.2093215901		vacuum	$^{12}C^{17}O_2$	0	1640
9.2100303627		vacuum	$^{12}C^{18}O_2$	0	1640
9.210030368		vacuum	$^{12}C^{18}O_2$	0	1640
9.2100923301		vacuum	$^{12}C^{16}O_2$	0	1640
9.210092333		vacuum	$^{12}C^{16}O_2$	0	1640
9.2115178379		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.211517856		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2145945513		vacuum	$^{12}C^{17}O_2$	0	1640
9.21575458		vacuum	$^{12}C^{18}O_2$	0	1640
9.2168535462		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.216853566		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2177733		vacuum	$^{12}C^{16}O_2$	0	1640
9.2196901801		vacuum	$^{12}C^{16}O_2$	0	1640
9.219690184		vacuum	$^{12}C^{16}O_2$	0	1640
9.2199213456		vacuum	$^{12}C^{17}O_2$	0	1640
9.2222435271		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.222243539		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2253021895		vacuum	$^{12}C^{17}O_2$	0	1640
9.2266150		vacuum	$^{12}C^{16}O_2$	0	1640
9.22664333		vacuum	$^{12}C^{18}O_2$	0	1640
9.2276879987		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.227688015		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2295301027		vacuum	$^{12}C^{16}O_2$	0	1640
9.229530105		vacuum	$^{12}C^{16}O_2$	0	1640
9.2307372990		vacuum	$^{12}C^{17}O_2$	0	1640
9.2331871778		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.233187192		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2356997		vacuum	$^{12}C^{16}O_2$	0	1640
9.2362268897		vacuum	$^{12}C^{17}O_2$	0	1640
9.23772834		vacuum	$^{12}C^{18}O_2$	0	1640
9.2387412792		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.238741289		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2393103478		vacuum	$^{12}C^{18}O_2$	0	1640
9.239310356		vacuum	$^{12}C^{18}O_2$	0	1640
9.2396144880		vacuum	$^{12}C^{16}O_2$	0	1640
9.239614496		vacuum	$^{12}C^{16}O_2$	0	1640
9.2417711746		vacuum	$^{12}C^{17}O_2$	0	1640
9.2443505168		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.244350527		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2450296		vacuum	$^{12}C^{16}O_2$	0	1640
9.2473703656		vacuum	$^{12}C^{17}O_2$	0	1640
9.2499457048		vacuum	$^{12}C^{16}O_2$	0	1640
9.249945712		vacuum	$^{12}C^{16}O_2$	0	1640
9.2500151042		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.250015111		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2513659810		vacuum	$^{12}C^{18}O_2$	0	1640
9.251365985		vacuum	$^{12}C^{18}O_2$	0	1640
9.2530246740		vacuum	$^{12}C^{17}O_2$	0	1640
9.2546080		vacuum	$^{12}C^{16}O_2$	0	1640
9.2557352512		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.255735258		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.2587343087		vacuum	$^{12}C^{17}O_2$	0	1640
9.2605261009		vacuum	$^{12}C^{16}O_2$	0	1640
9.260526108		vacuum	$^{12}C^{16}O_2$	0	1640
9.263619757		vacuum	$^{12}C^{18}O_2$	0	1640
9.2636197566		vacuum	$^{12}C^{18}O_2$	0	1640
9.2644362		vacuum	$^{12}C^{16}O_2$	0	1640
9.2644994798		vacuum	$^{12}C^{17}O_2$	0	1640
9.2703203918		vacuum	$^{12}C^{17}O_2$	0	1640
9.2713580020		vacuum	$^{12}C^{16}O_2$	0	1640
9.271358004		vacuum	$^{12}C^{16}O_2$	0	1640
9.2745176		vacuum	$^{12}C^{16}O_2$	0	1640
9.2760728413		vacuum	$^{12}C^{18}O_2$	0	1640
9.276072846		vacuum	$^{12}C^{18}O_2$	0	1640
9.2761972527		vacuum	$^{12}C^{17}O_2$	0	1640
9.2821302649		vacuum	$^{12}C^{17}O_2$	0	1640
9.2824437086		vacuum	$^{12}C^{16}O_2$	0	1640
9.282443709		vacuum	$^{12}C^{16}O_2$	0	1640
9.2848536		vacuum	$^{12}C^{16}O_2$	0	1640
9.2881196322		vacuum	$^{12}C^{17}O_2$	0	1640
9.2887263865		vacuum	$^{12}C^{18}O_2$	0	1640
9.288726393		vacuum	$^{12}C^{18}O_2$	0	1640
9.2937854986		vacuum	$^{12}C^{16}O_2$	0	1640
9.293785500		vacuum	$^{12}C^{16}O_2$	0	1640
9.2954478		vacuum	$^{12}C^{16}O_2$	0	1640
9.3			$^{14}NH_3$	0	1189,1210
9.3015815293		vacuum	$^{12}C^{18}O_2$	0	1640
9.301581533		vacuum	$^{12}C^{18}O_2$	0	1640
9.3053856241		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.305385625		vacuum	$^{12}C^{16}O_2$	0	1640
9.3063026		vacuum	$^{12}C^{16}O_2$	0	1640
9.3146393934		vacuum	$^{12}C^{18}O_2$	0	1640
9.314639396		vacuum	$^{12}C^{18}O_2$	0	1640
9.3172463132		vacuum	$^{12}C^{16}O_2$	0	1640
9.317246315		vacuum	$^{12}C^{16}O_2$	0	1640
9.3174189		vacuum	$^{12}C^{16}O_2$	0	1640
9.32725182		vacuum	$^{12}C^{18}O_2$	0	1640
9.327901090		vacuum	$^{12}C^{18}O_2$	0	1640
9.3279010896		vacuum	$^{12}C^{18}O_2$	0	1640
9.3288003		vacuum	$^{12}C^{16}O_2$	0	1640
9.3293697650		vacuum	$^{12}C^{16}O_2$	0	1640
9.329369767		vacuum	$^{12}C^{16}O_2$	0	1640
9.34005619		vacuum	$^{12}C^{18}O_2$	0	1640
9.3404485		vacuum	$^{12}C^{16}O_2$	0	1640
9.341367710		vacuum	$^{12}C^{18}O_2$	0	1640
9.3413677122		vacuum	$^{12}C^{18}O_2$	0	1640
9.3417581550		vacuum	$^{12}C^{16}O_2$	0	1640
9.341758159		vacuum	$^{12}C^{16}O_2$	0	1640
9.346		vacuum	$^{14}NH_3$	0	1189,1210
9.3523664		vacuum	$^{12}C^{16}O_2$	0	1640
9.35306846		vacuum	$^{12}C^{18}O_2$	0	1640
9.354413628		vacuum	$^{12}C^{16}O_2$	0	1640
9.3544136288		vacuum	$^{12}C^{16}O_2$	0	1640
9.3550403444		vacuum	$^{12}C^{18}O_2$	0	1640
9.355040346		vacuum	$^{12}C^{18}O_2$	0	1640
9.3645559		vacuum	$^{12}C^{16}O_2$	0	1640
9.36628985		vacuum	$^{12}C^{18}O_2$	0	1640
9.3673383050		vacuum	$^{12}C^{16}O_2$	0	1640
9.367338308		vacuum	$^{12}C^{16}O_2$	0	1640
9.3689200543		vacuum	$^{12}C^{18}O_2$	0	1640
9.368920057		vacuum	$^{12}C^{18}O_2$	0	1640
9.3711993962		vacuum	$^{12}C^{17}O_2$	0	1640
9.3770190		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.3779982255		vacuum	$^{12}C^{17}O_2$	0	1640
9.37972146		vacuum	$^{12}C^{18}O_2$	0	1640
9.3805342746		vacuum	$^{12}C^{16}O_2$	0	1640
9.380534281		vacuum	$^{12}C^{16}O_2$	0	1640
9.3830078982		vacuum	$^{12}C^{18}O_2$	0	1640
9.383007902		vacuum	$^{12}C^{18}O_2$	0	1640
9.3848562790		vacuum	$^{12}C^{17}O_2$	0	1640
9.3897578		vacuum	$^{12}C^{16}O_2$	0	1640
9.3917737361		vacuum	$^{12}C^{17}O_2$	0	1640
9.39336441		vacuum	$^{12}C^{18}O_2$	0	1640
9.39382		vacuum	H_2O	0	1284,1329–31
9.3940035981		vacuum	$^{12}C^{16}O_2$	0	1640
9.394003603		vacuum	$^{12}C^{16}O_2$	0	1640
9.3973049185		vacuum	$^{12}C^{18}O_2$	0	1640
9.397304920		vacuum	$^{12}C^{18}O_2$	0	1640
9.3987507727		vacuum	$^{12}C^{17}O_2$	0	1640
9.4027743		vacuum	$^{12}C^{16}O_2$	0	1640
9.4057875665		vacuum	$^{12}C^{17}O_2$	0	1640
9.40721976		vacuum	$^{12}C^{18}O_2$	0	1640
9.4118121458		vacuum	$^{12}C^{18}O_2$	0	1640
9.411812150		vacuum	$^{12}C^{18}O_2$	0	1640
9.4128842907		vacuum	$^{12}C^{17}O_2$	0	1640
9.4147245588		vacuum	$^{12}C^{16}O_2$	0	1640
9.414724562		vacuum	$^{12}C^{16}O_2$	0	1640
9.417384992		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4173850048		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4200411203		vacuum	$^{12}C^{17}O_2$	0	1640
9.42128859		vacuum	$^{12}C^{18}O_2$	0	1640
9.424619168		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4246191839		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4265305973		vacuum	$^{12}C^{18}O_2$	0	1640
9.426530601		vacuum	$^{12}C^{18}O_2$	0	1640
9.4272582269		vacuum	$^{12}C^{17}O_2$	0	1640
9.428886090		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.4288860917		vacuum	$^{12}C^{16}O_2$	0	1640
9.431914062		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4319140777		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4345357789		vacuum	$^{12}C^{17}O_2$	0	1640
9.43557192		vacuum	$^{12}C^{18}O_2$	0	1640
9.439269841		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4392698552		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.441461278		vacuum	$^{12}C^{18}O_2$	0	1640
9.4414612802		vacuum	$^{12}C^{18}O_2$	0	1640
9.4418739452		vacuum	$^{12}C^{17}O_2$	0	1640
9.4433279590		vacuum	$^{12}C^{16}O_2$	0	1640
9.443327961		vacuum	$^{12}C^{16}O_2$	0	1640
9.446686675		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4466866846		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4492728943		vacuum	$^{12}C^{17}O_2$	0	1640
9.45007080		vacuum	$^{12}C^{18}O_2$	0	1640
9.4505542		vacuum	$^{12}C^{16}O_2$	0	1640
9.454164717		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4541647314		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4566051900		vacuum	$^{12}C^{18}O_2$	0	1640
9.456605195		vacuum	$^{12}C^{18}O_2$	0	1640
9.4567327911		vacuum	$^{12}C^{17}O_2$	0	1640
9.4580520879		vacuum	$^{12}C^{16}O_2$	0	1640
9.458052092		vacuum	$^{12}C^{16}O_2$	0	1640
9.461704150		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4617041611		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4642537986		vacuum	$^{12}C^{17}O_2$	0	1640
9.46478631		vacuum	$^{12}C^{18}O_2$	0	1640
9.4648480		vacuum	$^{12}C^{16}O_2$	0	1640
9.4686955538		vacuum	$^{13}C^{18}O_2$	0	1640
9.469305123		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4693051359		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4718360798		vacuum	$^{12}C^{17}O_2$	0	1640
9.471963307		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.4719633100		vacuum	$^{12}C^{18}O_2$	0	1640
9.4730603717		vacuum	$^{12}C^{16}O_2$	0	1640
9.473060373		vacuum	$^{12}C^{16}O_2$	0	1640
9.47472		vacuum	H_2O	0	1284,1329–31
9.4762231953		vacuum	$^{13}C^{18}O_2$	0	1640
9.476967805		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4769678179		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4794322		vacuum	$^{12}C^{16}O_2$	0	1640
9.4794797973		vacuum	$^{12}C^{17}O_2$	0	1640
9.47971944		vacuum	$^{12}C^{18}O_2$	0	1640
9.4839415976		vacuum	$^{13}C^{18}O_2$	0	1640
9.484692358		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4846923680		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4871851086		vacuum	$^{12}C^{17}O_2$	0	1640
9.487536611		vacuum	$^{12}C^{18}O_2$	0	1640
9.4875366157		vacuum	$^{12}C^{18}O_2$	0	1640
9.4883546772		vacuum	$^{12}C^{16}O_2$	0	1640
9.488354678		vacuum	$^{12}C^{16}O_2$	0	1640
9.4918527715		vacuum	$^{13}C^{18}O_2$	0	1640
9.492478928		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4924789434		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.4943075		vacuum	$^{12}C^{16}O_2$	0	1640
9.49487115		vacuum	$^{12}C^{18}O_2$	0	1640
9.4949521722		vacuum	$^{12}C^{17}O_2$	0	1640
9.499958710		vacuum	$^{13}C^{18}O_2$	0	1640
9.4999587194		vacuum	$^{13}C^{18}O_2$	0	1640
9.500327691		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5003277023		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5027811452		vacuum	$^{12}C^{17}O_2$	0	1640
9.5033260720		vacuum	$^{12}C^{18}O_2$	0	1640
9.503326073		vacuum	$^{12}C^{18}O_2$	0	1640
9.5039368353		vacuum	$^{12}C^{16}O_2$	0	1640
9.503936837		vacuum	$^{12}C^{16}O_2$	0	1640
9.508238787		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5082387994		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.508261425		vacuum	$^{13}C^{18}O_2$	0	1640
9.5082614354		vacuum	$^{13}C^{18}O_2$	0	1640
9.5094756		vacuum	$^{12}C^{16}O_2$	0	1640
9.51024239		vacuum	$^{12}C^{18}O_2$	0	1640
9.5106721823		vacuum	$^{12}C^{17}O_2$	0	1640
9.5162123445		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.516212378		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.516762896		vacuum	$^{13}C^{18}O_2$	0	1640
9.5167629029		vacuum	$^{13}C^{18}O_2$	0	1640
9.5186254374		vacuum	$^{12}C^{17}O_2$	0	1640
9.5193326343		vacuum	$^{12}C^{18}O_2$	0	1640
9.519332636		vacuum	$^{12}C^{18}O_2$	0	1640
9.519808647		vacuum	$^{12}C^{16}O_2$	0	1640
9.5198086483		vacuum	$^{12}C^{16}O_2$	0	1640
9.524248619		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5242486252		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5249398		vacuum	$^{12}C^{16}O_2$	0	1640
9.525465086		vacuum	$^{13}C^{18}O_2$	0	1640
9.5254650959		vacuum	$^{13}C^{18}O_2$	0	1640
9.52583417		vacuum	$^{12}C^{18}O_2$	0	1640
9.5266410620		vacuum	$^{12}C^{17}O_2$	0	1640
9.532347648		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5323476576		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.534369974		vacuum	$^{13}C^{18}O_2$	0	1640
9.5343699763		vacuum	$^{13}C^{18}O_2$	0	1640
9.5347192086		vacuum	$^{12}C^{17}O_2$	0	1640
9.535557249		vacuum	$^{12}C^{18}O_2$	0	1640
9.5355572495		vacuum	$^{12}C^{18}O_2$	0	1640
9.535971884		vacuum	$^{12}C^{16}O_2$	0	1640
9.5359718858		vacuum	$^{12}C^{16}O_2$	0	1640
9.540509632		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5405096371		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5407011		vacuum	$^{12}C^{16}O_2$	0	1640
9.54164732		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.5428600243		vacuum	$^{12}C^{17}O_2$	0	1640
9.543479489		vacuum	$^{13}C^{18}O_2$	0	1640
9.5434794930		vacuum	$^{13}C^{18}O_2$	0	1640
9.5487347124		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.548734713		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5500053321		vacuum	$^{13}C^{16}O_2$	0	1640
9.5510636595		vacuum	$^{12}C^{17}O_2$	0	1640
9.5520008607		vacuum	$^{12}C^{18}O_2$	0	1640
9.552000862		vacuum	$^{12}C^{18}O_2$	0	1640
9.5524282869		vacuum	$^{12}C^{16}O_2$	0	1640
9.552428290		vacuum	$^{12}C^{16}O_2$	0	1640
9.552795581		vacuum	$^{13}C^{18}O_2$	0	1640
9.5527955805		vacuum	$^{13}C^{18}O_2$	0	1640
9.5567603		vacuum	$^{12}C^{16}O_2$	0	1640
9.557023028		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5570230286		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.55768295		vacuum	$^{12}C^{18}O_2$	0	1640
9.5579534656		vacuum	$^{13}C^{16}O_2$	0	1640
9.5593302580		vacuum	$^{12}C^{17}O_2$	0	1640
9.5623201609		vacuum	$^{13}C^{18}O_2$	0	1640
9.562320165		vacuum	$^{13}C^{18}O_2$	0	1640
9.5653747346		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.565374739		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5661640962		vacuum	$^{13}C^{16}O_2$	0	1640
9.56736		vacuum	H_2O	0	1284,1329–31
9.5676599674		vacuum	$^{12}C^{17}O_2$	0	1640
9.568664397		vacuum	$^{12}C^{18}O_2$	0	1640
9.5686643997		vacuum	$^{12}C^{18}O_2$	0	1640
9.569179556		vacuum	$^{12}C^{16}O_2$	0	1640
9.5691795595		vacuum	$^{12}C^{16}O_2$	0	1640
9.5720551385		vacuum	$^{13}C^{18}O_2$	0	1640
9.572055143		vacuum	$^{13}C^{18}O_2$	0	1640
9.5731220		vacuum	$^{12}C^{16}O_2$	0	1640
9.5737899740		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.573789978		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.57394187		vacuum	$^{12}C^{18}O_2$	0	1640
9.5746401430		vacuum	$^{13}C^{16}O_2$	0	1640
9.5760529309		vacuum	$^{12}C^{17}O_2$	0	1640
9.5820024033		vacuum	$^{13}C^{18}O_2$	0	1640
9.582002412		vacuum	$^{13}C^{18}O_2$	0	1640
9.5822688902		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.582268893		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5833845196		vacuum	$^{13}C^{16}O_2$	0	1640
9.5845092900		vacuum	$^{12}C^{17}O_2$	0	1640
9.585548793		vacuum	$^{12}C^{18}O_2$	0	1640
9.5855487957		vacuum	$^{12}C^{18}O_2$	0	1640
9.586227377		vacuum	$^{12}C^{16}O_2$	0	1640
9.5862273766		vacuum	$^{12}C^{16}O_2$	0	1640
9.5897854		vacuum	$^{12}C^{16}O_2$	0	1640
9.5908116271		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.590811628		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5921638277		vacuum	$^{13}C^{18}O_2$	0	1640
9.592163831		vacuum	$^{13}C^{18}O_2$	0	1640
9.5924001280		vacuum	$^{13}C^{16}O_2$	0	1640
9.5930291871		vacuum	$^{12}C^{17}O_2$	0	1640
9.599418318		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.5994183247		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.6			$^{14}NH_3$	0	1189,1210
9.6016127618		vacuum	$^{12}C^{17}O_2$	0	1640
9.6016898728		vacuum	$^{13}C^{16}O_2$	0	1640
9.601689891		vacuum	$^{13}C^{16}O_2$	0	1640
9.6025412654		vacuum	$^{13}C^{18}O_2$	0	1640
9.602541272		vacuum	$^{13}C^{18}O_2$	0	1640
9.6026549722		vacuum	$^{12}C^{18}O_2$	0	1640
9.602654976		vacuum	$^{12}C^{18}O_2$	0	1640
9.603573384		vacuum	$^{12}C^{16}O_2$	0	1640
9.6035733836		vacuum	$^{12}C^{16}O_2$	0	1640
9.6067533		vacuum	$^{12}C^{16}O_2$	0	1640
9.608089110		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.608089129		vacuum	$^{12}C^{16}O^{18}O$	0	1640
9.6102601521		vacuum	$^{12}C^{17}O_2$	0	1640
9.6112566121		vacuum	$^{13}C^{16}O_2$	0	1640
9.611256627		vacuum	$^{13}C^{16}O_2$	0	1640
9.6131365529		vacuum	$^{13}C^{18}O_2$	0	1640
9.613136556		vacuum	$^{13}C^{18}O_2$	0	1640
9.6189714956		vacuum	$^{12}C^{17}O_2$	0	1640
9.619983846		vacuum	$^{12}C^{18}O_2$	0	1640
9.6199838464		vacuum	$^{12}C^{18}O_2$	0	1640
9.6211032437		vacuum	$^{13}C^{16}O_2$	0	1640
9.621103251		vacuum	$^{13}C^{16}O_2$	0	1640
9.621219191		vacuum	$^{12}C^{16}O_2$	0	1640
9.6212191919		vacuum	$^{12}C^{16}O_2$	0	1640
9.6239515072		vacuum	$^{13}C^{18}O_2$	0	1640
9.623951515		vacuum	$^{13}C^{18}O_2$	0	1640
9.6240268		vacuum	$^{12}C^{16}O_2$	0	1640
9.6277469294		vacuum	$^{12}C^{17}O_2$	0	1640
9.6312326197		vacuum	$^{13}C^{16}O_2$	0	1640
9.631232623		vacuum	$^{13}C^{16}O_2$	0	1640
9.634987925		vacuum	$^{13}C^{18}O_2$	0	1640
9.6349879248		vacuum	$^{13}C^{18}O_2$	0	1640
9.6365865884		vacuum	$^{12}C^{17}O_2$	0	1640
9.637536335		vacuum	$^{12}C^{18}O_2$	0	1640
9.6375363360		vacuum	$^{12}C^{18}O_2$	0	1640
9.639		air	Kr	0	1498
9.6391663843		vacuum	$^{12}C^{16}O_2$	0	1640
9.639166385		vacuum	$^{12}C^{16}O_2$	0	1640
9.6416089		vacuum	$^{12}C^{16}O_2$	0	1640
9.641647583		vacuum	$^{13}C^{16}O_2$	0	1640
9.6416475855		vacuum	$^{13}C^{16}O_2$	0	1640
9.643		vacuum	$^{14}NH_3$	0	1189–90,1192
9.6454906048		vacuum	$^{12}C^{17}O_2$	0	1640
9.646247580		vacuum	$^{13}C^{18}O_2$	0	1640
9.6462475823		vacuum	$^{13}C^{18}O_2$	0	1640
9.652350966		vacuum	$^{13}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.6523509720		vacuum	$^{13}C^{16}O_2$	0	1640
9.6544591124		vacuum	$^{12}C^{17}O_2$	0	1640
9.6553133551		vacuum	$^{12}C^{18}O_2$	0	1640
9.655313356		vacuum	$^{12}C^{18}O_2$	0	1640
9.6574165094		vacuum	$^{12}C^{16}O_2$	0	1640
9.657416515		vacuum	$^{12}C^{16}O_2$	0	1640
9.657732230		vacuum	$^{13}C^{18}O_2$	0	1640
9.6577322334		vacuum	$^{13}C^{18}O_2$	0	1640
9.6594997		vacuum	$^{12}C^{16}O_2$	0	1640
9.6609222307		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.663345593		vacuum	$^{13}C^{16}O_2$	0	1640
9.6633455966		vacuum	$^{13}C^{16}O_2$	0	1640
9.6634922422		vacuum	$^{12}C^{17}O_2$	0	1640
9.6665738784		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.669443611		vacuum	$^{13}C^{18}O_2$	0	1640
9.6694436138		vacuum	$^{13}C^{18}O_2$	0	1640
9.6722905548		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.6725901242		vacuum	$^{12}C^{17}O_2$	0	1640
9.674634252		vacuum	$^{13}C^{16}O_2$	0	1640
9.6746342589		vacuum	$^{13}C^{16}O_2$	0	1640
9.6759710879		vacuum	$^{12}C^{16}O_2$	0	1640
9.675971090		vacuum	$^{12}C^{16}O_2$	0	1640
9.6777025		vacuum	$^{12}C^{16}O_2$	0	1640
9.6780725408		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.681383425		vacuum	$^{13}C^{18}O_2$	0	1640
9.6813834329		vacuum	$^{13}C^{18}O_2$	0	1640
9.6817528890		vacuum	$^{12}C^{17}O_2$	0	1640
9.6839201195		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.686219735		vacuum	$^{13}C^{16}O_2$	0	1640
9.6862197410		vacuum	$^{13}C^{16}O_2$	0	1640
9.6898335717		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.6909806643		vacuum	$^{12}C^{17}O_2$	0	1640
9.693553374		vacuum	$^{13}C^{18}O_2$	0	1640
9.6935533804		vacuum	$^{13}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.6948316089		vacuum	$^{12}C^{16}O_2$	0	1640
9.694831616		vacuum	$^{12}C^{16}O_2$	0	1640
9.6958131757		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.6962175		vacuum	$^{12}C^{16}O_2$	0	1640
9.698104805		vacuum	$^{13}C^{16}O_2$	0	1640
9.6981048064		vacuum	$^{13}C^{16}O_2$	0	1640
9.7			$^{14}NH_3$	0	1189,1210
9.7002735768		vacuum	$^{12}C^{17}O_2$	0	1640
9.7018592092		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.7031910		vacuum	Xe	0	559,582
9.705955110		vacuum	$^{13}C^{18}O_2$	0	1640
9.7059551215		vacuum	$^{13}C^{18}O_2$	0	1640
9.7079719484		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.7096317526		vacuum	$^{12}C^{17}O_2$	0	1640
9.710292190		vacuum	$^{13}C^{16}O_2$	0	1640
9.7102922000		vacuum	$^{13}C^{16}O_2$	0	1640
9.7139995302		vacuum	$^{12}C^{16}O_2$	0	1640
9.713999532		vacuum	$^{12}C^{16}O_2$	0	1640
9.7150460		vacuum	$^{12}C^{16}O_2$	0	1640
9.719055321		vacuum	$^{12}C^{17}O_2$	0	1640
9.722784635		vacuum	$^{13}C^{16}O_2$	0	1640
9.7227846476		vacuum	$^{13}C^{16}O_2$	0	1640
9.728544397		vacuum	$^{12}C^{17}O_2$	0	1640
9.7334762812		vacuum	$^{12}C^{16}O_2$	0	1640
9.733476288		vacuum	$^{12}C^{16}O_2$	0	1640
9.7341914		vacuum	$^{12}C^{16}O_2$	0	1640
9.735584845		vacuum	$^{13}C^{16}O_2$	0	1640
9.7355848547		vacuum	$^{13}C^{16}O_2$	0	1640
9.737		vacuum	$^{14}NH_3$	0	1640
9.747		vacuum	CH_3F	0	1218
9.748695495		vacuum	$^{13}C^{16}O_2$	0	1640
9.7486955049		vacuum	$^{13}C^{16}O_2$	0	1640
9.753263263		vacuum	$^{12}C^{16}O_2$	0	1640
9.7532632627		vacuum	$^{12}C^{16}O_2$	0	1640
9.7536530		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.762119246		vacuum	$^{13}C^{16}O_2$	0	1640
9.7621192600		vacuum	$^{13}C^{16}O_2$	0	1640
9.764674832		vacuum	$^{13}C^{18}O_2$	0	1640
9.7646748371		vacuum	$^{13}C^{18}O_2$	0	1640
9.7733618462		vacuum	$^{12}C^{16}O_2$	0	1640
9.773361847		vacuum	$^{12}C^{16}O_2$	0	1640
9.775858749		vacuum	$^{13}C^{16}O_2$	0	1640
9.7758587613		vacuum	$^{13}C^{16}O_2$	0	1640
9.778380123		vacuum	$^{13}C^{18}O_2$	0	1640
9.7783801282		vacuum	$^{13}C^{18}O_2$	0	1640
9.789916613		vacuum	$^{13}C^{16}O_2$	0	1640
9.7899166255		vacuum	$^{13}C^{16}O_2$	0	1640
9.792327434		vacuum	$^{13}C^{18}O_2$	0	1640
9.7923274443		vacuum	$^{13}C^{18}O_2$	0	1640
9.7935337		vacuum	$^{12}C^{16}O_2$	0	1640
9.7937733740		vacuum	$^{12}C^{16}O_2$	0	1640
9.793773376		vacuum	$^{12}C^{16}O_2$	0	1640
9.806518258		vacuum	$^{13}C^{18}O_2$	0	1640
9.8065182635		vacuum	$^{13}C^{18}O_2$	0	1640
9.8139549		vacuum	$^{12}C^{16}O_2$	0	1640
9.8144991624		vacuum	$^{12}C^{16}O_2$	0	1640
9.814499164		vacuum	$^{12}C^{16}O_2$	0	1640
9.820954030		vacuum	$^{13}C^{18}O_2$	0	1640
9.8209540406		vacuum	$^{13}C^{18}O_2$	0	1640
9.835540498		vacuum	$^{12}C^{16}O_2$	0	1640
9.8355404997		vacuum	$^{12}C^{16}O_2$	0	1640
9.835636201		vacuum	$^{13}C^{18}O_2$	0	1640
9.8356362025		vacuum	$^{13}C^{18}O_2$	0	1640
9.850566153		vacuum	$^{13}C^{18}O_2$	0	1640
9.8505661530		vacuum	$^{13}C^{18}O_2$	0	1640
9.8568986484		vacuum	$^{12}C^{16}O_2$	0	1640
9.856898649		vacuum	$^{12}C^{16}O_2$	0	1640
9.8657452671		vacuum	$^{13}C^{18}O_2$	0	1640
9.865745271		vacuum	$^{13}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.8730403614		vacuum	$^{13}C^{16}O_2$	0	1640
9.873040362		vacuum	$^{13}C^{16}O_2$	0	1640
9.8785748459		vacuum	$^{12}C^{16}O_2$	0	1640
9.878574860		vacuum	$^{12}C^{16}O_2$	0	1640
9.8811748957		vacuum	$^{13}C^{18}O_2$	0	1640
9.881174900		vacuum	$^{13}C^{18}O_2$	0	1640
9.8892297575		vacuum	$^{13}C^{16}O_2$	0	1640
9.889229768		vacuum	$^{13}C^{16}O_2$	0	1640
9.89073556		vacuum	$^{14}C^{18}O_2$	0	1640
9.89073556		vacuum	$^{14}C^{18}O_2$	0	1640
9.8968563624		vacuum	$^{13}C^{18}O_2$	0	1640
9.896856368		vacuum	$^{13}C^{18}O_2$	0	1640
9.898433863		vacuum	$^{14}C^{18}O_2$	0	1640
9.898433882		vacuum	$^{14}C^{18}O_2$	0	1640
9.9			$^{14}NH_3$	0	1189,1210
9.9005703050		vacuum	$^{12}C^{16}O_2$	0	1640
9.900570325		vacuum	$^{12}C^{16}O_2$	0	1640
9.9057563881		vacuum	$^{13}C^{16}O_2$	0	1640
9.905756396		vacuum	$^{13}C^{16}O_2$	0	1640
9.906357727		vacuum	$^{14}C^{18}O_2$	0	1640
9.906357736		vacuum	$^{14}C^{18}O_2$	0	1640
9.9127909665		vacuum	$^{13}C^{18}O_2$	0	1640
9.912790972		vacuum	$^{13}C^{18}O_2$	0	1640
9.914509593		vacuum	$^{14}C^{18}O_2$	0	1640
9.914509593		vacuum	$^{14}C^{18}O_2$	0	1640
9.917877180		vacuum	$^{14}C^{16}O_2$	0	1640
9.9178771801		vacuum	$^{14}C^{16}O_2$	0	1640
9.921		vacuum	$^{14}NH_3$	0	1189,1210
9.9226226651		vacuum	$^{13}C^{16}O_2$	0	1640
9.922622674		vacuum	$^{13}C^{16}O_2$	0	1640
9.9228862138		vacuum	$^{12}C^{16}O_2$	0	1640
9.922886254		vacuum	$^{12}C^{16}O_2$	0	1640
9.922891926		vacuum	$^{14}C^{18}O_2$	0	1640
9.922891936		vacuum	$^{14}C^{18}O_2$	0	1640
9.9236744988		vacuum	$^{13}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.9273316267		vacuum	$^{14}C^{16}O_2$	0	1640
9.927331635		vacuum	$^{14}C^{16}O_2$	0	1640
9.9289799801		vacuum	$^{13}C^{18}O_2$	0	1640
9.928979992		vacuum	$^{13}C^{18}O_2$	0	1640
9.9315071908		vacuum	$^{14}C^{18}O_2$	0	1640
9.931507202		vacuum	$^{14}C^{18}O_2$	0	1640
9.9319829837		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.9370891511		vacuum	$^{14}C^{16}O_2$	0	1640
9.937089163		vacuum	$^{14}C^{16}O_2$	0	1640
9.9398309766		vacuum	$^{13}C^{16}O_2$	0	1640
9.939830992		vacuum	$^{13}C^{16}O_2$	0	1640
9.9403578213		vacuum	$^{14}C^{18}O_2$	0	1640
9.9403661154		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.9454246503		vacuum	$^{13}C^{18}O_2$	0	1640
9.945424661		vacuum	$^{13}C^{18}O_2$	0	1640
9.9455237398		vacuum	$^{12}C^{16}O_2$	0	1640
9.94552379		vacuum	$^{12}C^{16}O_2$	0	1640
9.9471530250		vacuum	$^{14}C^{16}O_2$	0	1640
9.947153044		vacuum	$^{14}C^{16}O_2$	0	1640
9.9488241143		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.9494462448		vacuum	$^{14}C^{18}O_2$	0	1640
9.949446257		vacuum	$^{14}C^{18}O_2$	0	1640
9.9573571956		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.9573836833		vacuum	$^{13}C^{16}O_2$	0	1640
9.957383702		vacuum	$^{13}C^{16}O_2$	0	1640
9.9575265191		vacuum	$^{14}C^{16}O_2$	0	1640
9.957526539		vacuum	$^{14}C^{16}O_2$	0	1640
9.9587748736		vacuum	$^{14}C^{18}O_2$	0	1640
9.958774894		vacuum	$^{14}C^{18}O_2$	0	1640
9.9621262008		vacuum	$^{13}C^{18}O_2$	0	1640
9.962126218		vacuum	$^{13}C^{18}O_2$	0	1640
9.9659655768		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.9682128982		vacuum	$^{14}C^{16}O_2$	0	1640
9.968212914		vacuum	$^{14}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
9.9683461051		vacuum	$^{14}C^{18}O_2$	0	1640
9.968346125		vacuum	$^{14}C^{18}O_2$	0	1640
9.9684846		vacuum	$^{12}C^{16}O_2$	0	1640
9.9684846		vacuum	$^{12}C^{16}O_2$	0	1640
9.9746494693		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.9752831248		vacuum	$^{13}C^{16}O_2$	0	1640
9.975283144		vacuum	$^{13}C^{16}O_2$	0	1640
9.9781623208		vacuum	$^{14}C^{18}O_2$	0	1640
9.978162343		vacuum	$^{14}C^{18}O_2$	0	1640
9.9790858269		vacuum	$^{13}C^{18}O_2$	0	1640
9.979085842		vacuum	$^{13}C^{18}O_2$	0	1640
9.9792154208		vacuum	$^{14}C^{16}O_2$	0	1640
9.979215440		vacuum	$^{14}C^{16}O_2$	0	1640
9.9834090856		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.98393525		vacuum	$^{13}C^{16}O_2$	0	1640
9.9882258833		vacuum	$^{14}C^{18}O_2$	0	1640
9.988225899		vacuum	$^{14}C^{18}O_2$	0	1640
9.9905373357		vacuum	$^{14}C^{16}O_2$	0	1640
9.990537353		vacuum	$^{14}C^{16}O_2$	0	1640
9.9917688		vacuum	$^{12}C^{16}O_2$	0	1640
9.9917688		vacuum	$^{12}C^{16}O_2$	0	1640
9.9922446352		vacuum	$^{13}C^{16}O^{18}O$	0	1640
9.9935316127		vacuum	$^{13}C^{16}O_2$	0	1640
9.993531627		vacuum	$^{13}C^{16}O_2$	0	1640
9.9963047030		vacuum	$^{13}C^{18}O_2$	0	1640
9.996304716		vacuum	$^{13}C^{18}O_2$	0	1640
9.9985391414		vacuum	$^{14}C^{18}O_2$	0	1640
9.998539153		vacuum	$^{14}C^{18}O_2$	0	1640
~10		vacuum	COF_2	0	1337
10.00115632		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.002016		vacuum	$^{13}C^{16}O_2$	0	1640
10.00218188		vacuum	$^{14}C^{16}O_2$	0	1640
10.0021819		vacuum	$^{14}C^{16}O_2$	0	1640
10.00910442		vacuum	$^{14}C^{18}O_2$	0	1640
10.0091044		vacuum	$^{14}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.01014436		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.01213144		vacuum	$^{13}C^{16}O_2$	0	1640
10.0121314		vacuum	$^{13}C^{16}O_2$	0	1640
10.01378398		vacuum	$^{13}C^{18}O_2$	0	1640
10.0137840		vacuum	$^{13}C^{18}O_2$	0	1640
10.01415228		vacuum	$^{14}C^{16}O_2$	0	1640
10.0141523		vacuum	$^{14}C^{16}O_2$	0	1640
10.01538		vacuum	$^{12}C^{16}O_2$	0	1640
10.015380		vacuum	$^{12}C^{16}O_2$	0	1640
10.01920894		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.01992404		vacuum	$^{14}C^{18}O_2$	0	1640
10.0199240		vacuum	$^{14}C^{18}O_2$	0	1640
10.025912		vacuum	$^{12}C^{16}O_2$	0	1640
10.025912		vacuum	$^{12}C^{16}O_2$	0	1640
10.02645173		vacuum	$^{14}C^{16}O_2$	0	1640
10.0264517		vacuum	$^{14}C^{16}O_2$	0	1640
10.02835028		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.03100028		vacuum	$^{14}C^{18}O_2$	0	1640
10.0310003		vacuum	$^{14}C^{18}O_2$	0	1640
10.03108486		vacuum	$^{13}C^{16}O_2$	0	1640
10.0310849		vacuum	$^{13}C^{16}O_2$	0	1640
10.03152477		vacuum	$^{13}C^{18}O_2$	0	1640
10.0315248		vacuum	$^{13}C^{18}O_2$	0	1640
10.033468		vacuum	$^{12}C^{16}O_2$	0	1640
10.033468		vacuum	$^{12}C^{16}O_2$	0	1640
10.0375686		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.03908344		vacuum	$^{14}C^{16}O_2$	0	1640
10.0390835		vacuum	$^{14}C^{16}O_2$	0	1640
10.04039645		vacuum	$^{12}C^{16}O_2$	0	1640
10.0413232		vacuum	$^{12}C^{16}O_2$	0	1640
10.04132324		vacuum	$^{12}C^{16}O_2$	0	1640
10.04233542		vacuum	$^{14}C^{18}O_2$	0	1640
10.0423354		vacuum	$^{14}C^{18}O_2$	0	1640
10.0468640		vacuum	$^{13}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.0494775		vacuum	$^{12}C^{16}O_2$	0	1640
10.04952819		vacuum	$^{13}C^{18}O_2$	0	1640
10.0495282		vacuum	$^{13}C^{18}O_2$	0	1640
10.05039413		vacuum	$^{13}C^{16}O_2$	0	1640
10.0503941		vacuum	$^{13}C^{16}O_2$	0	1640
10.05205058		vacuum	$^{14}C^{16}O_2$	0	1640
10.0520506		vacuum	$^{14}C^{16}O_2$	0	1640
10.05393170		vacuum	$^{14}C^{18}O_2$	0	1640
10.0539317		vacuum	$^{14}C^{18}O_2$	0	1640
10.0562367		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.0579292		vacuum	$^{12}C^{16}O_2$	0	1640
10.05792925		vacuum	$^{12}C^{16}O_2$	0	1640
10.063422		vacuum	Ne	0	195,564
10.06535630		vacuum	$^{14}C^{16}O_2$	0	1640
10.0653563		vacuum	$^{14}C^{16}O_2$	0	1640
10.0656870		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.06579137		vacuum	$^{14}C^{18}O_2$	0	1640
10.0657914		vacuum	$^{14}C^{18}O_2$	0	1640
10.0666774		vacuum	$^{12}C^{16}O_2$	0	1640
10.06667739		vacuum	$^{12}C^{16}O_2$	0	1640
10.06779531		vacuum	$^{13}C^{18}O_2$	0	1640
10.0677953		vacuum	$^{13}C^{18}O_2$	0	1640
10.07006146		vacuum	$^{13}C^{16}O_2$	0	1640
10.0700615		vacuum	$^{13}C^{16}O_2$	0	1640
10.0752150		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.0757210		vacuum	$^{12}C^{16}O_2$	0	1640
10.07572104		vacuum	$^{12}C^{16}O_2$	0	1640
10.07791662		vacuum	$^{14}C^{18}O_2$	0	1640
10.0779166		vacuum	$^{14}C^{18}O_2$	0	1640
10.07900373		vacuum	$^{14}C^{16}O_2$	0	1640
10.0790037		vacuum	$^{14}C^{16}O_2$	0	1640
10.0848209		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.08505944		vacuum	$^{12}C^{16}O_2$	0	1640
10.0850599		vacuum	$^{12}C^{16}O_2$	0	1640
10.08632719		vacuum	$^{13}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.0863272		vacuum	$^{13}C^{18}O_2$	0	1640
10.08761317		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.087613		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.0880271		vacuum	$^{12}C^{18}O_2$	0	1640
10.08802714		vacuum	$^{12}C^{18}O_2$	0	1640
10.09008904		vacuum	$^{13}C^{16}O_2$	0	1640
10.0900890		vacuum	$^{13}C^{16}O_2$	0	1640
10.09030964		vacuum	$^{14}C^{18}O_2$	0	1640
10.0903096		vacuum	$^{14}C^{18}O_2$	0	1640
10.092287		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.09228700		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.09299597		vacuum	$^{14}C^{16}O_2$	0	1640
10.0929960		vacuum	$^{14}C^{16}O_2$	0	1640
10.0945049		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.0946919		vacuum	$^{12}C^{16}O_2$	0	1640
10.09469196		vacuum	$^{12}C^{16}O_2$	0	1640
10.095			HF	0	1735
10.0960365		vacuum	$^{12}C^{18}O_2$	0	1640
10.09603650		vacuum	$^{12}C^{18}O_2$	0	1640
10.097035		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.09703546		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.101859		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.10185856		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.10297260		vacuum	$^{14}C^{18}O_2$	0	1640
10.1029726		vacuum	$^{14}C^{18}O_2$	0	1640
10.1029726		vacuum	$^{14}C^{18}O_2$	0	1640
10.1042671		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.1043452		vacuum	$^{12}C^{18}O_2$	0	1640
10.10434524		vacuum	$^{12}C^{18}O_2$	0	1640
10.1046181		vacuum	$^{12}C^{16}O_2$	0	1640
10.10461811		vacuum	$^{12}C^{16}O_2$	0	1640
10.10512486		vacuum	$^{13}C^{18}O_2$	0	1640
10.1051249		vacuum	$^{13}C^{18}O_2$	0	1640
10.10675630		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.1067563		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.10733613		vacuum	$^{14}C^{16}O_2$	0	1640
10.1073361		vacuum	$^{14}C^{16}O_2$	0	1640
10.11047906		vacuum	$^{13}C^{16}O_2$	0	1640
10.1104791		vacuum	$^{13}C^{16}O_2$	0	1640
10.11172872		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1117287		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1129535		vacuum	$^{12}C^{18}O_2$	0	1640
10.11295349		vacuum	$^{12}C^{18}O_2$	0	1640
10.11386934		vacuum	$^{12}C^{17}O_2$	0	1640
10.1148375		vacuum	$^{12}C^{16}O_2$	0	1640
10.11483754		vacuum	$^{12}C^{16}O_2$	0	1640
10.11590763		vacuum	$^{14}C^{18}O_2$	0	1640
10.1159076		vacuum	$^{14}C^{18}O_2$	0	1640
10.11677584		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1167758		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.11882628		vacuum	$^{12}C^{17}O_2$	0	1640
10.1218615		vacuum	$^{12}C^{18}O_2$	0	1640
10.12186153		vacuum	$^{12}C^{18}O_2$	0	1640
10.12189771		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1218977		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.12202725		vacuum	$^{14}C^{16}O_2$	0	1640
10.1220273		vacuum	$^{14}C^{16}O_2$	0	1640
10.12385803		vacuum	$^{12}C^{17}O_2$	0	1640
10.12418933		vacuum	$^{13}C^{18}O_2$	0	1640
10.1241893		vacuum	$^{13}C^{18}O_2$	0	1640
10.1253500		vacuum	$^{12}C^{16}O_2$	0	1640
10.12535001		vacuum	$^{12}C^{16}O_2$	0	1640
10.12615		vacuum	$^{12}C^{16}O_2$	0	1640
10.12709436		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1270944		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.12896464		vacuum	$^{12}C^{17}O_2$	0	1640
10.12911687		vacuum	$^{14}C^{18}O_2$	0	1640
10.1291169		vacuum	$^{14}C^{18}O_2$	0	1640
10.1310697		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.13106971		vacuum	$^{12}C^{18}O_2$	0	1640
10.13123365		vacuum	$^{13}C^{16}O_2$	0	1640
10.1312337		vacuum	$^{13}C^{16}O_2$	0	1640
10.13236586		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1323659		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.13414614		vacuum	$^{12}C^{17}O_2$	0	1640
10.1361554		vacuum	$^{12}C^{16}O_2$	0	1640
10.13615541		vacuum	$^{12}C^{16}O_2$	0	1640
10.13624		vacuum	$^{12}C^{16}O_2$	0	1640
10.13771226		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1377123		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.13940260		vacuum	$^{12}C^{17}O_2$	0	1640
10.1405785		vacuum	$^{12}C^{18}O_2$	0	1640
10.14057849		vacuum	$^{12}C^{18}O_2$	0	1640
10.14260239		vacuum	$^{14}C^{18}O_2$	0	1640
10.1426024		vacuum	$^{14}C^{18}O_2$	0	1640
10.14313362		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1431336		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.14352161		vacuum	$^{13}C^{18}O_2$	0	1640
10.1435216		vacuum	$^{13}C^{18}O_2$	0	1640
10.14473407		vacuum	$^{12}C^{17}O_2$	0	1640
10.14662		vacuum	$^{12}C^{16}O_2$	0	1640
10.1472538		vacuum	$^{12}C^{16}O_2$	0	1640
10.14725379		vacuum	$^{12}C^{16}O_2$	0	1640
10.14863003		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1486300		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.15014061		vacuum	$^{12}C^{17}O_2$	0	1640
10.1503884		vacuum	$^{12}C^{18}O_2$	0	1640
10.15038843		vacuum	$^{12}C^{18}O_2$	0	1640
10.15235497		vacuum	$^{13}C^{16}O_2$	0	1640
10.1523550		vacuum	$^{13}C^{16}O_2$	0	1640
10.15420157		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1542016		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.15562232		vacuum	$^{12}C^{17}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.15636628		vacuum	$^{14}C^{18}O_2$	0	1640
10.1563663		vacuum	$^{14}C^{18}O_2$	0	1640
10.15730		vacuum	$^{12}C^{16}O_2$	0	1640
10.1586453		vacuum	$^{12}C^{16}O_2$	0	1640
10.15864527		vacuum	$^{12}C^{16}O_2$	0	1640
10.15984832		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1598483		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1605002		vacuum	$^{12}C^{18}O_2$	0	1640
10.16050021		vacuum	$^{12}C^{18}O_2$	0	1640
10.16117926		vacuum	$^{12}C^{17}O_2$	0	1640
10.16312266		vacuum	$^{13}C^{18}O_2$	0	1640
10.16557038		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1655704		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.16681153		vacuum	$^{12}C^{17}O_2$	0	1640
10.16826		vacuum	$^{12}C^{16}O_2$	0	1640
10.17033015		vacuum	$^{12}C^{16}O_2$	0	1640
10.1703302		vacuum	$^{12}C^{16}O_2$	0	1640
10.1709146		vacuum	$^{12}C^{18}O_2$	0	1640
10.17091460		vacuum	$^{12}C^{18}O_2$	0	1640
10.17136785		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1713679		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.17251922		vacuum	$^{12}C^{17}O_2$	0	1640
10.17384510		vacuum	$^{13}C^{16}O_2$	0	1640
10.1738452		vacuum	$^{13}C^{16}O_2$	0	1640
10.17724084		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1772409		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.17830245		vacuum	$^{12}C^{17}O_2$	0	1640
10.17951		vacuum	$^{12}C^{16}O_2$	0	1640
10.18163248		vacuum	$^{12}C^{18}O_2$	0	1640
10.1816325		vacuum	$^{12}C^{18}O_2$	0	1640
10.1823088		vacuum	$^{12}C^{16}O_2$	0	1640
10.18230883		vacuum	$^{12}C^{16}O_2$	0	1640
10.18299344		vacuum	$^{13}C^{18}O_2$	0	1640
10.18318948		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1831895		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.18416131		vacuum	$^{12}C^{17}O_2$	0	1640
10.18921389		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1892139		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.19009593		vacuum	$^{12}C^{17}O_2$	0	1640
10.19105		vacuum	$^{12}C^{16}O_2$	0	1640
10.1926548		vacuum	$^{12}C^{18}O_2$	0	1640
10.19265483		vacuum	$^{12}C^{18}O_2$	0	1640
10.1945818		vacuum	$^{12}C^{16}O_2$	0	1640
10.19458184		vacuum	$^{12}C^{16}O_2$	0	1640
10.19531420		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.1953142		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.19570615		vacuum	$^{13}C^{16}O_2$	0	1640
10.19610644		vacuum	$^{12}C^{17}O_2$	0	1640
10.20149054		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.2014906		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.202035		vacuum	$^{12}C^{18}O_2$	0	1640
10.20219297		vacuum	$^{12}C^{17}O_2$	0	1640
10.20288		vacuum	$^{12}C^{16}O_2$	0	1640
10.2039827		vacuum	$^{12}C^{18}O_2$	0	1640
10.20398273		vacuum	$^{12}C^{18}O_2$	0	1640
10.20676128		vacuum	$^{14}C^{18}O_2$	0	1640
10.2067613		vacuum	$^{14}C^{18}O_2$	0	1640
10.2071498		vacuum	$^{12}C^{16}O_2$	0	1640
10.20714981		vacuum	$^{12}C^{16}O_2$	0	1640
10.20774308		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.2077431		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.20835565		vacuum	$^{12}C^{17}O_2$	0	1640
10.213155		vacuum	$^{12}C^{18}O_2$	0	1640
10.21407196		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.2140720		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.21459464		vacuum	$^{12}C^{17}O_2$	0	1640
10.21501		vacuum	$^{12}C^{16}O_2$	0	1640
10.21561737		vacuum	$^{12}C^{18}O_2$	0	1640
10.2156174		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.21794020		vacuum	$^{13}C^{16}O_2$	0	1640
10.2200135		vacuum	$^{12}C^{16}O_2$	0	1640
10.22001353		vacuum	$^{12}C^{16}O_2$	0	1640
10.22047734		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.2204774		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.22091010		vacuum	$^{12}C^{17}O_2$	0	1640
10.22180274		vacuum	$^{14}C^{18}O_2$	0	1640
10.2218028		vacuum	$^{14}C^{18}O_2$	0	1640
10.224579		vacuum	$^{12}C^{18}O_2$	0	1640
10.22695939		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.2269594		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.22730217		vacuum	$^{12}C^{17}O_2$	0	1640
10.22742		vacuum	$^{12}C^{16}O_2$	0	1640
10.22756007		vacuum	$^{12}C^{18}O_2$	0	1640
10.2275601		vacuum	$^{12}C^{18}O_2$	0	1640
10.23317390		vacuum	$^{12}C^{16}O_2$	0	1640
10.2331739		vacuum	$^{12}C^{16}O_2$	0	1640
10.23377105		vacuum	$^{12}C^{17}O_2$	0	1640
10.236308		vacuum	$^{12}C^{18}O_2$	0	1640
10.23713350		vacuum	$^{14}C^{18}O_2$	0	1640
10.2371335		vacuum	$^{14}C^{18}O_2$	0	1640
10.2398122		vacuum	$^{12}C^{18}O_2$	0	1640
10.23981221		vacuum	$^{12}C^{18}O_2$	0	1640
10.24013		vacuum	$^{12}C^{16}O_2$	0	1640
10.24031689		vacuum	$^{12}C^{17}O_2$	0	1640
10.24054929		vacuum	$^{13}C^{16}O_2$	0	1640
10.24370004		vacuum	$^{14}C^{16}O_2$	0	1640
10.2437001		vacuum	$^{14}C^{16}O_2$	0	1640
10.24663193		vacuum	$^{12}C^{16}O_2$	0	1640
10.2466319		vacuum	$^{12}C^{16}O_2$	0	1640
10.24693989		vacuum	$^{12}C^{17}O_2$	0	1640
10.248345		vacuum	$^{12}C^{18}O_2$	0	1640
10.2523753		vacuum	$^{12}C^{18}O_2$	0	1640
10.25237530		vacuum	$^{12}C^{18}O_2$	0	1640
10.25275548		vacuum	$^{14}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.2527555		vacuum	$^{14}C^{18}O_2$	0	1640
10.25314		vacuum	$^{12}C^{16}O_2$	0	1640
10.25364024		vacuum	$^{12}C^{17}O_2$	0	1640
10.26038876		vacuum	$^{12}C^{16}O_2$	0	1640
10.2603888		vacuum	$^{12}C^{16}O_2$	0	1640
10.26041813		vacuum	$^{12}C^{17}O_2$	0	1640
10.260689		vacuum	$^{12}C^{18}O_2$	0	1640
10.26149432		vacuum	$^{14}C^{16}O_2$	0	1640
10.2614943		vacuum	$^{14}C^{16}O_2$	0	1640
10.26353546		vacuum	$^{13}C^{16}O_2$	0	1640
10.26525098		vacuum	$^{12}C^{18}O_2$	0	1640
10.2652510		vacuum	$^{12}C^{18}O_2$	0	1640
10.26643		vacuum	$^{12}C^{16}O_2$	0	1640
10.26727379		vacuum	$^{12}C^{17}O_2$	0	1640
10.26867054		vacuum	$^{14}C^{18}O_2$	0	1640
10.2686706		vacuum	$^{14}C^{18}O_2$	0	1640
10.273344		vacuum	$^{12}C^{18}O_2$	0	1640
10.27420741		vacuum	$^{12}C^{17}O_2$	0	1640
10.2744457		vacuum	$^{12}C^{16}O_2$	0	1640
10.27444568		vacuum	$^{12}C^{16}O_2$	0	1640
10.2784410		vacuum	$^{12}C^{18}O_2$	0	1640
10.27844096		vacuum	$^{12}C^{18}O_2$	0	1640
10.27966734		vacuum	$^{14}C^{16}O_2$	0	1640
10.2796674		vacuum	$^{14}C^{16}O_2$	0	1640
10.28002		vacuum	$^{12}C^{16}O_2$	0	1640
10.28121923		vacuum	$^{12}C^{17}O_2$	0	1640
10.28488054		vacuum	$^{14}C^{18}O_2$	0	1640
10.2848805		vacuum	$^{14}C^{18}O_2$	0	1640
10.28690074		vacuum	$^{13}C^{16}O_2$	0	1640
10.28880407		vacuum	$^{12}C^{16}O_2$	0	1640
10.2888041		vacuum	$^{12}C^{16}O_2$	0	1640
10.29016		vacuum	$^{14}NH_3$	0	1189,1210
10.29194709		vacuum	$^{12}C^{18}O_2$	0	1640
10.2919471		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
10.29391		vacuum	$^{12}C^{16}O_2$	0	1640
10.29822186		vacuum	$^{14}C^{16}O_2$	0	1640
10.2982219		vacuum	$^{14}C^{16}O_2$	0	1640
10.3013873		vacuum	$^{14}C^{18}O_2$	0	1640
10.30138731		vacuum	$^{14}C^{18}O_2$	0	1640
10.30243		vacuum	$^{12}C^{16}O_2$	0	1640
10.30346545		vacuum	$^{12}C^{16}O_2$	0	1640
10.3034655		vacuum	$^{12}C^{16}O_2$	0	1640
10.3057713		vacuum	$^{12}C^{18}O_2$	0	1640
10.30577132		vacuum	$^{12}C^{18}O_2$	0	1640
10.30810		vacuum	$^{12}C^{16}O_2$	0	1640
10.3083028		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.3156527		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.31616		vacuum	$^{12}C^{16}O_2$	0	1640
10.31716065		vacuum	$^{14}C^{16}O_2$	0	1640
10.3171607		vacuum	$^{14}C^{16}O_2$	0	1640
10.31819264		vacuum	$^{14}C^{18}O_2$	0	1640
10.3181927		vacuum	$^{14}C^{18}O_2$	0	1640
10.31843147		vacuum	$^{12}C^{16}O_2$	0	1640
10.3184315		vacuum	$^{12}C^{16}O_2$	0	1640
10.32258		vacuum	$^{12}C^{16}O_2$	0	1640
10.3230518		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.33018		vacuum	$^{12}C^{16}O_2$	0	1640
10.3305000		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.33370389		vacuum	$^{12}C^{16}O_2$	0	1640
10.3337039		vacuum	$^{12}C^{16}O_2$	0	1640
10.3352983		vacuum	$^{14}C^{18}O_2$	0	1640
10.33529832		vacuum	$^{14}C^{18}O_2$	0	1640
10.3364864		vacuum	$^{14}C^{16}O_2$	0	1640
10.33648641		vacuum	$^{14}C^{16}O_2$	0	1640
10.33737		vacuum	$^{12}C^{16}O_2$	0	1640
10.3376		vacuum	$^{14}NH_3$	0	1630,1189–92
10.3379976		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.338			NH_3	0	1189–90,1192
10.342			NH_3	0	1189–90,1192

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.3423		vacuum	$^{14}NH_3$	0	1630,1189–92
10.34451		vacuum	$^{12}C^{16}O_2$	0	1640
10.3455446		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.3492846		vacuum	$^{12}C^{16}O_2$	0	1640
10.34928462		vacuum	$^{12}C^{16}O_2$	0	1640
10.35246		vacuum	$^{12}C^{16}O_2$	0	1640
10.35270609		vacuum	$^{14}C^{18}O_2$	0	1640
10.3527061		vacuum	$^{14}C^{18}O_2$	0	1640
10.3531411		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.35620187		vacuum	$^{14}C^{16}O_2$	0	1640
10.3562019		vacuum	$^{14}C^{16}O_2$	0	1640
10.3589		vacuum	$^{14}NH_3$	0	1630,1189–92
10.359			NH_3	0	1189–90,1192
10.35912		vacuum	$^{12}C^{16}O_2$	0	1640
10.3607873		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.3651757		vacuum	$^{12}C^{16}O_2$	0	1640
10.36517570		vacuum	$^{12}C^{16}O_2$	0	1640
10.367			NH_3	0	1189–90,1192
10.3670		vacuum	$^{14}NH_3$	0	1630,1189–92
10.36785		vacuum	$^{12}C^{16}O_2$	0	1640
10.3684833		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.37041767		vacuum	$^{14}C^{18}O_2$	0	1640
10.3704177		vacuum	$^{14}C^{18}O_2$	0	1640
10.37404		vacuum	$^{12}C^{16}O_2$	0	1640
10.3762292		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.37630968		vacuum	$^{14}C^{16}O_2$	0	1640
10.3763097		vacuum	$^{14}C^{16}O_2$	0	1640
10.38137928		vacuum	$^{12}C^{16}O_2$	0	1640
10.3813793		vacuum	$^{12}C^{16}O_2$	0	1640
10.38355		vacuum	$^{12}C^{16}O_2$	0	1640
10.3840251		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.38758858		vacuum	$^{12}C^{18}O_2$	0	1640
10.3875886		vacuum	$^{12}C^{18}O_2$	0	1640
10.38843476		vacuum	$^{14}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.3884348		vacuum	$^{14}C^{18}O_2$	0	1640
10.38926		vacuum	$^{12}C^{16}O_2$	0	1640
10.3918711		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.3968125		vacuum	$^{14}C^{16}O_2$	0	1640
10.39681250		vacuum	$^{14}C^{16}O_2$	0	1640
10.39789766		vacuum	$^{12}C^{16}O_2$	0	1640
10.3978977		vacuum	$^{12}C^{16}O_2$	0	1640
10.39955		vacuum	$^{12}C^{16}O_2$	0	1640
10.3997674		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.40312		vacuum	O	0	235,1698
10.4035359		vacuum	$^{12}C^{18}O_2$	0	1640
10.40353594		vacuum	$^{12}C^{18}O_2$	0	1640
10.40477		vacuum	$^{12}C^{16}O_2$	0	1640
10.4067590		vacuum	$^{14}C^{18}O_2$	0	1640
10.40675902		vacuum	$^{14}C^{18}O_2$	0	1640
10.4077141		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.41105		vacuum	$^{14}N_2O$	0	1179
10.4157114		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.41587		vacuum	$^{12}C^{16}O_2$	0	1640
10.41771296		vacuum	$^{14}C^{16}O_2$	0	1640
10.4177130		vacuum	$^{14}C^{16}O_2$	0	1640
10.41887		vacuum	$^{14}N_2O$	0	1179
10.4198197		vacuum	$^{12}C^{18}O_2$	0	1640
10.41981973		vacuum	$^{12}C^{18}O_2$	0	1640
10.4232708		vacuum	$^{12}C^{16}O_2$	0	1640
10.42327084		vacuum	$^{12}C^{16}O_2$	0	1640
10.4237593		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.42539209		vacuum	$^{14}C^{18}O_2$	0	1640
10.4253921		vacuum	$^{14}C^{18}O_2$	0	1640
10.42674		vacuum	$^{14}N_2O$	0	1179
10.43178618		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.4317862		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.4318580		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.43466		vacuum	$^{14}N_2O$	0	1179
10.4364429		vacuum	$^{12}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.43644294		vacuum	$^{12}C^{18}O_2$	0	1640
10.43901367		vacuum	$^{14}C^{16}O_2$	0	1640
10.4390137		vacuum	$^{14}C^{16}O_2$	0	1640
10.4400076		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.4405152		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.44051521		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.44058717		vacuum	$^{12}C^{16}O_2$	0	1640
10.4405872		vacuum	$^{12}C^{16}O_2$	0	1640
10.441778		vacuum	$^{12}C^{18}O_2$	0	1640
10.44263		vacuum	$^{14}N_2O$	0	1179
10.4443356		vacuum	$^{14}C^{18}O_2$	0	1640
10.44433560		vacuum	$^{14}C^{18}O_2$	0	1640
10.44700792		vacuum	$^{12}C^{17}O_2$	0	1640
10.4482084		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.4493292		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.44932925		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.45065		vacuum	$^{14}N_2O$	0	1179
10.451505		vacuum	Tl	0	175
10.4534086		vacuum	$^{12}C^{18}O_2$	0	1640
10.45340865		vacuum	$^{12}C^{18}O_2$	0	1640
10.45581237		vacuum	$^{12}C^{17}O_2$	0	1640
10.4564603		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.45803		vacuum	$^{12}C^{16}O_2$	0	1640
10.4582274		vacuum	$^{12}C^{16}O_2$	0	1640
10.45822742		vacuum	$^{12}C^{16}O_2$	0	1640
10.45822869		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.4582287		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.458482		vacuum	$^{12}C^{18}O_2$	0	1640
10.4587136		vacuum	$^{14}N_2O$	0	1179
10.4607172		vacuum	$^{14}C^{16}O_2$	0	1640
10.46071722		vacuum	$^{14}C^{16}O_2$	0	1640
10.4635911		vacuum	$^{14}C^{18}O_2$	0	1640
10.46359112		vacuum	$^{14}C^{18}O_2$	0	1640
10.46470237		vacuum	$^{12}C^{17}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.4647637		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.46684		vacuum	$^{14}N_2O$	0	1179
10.46721398		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.4672140		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.47072009		vacuum	$^{12}C^{18}O_2$	0	1640
10.4707201		vacuum	$^{12}C^{18}O_2$	0	1640
10.4731186		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.47367833		vacuum	$^{12}C^{17}O_2$	0	1640
10.47391309		vacuum	$^{13}C^{18}O_2$	0	1640
10.47501		vacuum	$^{14}N_2O$	0	1179
10.47545		vacuum	$^{12}C^{16}O_2$	0	1640
10.475528		vacuum	$^{12}C^{18}O_2$	0	1640
10.4761945		vacuum	$^{12}C^{16}O_2$	0	1640
10.47619452		vacuum	$^{12}C^{16}O_2$	0	1640
10.4762855		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.47628554		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.4815252		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.48274069		vacuum	$^{12}C^{17}O_2$	0	1640
10.48282618		vacuum	$^{14}C^{16}O_2$	0	1640
10.4828262		vacuum	$^{14}C^{16}O_2$	0	1640
10.4831602		vacuum	$^{14}C^{18}O_2$	0	1640
10.48316022		vacuum	$^{14}C^{18}O_2$	0	1640
10.48322654		vacuum	$^{13}C^{18}O_2$	0	1640
10.48324		vacuum	$^{14}N_2O$	0	1179
10.4854438		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.48544381		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.4883806		vacuum	$^{12}C^{18}O_2$	0	1640
10.48838063		vacuum	$^{12}C^{18}O_2$	0	1640
10.4899836		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.49151		vacuum	$^{14}N_2O$	0	1179
10.49188988		vacuum	$^{12}C^{17}O_2$	0	1640
10.49282497		vacuum	$^{13}C^{18}O_2$	0	1640
10.492919		vacuum	$^{12}C^{18}O_2$	0	1640
10.49319		vacuum	$^{12}C^{16}O_2$	0	1640
10.4944915		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.49449153		vacuum	$^{12}C^{16}O_2$	0	1640
10.4946892		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.49468924		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.4984940		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.49983		vacuum	$^{14}N_2O$	0	1179
10.50112635		vacuum	$^{12}C^{17}O_2$	0	1640
10.50270827		vacuum	$^{13}C^{18}O_2$	0	1640
10.5027083		vacuum	$^{13}C^{18}O_2$	0	1640
10.5030444		vacuum	$^{14}C^{18}O_2$	0	1640
10.50304443		vacuum	$^{14}C^{18}O_2$	0	1640
10.5040223		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.50402230		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5053431		vacuum	$^{14}C^{16}O_2$	0	1640
10.50534311		vacuum	$^{14}C^{16}O_2$	0	1640
10.50639376		vacuum	$^{12}C^{18}O_2$	0	1640
10.5063938		vacuum	$^{12}C^{18}O_2$	0	1640
10.5067		vacuum	$^{14}NH_3$	0	1630,1189–92
10.507			NH_3	0	1189–90,1192
10.5070566		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.50821		vacuum	$^{14}N_2O$	0	1179
10.51045058		vacuum	$^{12}C^{17}O_2$	0	1640
10.510659		vacuum	$^{12}C^{18}O_2$	0	1640
10.51126		vacuum	$^{12}C^{16}O_2$	0	1640
10.5128764		vacuum	$^{13}C^{18}O_2$	0	1640
10.51287644		vacuum	$^{13}C^{18}O_2$	0	1640
10.51312168		vacuum	$^{12}C^{16}O_2$	0	1640
10.5131217		vacuum	$^{12}C^{16}O_2$	0	1640
10.51344346		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5134435		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5156714		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.51664		vacuum	$^{14}N_2O$	0	1179
10.51986303		vacuum	$^{12}C^{17}O_2$	0	1640
10.52295319		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5229532		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.52324528		vacuum	$^{14}C^{18}O_2$	0	1640
10.5232453		vacuum	$^{14}C^{18}O_2$	0	1640
10.52332959		vacuum	$^{13}C^{18}O_2$	0	1640
10.5233296		vacuum	$^{13}C^{18}O_2$	0	1640
10.5243388		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.5247631		vacuum	$^{12}C^{18}O_2$	0	1640
10.52476313		vacuum	$^{12}C^{18}O_2$	0	1640
10.52512		vacuum	$^{14}N_2O$	0	1179
10.52827056		vacuum	$^{14}C^{16}O_2$	0	1640
10.5282706		vacuum	$^{14}C^{16}O_2$	0	1640
10.528750		vacuum	$^{12}C^{18}O_2$	0	1640
10.52936417		vacuum	$^{12}C^{17}O_2$	0	1640
10.52965		vacuum	$^{12}C^{16}O_2$	0	1640
10.53		vacuum	C_2H_4	0	1194
10.5320883		vacuum	$^{12}C^{16}O_2$	0	1640
10.53208833		vacuum	$^{12}C^{16}O_2$	0	1640
10.53255199		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5325520		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5330588		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.53366		vacuum	$^{14}N_2O$	0	1179
10.53406795		vacuum	$^{13}C^{18}O_2$	0	1640
10.5340680		vacuum	$^{13}C^{18}O_2$	0	1640
10.53895450		vacuum	$^{12}C^{17}O_2$	0	1640
10.5418316		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.54224		vacuum	$^{14}N_2O$	0	1179
10.54224035		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5422404		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5434925		vacuum	$^{12}C^{18}O_2$	0	1640
10.54349252		vacuum	$^{12}C^{18}O_2$	0	1640
10.54376425		vacuum	$^{14}C^{18}O_2$	0	1640
10.5437643		vacuum	$^{14}C^{18}O_2$	0	1640
10.5450918		vacuum	$^{13}C^{18}O_2$	0	1640
10.54509183		vacuum	$^{13}C^{18}O_2$	0	1640
10.5459		vacuum	$^{14}NH_3$	0	1630,1189–92
10.54594		vacuum	$^{14}NH_3$	0	1189,1210

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.546			NH_3	0	1189–90,1192
10.547198		vacuum	$^{12}C^{18}O_2$	0	1640
10.54838		vacuum	$^{12}C^{16}O_2$	0	1640
10.54863453		vacuum	$^{12}C^{17}O_2$	0	1640
10.5506575		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.5508756		vacuum	$^{14}N_2O$	0	1179
10.5513950		vacuum	$^{12}C^{16}O_2$	0	1640
10.55139503		vacuum	$^{12}C^{16}O_2$	0	1640
10.5520188		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.55201880		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.55640169		vacuum	$^{13}C^{18}O_2$	0	1640
10.5564017		vacuum	$^{13}C^{18}O_2$	0	1640
10.55840475		vacuum	$^{12}C^{17}O_2$	0	1640
10.5595364		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.56188785		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5618879		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.56258585		vacuum	$^{12}C^{18}O_2$	0	1640
10.5625859		vacuum	$^{12}C^{18}O_2$	0	1640
10.56460279		vacuum	$^{14}C^{18}O_2$	0	1640
10.5646028		vacuum	$^{14}C^{18}O_2$	0	1640
10.566004		vacuum	$^{12}C^{18}O_2$	0	1640
10.56744		vacuum	$^{12}C^{16}O_2$	0	1640
10.56799805		vacuum	$^{13}C^{18}O_2$	0	1640
10.5679981		vacuum	$^{13}C^{18}O_2$	0	1640
10.56826570		vacuum	$^{12}C^{17}O_2$	0	1640
10.56830		vacuum	$^{14}N_2O$	0	1179
10.5684688		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.5710454		vacuum	$^{12}C^{16}O_2$	0	1640
10.57104545		vacuum	$^{12}C^{16}O_2$	0	1640
10.5718480		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.57184804		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5758593		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.57710		vacuum	$^{14}N_2O$	0	1179
10.5774546		vacuum	$^{14}N_2O$	0	1177–8,1331–5

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.57821790		vacuum	$^{12}C^{17}O_2$	0	1640
10.57988156		vacuum	$^{13}C^{18}O_2$	0	1640
10.5798816		vacuum	$^{13}C^{18}O_2$	0	1640
10.5818999		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.58189990		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5820472		vacuum	$^{12}C^{18}O_2$	0	1640
10.58204723		vacuum	$^{12}C^{18}O_2$	0	1640
10.58205091		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.585175		vacuum	$^{12}C^{18}O_2$	0	1640
10.58576235		vacuum	$^{14}C^{18}O_2$	0	1640
10.5857624		vacuum	$^{14}C^{18}O_2$	0	1640
10.58595		vacuum	$^{14}N_2O$	0	1179
10.5864941		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.58684		vacuum	$^{12}C^{16}O_2$	0	1640
10.58826190		vacuum	$^{12}C^{17}O_2$	0	1640
10.58831203		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.5910255		vacuum	$^{12}C^{16}O_2$	0	1640
10.59104346		vacuum	$^{12}C^{16}O_2$	0	1640
10.5910435		vacuum	$^{12}C^{16}O_2$	0	1640
10.59204399		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.5920440		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.59205299		vacuum	$^{13}C^{18}O_2$	0	1640
10.5920530		vacuum	$^{13}C^{18}O_2$	0	1640
10.59464276		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.59485		vacuum	$^{14}N_2O$	0	1179
10.5955875		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.59839824		vacuum	$^{12}C^{17}O_2$	0	1640
10.6			$^{14}NH_3$	0	1189,1210
10.6006284		vacuum	$^{13}C^{16}O_2$	0	1640
10.60062840		vacuum	$^{13}C^{16}O_2$	0	1640
10.60104316		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.60188087		vacuum	$^{12}C^{18}O_2$	0	1640
10.6018809		vacuum	$^{12}C^{18}O_2$	0	1640
10.60228087		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.6022809		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.60380		vacuum	$^{14}N_2O$	0	1179
10.60451318		vacuum	$^{13}C^{18}O_2$	0	1640
10.6045132		vacuum	$^{13}C^{18}O_2$	0	1640
10.604713		vacuum	$^{12}C^{18}O_2$	0	1640
10.6047350		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.60658		vacuum	$^{12}C^{16}O_2$	0	1640
10.6072443		vacuum	$^{14}C^{18}O_2$	0	1640
10.60724433		vacuum	$^{14}C^{18}O_2$	0	1640
10.60751330		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.60862750		vacuum	$^{12}C^{17}O_2$	0	1640
10.61139307		vacuum	$^{12}C^{16}O_2$	0	1640
10.6113931		vacuum	$^{12}C^{16}O_2$	0	1640
10.6126111		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.61261113		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.61281		vacuum	$^{14}N_2O$	0	1179
10.6131040		vacuum	$^{13}C^{16}O_2$	0	1640
10.61310404		vacuum	$^{13}C^{16}O_2$	0	1640
10.6139368		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.61405328		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.6172631		vacuum	$^{13}C^{18}O_2$	0	1640
10.61726312		vacuum	$^{13}C^{18}O_2$	0	1640
10.61895025		vacuum	$^{12}C^{17}O_2$	0	1640
10.62066319		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.62187		vacuum	$^{14}N_2O$	0	1179
10.62209118		vacuum	$^{12}C^{18}O_2$	0	1640
10.6220912		vacuum	$^{12}C^{18}O_2$	0	1640
10.62303534		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.6230354		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.6231929		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.624624		vacuum	$^{12}C^{18}O_2$	0	1640
10.62584936		vacuum	$^{13}C^{16}O_2$	0	1640
10.6258494		vacuum	$^{13}C^{16}O_2$	0	1640
10.62666		vacuum	$^{12}C^{16}O_2$	0	1640
10.62734311		vacuum	$^{13}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.6290501		vacuum	$^{14}C^{18}O_2$	0	1640
10.62905014		vacuum	$^{14}C^{18}O_2$	0	1640
10.62936707		vacuum	$^{12}C^{17}O_2$	0	1640
10.63030388		vacuum	$^{13}C^{18}O_2$	0	1640
10.6303039		vacuum	$^{13}C^{18}O_2$	0	1640
10.63209848		vacuum	$^{12}C^{16}O_2$	0	1640
10.6320985		vacuum	$^{12}C^{16}O_2$	0	1640
10.6325038		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.6335541		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.63355411		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.63409317		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.6388646		vacuum	$^{13}C^{16}O_2$	0	1640
10.63886462		vacuum	$^{13}C^{16}O_2$	0	1640
10.63987856		vacuum	$^{12}C^{17}O_2$	0	1640
10.64091348		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.6418694		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.6426827		vacuum	$^{12}C^{18}O_2$	0	1640
10.64268271		vacuum	$^{12}C^{18}O_2$	0	1640
10.64363665		vacuum	$^{13}C^{18}O_2$	0	1640
10.6436367		vacuum	$^{13}C^{18}O_2$	0	1640
10.64416804		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.6441681		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.64710		vacuum	$^{12}C^{16}O_2$	0	1640
10.64780415		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.65048533		vacuum	$^{12}C^{17}O_2$	0	1640
10.6511811		vacuum	$^{14}C^{18}O_2$	0	1640
10.65118113		vacuum	$^{14}C^{18}O_2$	0	1640
10.65215015		vacuum	$^{13}C^{16}O_2$	0	1640
10.6521502		vacuum	$^{13}C^{16}O_2$	0	1640
10.65316406		vacuum	$^{12}C^{16}O_2$	0	1640
10.6531641		vacuum	$^{12}C^{16}O_2$	0	1640
10.653167		vacuum	$^{13}C^{16}O_2$	0	1640
10.65476531		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.65487776		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.6548778		vacuum	$^{12}C^{16}O^{18}O$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.6572627		vacuum	$^{13}C^{18}O_2$	0	1640
10.65726273		vacuum	$^{13}C^{18}O_2$	0	1640
10.6607661		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.66118800		vacuum	$^{12}C^{17}O_2$	0	1640
10.66179709		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.66366019		vacuum	$^{12}C^{18}O_2$	0	1640
10.6636602		vacuum	$^{12}C^{18}O_2$	0	1640
10.6656839		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.66568390		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.6657064		vacuum	$^{13}C^{16}O_2$	0	1640
10.66570643		vacuum	$^{13}C^{16}O_2$	0	1640
10.666054		vacuum	$^{13}C^{16}O_2$	0	1640
10.66789		vacuum	$^{12}C^{16}O_2$	0	1640
10.66889965		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.6702974		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.6711835		vacuum	$^{13}C^{18}O_2$	0	1640
10.67118352		vacuum	$^{13}C^{18}O_2$	0	1640
10.67198720		vacuum	$^{12}C^{17}O_2$	0	1640
10.67459436		vacuum	$^{12}C^{16}O_2$	0	1640
10.6745944		vacuum	$^{12}C^{16}O_2$	0	1640
10.67607312		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.6765871		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.67658710		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.679209		vacuum	$^{13}C^{16}O_2$	0	1640
10.6795340		vacuum	$^{13}C^{16}O_2$	0	1640
10.67953401		vacuum	$^{13}C^{16}O_2$	0	1640
10.6798844		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.68288358		vacuum	$^{12}C^{17}O_2$	0	1640
10.68331766		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.6850285		vacuum	$^{12}C^{18}O_2$	0	1640
10.68502852		vacuum	$^{12}C^{18}O_2$	0	1640
10.6854005		vacuum	$^{13}C^{18}O_2$	0	1640
10.68540053		vacuum	$^{13}C^{18}O_2$	0	1640
10.68565		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.6875880		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.68758802		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.68904		vacuum	$^{12}C^{16}O_2$	0	1640
10.6895273		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.69063344		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.692633		vacuum	$^{13}C^{16}O_2$	0	1640
10.69363357		vacuum	$^{13}C^{16}O_2$	0	1640
10.6936336		vacuum	$^{13}C^{16}O_2$	0	1640
10.69387779		vacuum	$^{12}C^{17}O_2$	0	1640
10.6963941		vacuum	$^{12}C^{16}O_2$	0	1640
10.69639414		vacuum	$^{12}C^{16}O_2$	0	1640
10.69802061		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.6986873		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.69868734		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.6992262		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.6999154		vacuum	$^{13}C^{18}O_2$	0	1640
10.69991540		vacuum	$^{13}C^{18}O_2$	0	1640
10.7			$^{14}NH_3$	0	1189,1210
10.70497050		vacuum	$^{12}C^{17}O_2$	0	1640
10.70547937		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.706327		vacuum	$^{13}C^{16}O_2$	0	1640
10.70652		vacuum	$^{12}C^{16}O_2$	0	1640
10.70679276		vacuum	$^{12}C^{18}O_2$	0	1640
10.7067928		vacuum	$^{12}C^{18}O_2$	0	1640
10.70800589		vacuum	$^{13}C^{16}O_2$	0	1640
10.7080059		vacuum	$^{13}C^{16}O_2$	0	1640
10.7089814		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.7098857		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.70988572		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.71055		vacuum	$^{12}C^{16}O_2$	0	1640
10.71300988		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.71472987		vacuum	$^{13}C^{18}O_2$	0	1640
10.7147299		vacuum	$^{13}C^{18}O_2$	0	1640
10.718			NH_3	0	1189–90,1192
10.7182		vacuum	$^{14}NH_3$	0	1630,1189–92

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.7185683		vacuum	$^{12}C^{16}O_2$	0	1640
10.71856831		vacuum	$^{12}C^{16}O_2$	0	1640
10.7187931		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.720291		vacuum	$^{13}C^{16}O_2$	0	1640
10.72118388		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.721184		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.7226518		vacuum	$^{13}C^{16}O_2$	0	1640
10.72265182		vacuum	$^{13}C^{16}O_2$	0	1640
10.72775		vacuum	$^{12}C^{16}O_2$	0	1640
10.7286616		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.72895816		vacuum	$^{12}C^{18}O_2$	0	1640
10.7289582		vacuum	$^{12}C^{18}O_2$	0	1640
10.732			NH_3	0	1189–90,1192
10.7322		vacuum	$^{14}NH_3$	0	1190
10.73243		vacuum	$^{12}C^{16}O_2$	0	1640
10.732582		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.73258251		vacuum	$^{12}C^{16}O^{18}O$	0	1640
10.734525		vacuum	$^{13}C^{16}O_2$	0	1640
10.73488		vacuum	$^{14}N_2O$	0	1179
10.737			NH_3	0	1189–90,1192
10.73729		vacuum	$^{14}NH_3$	0	1630,1189–92
10.73757236		vacuum	$^{13}C^{16}O_2$	0	1640
10.7375724		vacuum	$^{13}C^{16}O_2$	0	1640
10.7385869		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.7411220		vacuum	$^{12}C^{16}O_2$	0	1640
10.74112203		vacuum	$^{12}C^{16}O_2$	0	1640
10.74394		vacuum	$^{14}NH_3$	0	1190
10.744			NH_3	0	1189,1191–92
10.74466		vacuum	$^{14}N_2O$	0	1179
10.7485694		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.749031		vacuum	$^{13}C^{16}O_2$	0	1640
10.74934		vacuum	$^{12}C^{16}O_2$	0	1640
10.75153017		vacuum	$^{12}C^{18}O_2$	0	1640
10.7515302		vacuum	$^{12}C^{18}O_2$	0	1640
10.75276857		vacuum	$^{13}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.7527686		vacuum	$^{13}C^{16}O_2$	0	1640
10.75387		vacuum	$^{14}NH_3$	0	1190
10.754			NH_3	0	1189–90,1192
10.75449		vacuum	$^{14}N_2O$	0	1179
10.75468		vacuum	$^{12}C^{16}O_2$	0	1640
10.7586093		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.762			NH_3	0	1189–90,1192
10.7624		vacuum	$^{14}NH_3$	0	1630,1189–92
10.763809		vacuum	$^{13}C^{16}O_2$	0	1640
10.764060534		vacuum	$^{12}C^{16}O_2$	0	1640
10.7640606		vacuum	$^{12}C^{16}O_2$	0	1640
10.7643831		vacuum	$^{14}N_2O$	0	1179
10.767			NH_3	0	1189–90,1192
10.76710		vacuum	$^{14}NH_3$	0	1190
10.7682416		vacuum	$^{13}C^{16}O_2$	0	1640
10.76824164		vacuum	$^{13}C^{16}O_2$	0	1640
10.7687068		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.77130		vacuum	$^{12}C^{16}O_2$	0	1640
10.77433		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.7745144		vacuum	$^{12}C^{18}O_2$	0	1640
10.77451441		vacuum	$^{12}C^{18}O_2$	0	1640
10.77731		vacuum	$^{12}C^{16}O_2$	0	1640
10.778861		vacuum	$^{13}C^{16}O_2$	0	1640
10.7788621		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.7837		vacuum	$^{14}NH_3$	0	1630,1189–92
10.78399284		vacuum	$^{13}C^{16}O_2$	0	1640
10.7839929		vacuum	$^{13}C^{16}O_2$	0	1640
10.784			NH_3	0	1189,1191–92
10.78434		vacuum	$^{14}N_2O$	0	1179
10.7873896		vacuum	$^{12}C^{16}O_2$	0	1640
10.78738965		vacuum	$^{12}C^{16}O_2$	0	1640
10.789			NH_3	0	1189,1191–92
10.789		vacuum	$^{15}NH_3$	0	1635,1191–92
10.7890756		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.7890778		vacuum	$^{12}C^{16}O_2$	0	1640
10.79362		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.794187		vacuum	$^{13}C^{16}O_2$	0	1640
10.79440		vacuum	$^{14}N_2O$	0	1179
10.7979167		vacuum	$^{12}C^{18}O_2$	0	1640
10.79791670		vacuum	$^{12}C^{18}O_2$	0	1640
10.7993473		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.80002356		vacuum	$^{13}C^{16}O_2$	0	1640
10.8000236		vacuum	$^{13}C^{16}O_2$	0	1640
10.80032		vacuum	$^{12}C^{16}O_2$	0	1640
10.80452		vacuum	$^{14}N_2O$	0	1179
10.8096777		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.809789		vacuum	$^{13}C^{16}O_2$	0	1640
10.81111488		vacuum	$^{12}C^{16}O_2$	0	1640
10.8111149		vacuum	$^{12}C^{16}O_2$	0	1640
10.81470		vacuum	$^{14}N_2O$	0	1179
10.81632		vacuum	$^{12}C^{16}O_2$	0	1640
10.81633528		vacuum	$^{13}C^{16}O_2$	0	1640
10.8163353		vacuum	$^{13}C^{16}O_2$	0	1640
10.81846594		vacuum	$^{13}C^{18}O_2$	0	1640
10.820067		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.82372		vacuum	$^{12}C^{16}O_2$	0	1640
10.82494		vacuum	$^{14}N_2O$	0	1179
10.825668		vacuum	$^{13}C^{16}O_2$	0	1640
10.830515		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.83292957		vacuum	$^{13}C^{16}O_2$	0	1640
10.8329296		vacuum	$^{13}C^{16}O_2$	0	1640
10.8352265		vacuum	$^{14}N_2O$	0	1179
10.8352423		vacuum	$^{12}C^{16}O_2$	0	1640
10.83524231		vacuum	$^{12}C^{16}O_2$	0	1640
10.8355947		vacuum	$^{13}C^{18}O_2$	0	1640
10.83559471		vacuum	$^{13}C^{18}O_2$	0	1640
10.83941		vacuum	$^{12}C^{16}O_2$	0	1640
10.841023		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.841826		vacuum	$^{13}C^{16}O_2$	0	1640
10.84559		vacuum	$^{14}N_2O$	0	1179
10.84751		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.8498081		vacuum	$^{13}C^{16}O_2$	0	1640
10.84980812		vacuum	$^{13}C^{16}O_2$	0	1640
10.851590		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.8530426		vacuum	$^{13}C^{18}O_2$	0	1640
10.85304265		vacuum	$^{13}C^{18}O_2$	0	1640
10.8548		vacuum	$^{14}NH_3$	0	1630,1189–92
10.855			NH_3	0	1189–90,1192
10.85600		vacuum	$^{14}N_2O$	0	1179
10.858263		vacuum	$^{13}C^{16}O_2$	0	1640
10.85977817		vacuum	$^{12}C^{16}O_2$	0	1640
10.8597782		vacuum	$^{12}C^{16}O_2$	0	1640
10.862216		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.86647		vacuum	$^{14}N_2O$	0	1179
10.8669727		vacuum	$^{13}C^{16}O_2$	0	1640
10.86697272		vacuum	$^{13}C^{16}O_2$	0	1640
10.8708127		vacuum	$^{13}C^{18}O_2$	0	1640
10.87081266		vacuum	$^{13}C^{18}O_2$	0	1640
10.87171		vacuum	$^{12}C^{16}O_2$	0	1640
10.872903		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.874982		vacuum	$^{13}C^{16}O_2$	0	1640
10.87700		vacuum	$^{14}N_2O$	0	1179
10.883651		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.88442525		vacuum	$^{13}C^{16}O_2$	0	1640
10.8844252		vacuum	$^{13}C^{16}O_2$	0	1640
10.8847289		vacuum	$^{12}C^{16}O_2$	0	1640
10.88472894		vacuum	$^{12}C^{16}O_2$	0	1640
10.88759		vacuum	$^{14}N_2O$	0	1179
10.88890777		vacuum	$^{13}C^{18}O_2$	0	1640
10.8889078		vacuum	$^{13}C^{18}O_2$	0	1640
10.8901847		vacuum	$^{12}C^{16}O_2$	0	1640
10.891985		vacuum	$^{13}C^{16}O_2$	0	1640
10.89446		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.89631		vacuum	$^{12}C^{16}O_2$	0	1640
10.89824		vacuum	$^{14}N_2O$	0	1179
10.900267		vacuum	$^{14}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.900268		vacuum	$^{14}C^{18}O_2$	0	1640
10.9009647		vacuum	$^{12}C^{16}O_2$	0	1640
10.90216771		vacuum	$^{13}C^{16}O_2$	0	1640
10.9021677		vacuum	$^{13}C^{16}O_2$	0	1640
10.90533		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.90733115		vacuum	$^{13}C^{18}O_2$	0	1640
10.9073312		vacuum	$^{13}C^{18}O_2$	0	1640
10.90895		vacuum	$^{14}N_2O$	0	1179
10.909272		vacuum	$^{13}C^{16}O_2$	0	1640
10.9101013		vacuum	$^{12}C^{16}O_2$	0	1640
10.91010135		vacuum	$^{12}C^{16}O_2$	0	1640
10.911233		vacuum	$^{14}C^{18}O_2$	0	1640
10.9112334		vacuum	$^{14}C^{18}O_2$	0	1640
10.91626		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.91972		vacuum	$^{14}N_2O$	0	1179
10.92133		vacuum	$^{12}C^{16}O_2$	0	1640
10.9214691		vacuum	$^{12}C^{16}O_2$	0	1640
10.9224632		vacuum	$^{14}C^{18}O_2$	0	1640
10.922463		vacuum	$^{14}C^{18}O_2$	0	1640
10.92527598		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.92608610		vacuum	$^{13}C^{18}O_2$	0	1640
10.9260861		vacuum	$^{13}C^{18}O_2$	0	1640
10.92725		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.93055		vacuum	$^{14}N_2O$	0	1179
10.9307080		vacuum	$^{12}C^{16}O_2$	0	1640
10.9337		air	Kr	0	1498
10.9339572		vacuum	$^{14}C^{18}O_2$	0	1640
10.933957		vacuum	$^{14}C^{18}O_2$	0	1640
10.93476009		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.9359024		vacuum	$^{12}C^{16}O_2$	0	1640
10.93590238		vacuum	$^{12}C^{16}O_2$	0	1640
10.93830		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.94144		vacuum	$^{14}N_2O$	0	1179
10.9423513		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.94432366		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.94517607		vacuum	$^{13}C^{18}O_2$	0	1640
10.9451761		vacuum	$^{13}C^{18}O_2$	0	1640
10.9457153		vacuum	$^{14}C^{18}O_2$	0	1640
10.945715		vacuum	$^{14}C^{18}O_2$	0	1640
10.94676		vacuum	$^{12}C^{16}O_2$	0	1640
10.94942		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.9514868		vacuum	$^{12}C^{16}O_2$	0	1640
10.95240		vacuum	$^{14}N_2O$	0	1179
10.95396711		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.9577377		vacuum	$^{14}C^{18}O_2$	0	1640
10.957738		vacuum	$^{14}C^{18}O_2$	0	1640
10.96059		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.9621393		vacuum	$^{12}C^{16}O_2$	0	1640
10.96213927		vacuum	$^{12}C^{16}O_2$	0	1640
10.96341		vacuum	$^{14}N_2O$	0	1179
10.96369084		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.96460463		vacuum	$^{13}C^{18}O_2$	0	1640
10.9646046		vacuum	$^{13}C^{18}O_2$	0	1640
10.970024		vacuum	$^{14}C^{18}O_2$	0	1640
10.9700243		vacuum	$^{14}C^{18}O_2$	0	1640
10.97183		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.9726149		vacuum	$^{12}C^{16}O_2$	0	1640
10.97349525		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.97449		vacuum	$^{14}N_2O$	0	1179
10.98		vacuum	C_2H_4	0	1194
10.981641		vacuum	Ne	0	195,564,570
10.982576		vacuum	$^{14}C^{18}O_2$	0	1640
10.9825756		vacuum	$^{14}C^{18}O_2$	0	1640
10.98314		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.98338078		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.98437552		vacuum	$^{13}C^{18}O_2$	0	1640
10.9843755		vacuum	$^{13}C^{18}O_2$	0	1640
10.9852663		vacuum	$^{12}C^{16}O_2$	0	1640
10.98563		vacuum	$^{14}N_2O$	0	1179

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
10.98565546		vacuum	$^{13}C^{16}O_2$	0	1640
10.9856555		vacuum	$^{13}C^{16}O_2$	0	1640
10.9888196		vacuum	$^{12}C^{16}O_2$	0	1640
10.98881958		vacuum	$^{12}C^{16}O_2$	0	1640
10.99334786		vacuum	$^{13}C^{16}O^{18}O$	0	1640
10.994		vacuum	$^{12}C^{16}O_2$	0	1640
10.99450		vacuum	$^{14}N_2O$	0	1177–8,1331–5
10.9953918		vacuum	$^{14}C^{18}O_2$	0	1640
10.995392		vacuum	$^{14}C^{18}O_2$	0	1640
11.00339692		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.00449265		vacuum	$^{13}C^{18}O_2$	0	1640
11.0044927		vacuum	$^{13}C^{18}O_2$	0	1640
11.00503296		vacuum	$^{13}C^{16}O_2$	0	1640
11.0050330		vacuum	$^{13}C^{16}O_2$	0	1640
11.00593		vacuum	$^{14}N_2O$	0	1177–8,1331–5
11.0073078		vacuum	$^{12}C^{16}O_2$	0	1640
11.0084736		vacuum	$^{14}C^{18}O_2$	0	1640
11.008474		vacuum	$^{14}C^{18}O_2$	0	1640
11.009542		vacuum	$^{13}C^{16}O_2$	0	1640
11.01080		vacuum	$^{14}NH_3$	0	1190
11.011			NH_3	0	1189,1191–92
11.0111		vacuum	$^{14}NH_3$	0	1181
11.01352843		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.0159341		vacuum	$^{12}C^{16}O_2$	0	1640
11.0159511		vacuum	$^{12}C^{16}O_2$	0	1640
11.01595112		vacuum	$^{12}C^{16}O_2$	0	1640
11.01743		vacuum	$^{14}N_2O$	0	1177–8,1331–5
11.021816		vacuum	$^{14}C^{18}O_2$	0	1640
11.021822		vacuum	$^{14}C^{18}O_2$	0	1640
11.02374283		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.02471598		vacuum	$^{13}C^{16}O_2$	0	1640
11.0247160		vacuum	$^{13}C^{16}O_2$	0	1640
11.02496004		vacuum	$^{13}C^{18}O_2$	0	1640
11.0249601		vacuum	$^{13}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.028734		vacuum	$^{13}C^{16}O_2$	0	1640
11.02898		vacuum	$^{14}N_2O$	0	1177–8,1331–5
11.0297448		vacuum	$^{12}C^{16}O_2$	0	1640
11.03404059		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.035436		vacuum	$^{14}C^{18}O_2$	0	1640
11.0354362		vacuum	$^{14}C^{18}O_2$	0	1640
11.039		vacuum	$^{12}C^{16}O_2$	0	1640
11.04061		vacuum	$^{14}N_2O$	0	1177–8,1331–5
11.0415		air	Ar	0	1498
11.043542		vacuum	$^{12}C^{16}O_2$	0	1640
11.04354201		vacuum	$^{12}C^{16}O_2$	0	1640
11.04442221		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.04470736		vacuum	$^{13}C^{16}O_2$	0	1640
11.0447074		vacuum	$^{13}C^{16}O_2$	0	1640
11.0457819		vacuum	$^{13}C^{18}O_2$	0	1640
11.04578190		vacuum	$^{13}C^{18}O_2$	0	1640
11.048228		vacuum	$^{13}C^{16}O_2$	0	1640
11.0493184		vacuum	$^{14}C^{18}O_2$	0	1640
11.049319		vacuum	$^{14}C^{18}O_2$	0	1640
11.053		vacuum	$^{12}C^{16}O_2$	0	1640
11.05488816		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.061		vacuum	$^{12}C^{16}O_2$	0	1640
11.063469		vacuum	$^{14}C^{18}O_2$	0	1640
11.0634691		vacuum	$^{14}C^{18}O_2$	0	1640
11.06501005		vacuum	$^{13}C^{16}O_2$	0	1640
11.0650101		vacuum	$^{13}C^{16}O_2$	0	1640
11.06543894		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.06696259		vacuum	$^{13}C^{18}O_2$	0	1640
11.0669626		vacuum	$^{13}C^{18}O_2$	0	1640
11.068028		vacuum	$^{13}C^{16}O_2$	0	1640
11.07160069		vacuum	$^{12}C^{16}O_2$	0	1640
11.071601		vacuum	$^{12}C^{16}O_2$	0	1640
11.076		vacuum	$^{12}C^{16}O_2$	0	1640
11.07607506		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.0778893		vacuum	$^{14}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.077890		vacuum	$^{14}C^{18}O_2$	0	1640
11.0836301		vacuum	$^{12}C^{16}O_2$	0	1640
11.0856271		vacuum	$^{13}C^{16}O_2$	0	1640
11.08562711		vacuum	$^{13}C^{16}O_2$	0	1640
11.08679705		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.088135		vacuum	$^{13}C^{16}O_2$	0	1640
11.08850666		vacuum	$^{13}C^{18}O_2$	0	1640
11.0885067		vacuum	$^{13}C^{18}O_2$	0	1640
11.0925799		vacuum	$^{14}C^{18}O_2$	0	1640
11.092580		vacuum	$^{14}C^{18}O_2$	0	1640
11.09760542		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.100		vacuum	$^{12}C^{16}O_2$	0	1640
11.100135		vacuum	$^{12}C^{16}O_2$	0	1640
11.100135		vacuum	$^{12}C^{16}O_2$	0	1640
11.10656174		vacuum	$^{13}C^{16}O_2$	0	1640
11.1065618		vacuum	$^{13}C^{16}O_2$	0	1640
11.106994		vacuum	$^{14}C^{16}O_2$	0	1640
11.106994		vacuum	$^{14}C^{16}O_2$	0	1640
11.107		vacuum	$^{12}C^{16}O_2$	0	1640
11.1075423		vacuum	$^{14}C^{18}O_2$	0	1640
11.107543		vacuum	$^{14}C^{18}O_2$	0	1640
11.10850073		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.108552		vacuum	$^{13}C^{16}O_2$	0	1640
11.11041879		vacuum	$^{13}C^{18}O_2$	0	1640
11.1104188		vacuum	$^{13}C^{18}O_2$	0	1640
11.11948352		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.119855		vacuum	$^{14}C^{16}O_2$	0	1640
11.120968		vacuum	$^{14}C^{16}O_2$	0	1640
11.1227776		vacuum	$^{14}C^{18}O_2$	0	1640
11.122778		vacuum	$^{14}C^{18}O_2$	0	1640
11.124		vacuum	$^{12}C^{16}O_2$	0	1640
11.12781727		vacuum	$^{13}C^{16}O_2$	0	1640
11.1278173		vacuum	$^{13}C^{16}O_2$	0	1640
11.129155		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.129155		vacuum	$^{12}C^{16}O_2$	0	1640
11.129283		vacuum	$^{13}C^{16}O_2$	0	1640
11.13055436		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.131		vacuum	$^{12}C^{16}O_2$	0	1640
11.13270389		vacuum	$^{13}C^{18}O_2$	0	1640
11.1327039		vacuum	$^{13}C^{18}O_2$	0	1640
11.1351978		vacuum	$^{14}C^{16}O_2$	0	1640
11.135198		vacuum	$^{14}C^{16}O_2$	0	1640
11.1382873		vacuum	$^{14}C^{18}O_2$	0	1640
11.138288		vacuum	$^{14}C^{18}O_2$	0	1640
11.1417138		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.148		vacuum	$^{12}C^{16}O_2$	0	1640
11.14939715		vacuum	$^{13}C^{16}O_2$	0	1640
11.1493972		vacuum	$^{13}C^{16}O_2$	0	1640
11.1496835		vacuum	$^{14}C^{16}O_2$	0	1640
11.149684		vacuum	$^{14}C^{16}O_2$	0	1640
11.150331		vacuum	$^{13}C^{16}O_2$	0	1640
11.15296216		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.1540728		vacuum	$^{14}C^{18}O_2$	0	1640
11.154073		vacuum	$^{14}C^{18}O_2$	0	1640
11.1553670		vacuum	$^{13}C^{18}O_2$	0	1640
11.15536702		vacuum	$^{13}C^{18}O_2$	0	1640
11.15867		vacuum	$^{12}C^{16}O_2$	0	1640
11.158670		vacuum	$^{12}C^{16}O_2$	0	1640
11.1643009		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.164426		vacuum	$^{14}C^{16}O_2$	0	1640
11.1644260		vacuum	$^{14}C^{16}O_2$	0	1640
11.17130499		vacuum	$^{13}C^{16}O_2$	0	1640
11.1713050		vacuum	$^{13}C^{16}O_2$	0	1640
11.171700		vacuum	$^{13}C^{16}O_2$	0	1640
11.1757298		vacuum	$^{13}C^{16}O^{18}O$	0	1640
11.1784134		vacuum	$^{13}C^{18}O_2$	0	1640
11.17841341		vacuum	$^{13}C^{18}O_2$	0	1640
11.1794258		vacuum	$^{14}C^{16}O_2$	0	1640
11.179426		vacuum	$^{14}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.18868		vacuum	$^{12}C^{16}O_2$	0	1640
11.188680		vacuum	$^{12}C^{16}O_2$	0	1640
11.193392		vacuum	$^{13}C^{16}O_2$	0	1640
11.1935445		vacuum	$^{13}C^{16}O_2$	0	1640
11.19354451		vacuum	$^{13}C^{16}O_2$	0	1640
11.194684		vacuum	$^{14}C^{16}O_2$	0	1640
11.1946840		vacuum	$^{14}C^{16}O_2$	0	1640
11.20184854		vacuum	$^{13}C^{18}O_2$	0	1640
11.2018486		vacuum	$^{13}C^{18}O_2$	0	1640
11.20879		vacuum	$^{14}NH_3$	0	1190,1191
11.209			NH_3	0	1189,1191–92
11.210201		vacuum	$^{14}C^{16}O_2$	0	1640
11.2102013		vacuum	$^{14}C^{16}O_2$	0	1640
11.212			NH_3	0	1189–90,1192
11.2123		vacuum	$^{14}NH_3$	0	1630,1189–92
11.215411		vacuum	$^{13}C^{16}O_2$	0	1640
11.2161196		vacuum	$^{13}C^{16}O_2$	0	1640
11.21611960		vacuum	$^{13}C^{16}O_2$	0	1640
11.2256780		vacuum	$^{13}C^{18}O_2$	0	1640
11.22567803		vacuum	$^{13}C^{18}O_2$	0	1640
11.2259788		vacuum	$^{14}C^{16}O_2$	0	1640
11.225979		vacuum	$^{14}C^{16}O_2$	0	1640
11.237762		vacuum	$^{13}C^{16}O_2$	0	1640
11.23903428		vacuum	$^{13}C^{16}O_2$	0	1640
11.2390343		vacuum	$^{13}C^{16}O_2$	0	1640
11.2420175		vacuum	$^{14}C^{16}O_2$	0	1640
11.242018		vacuum	$^{14}C^{16}O_2$	0	1640
11.2499077		vacuum	$^{13}C^{18}O_2$	0	1640
11.24990774		vacuum	$^{13}C^{18}O_2$	0	1640
11.257			NH_3	0	1189,1191–92
11.257		vacuum	$^{15}NH_3$	0	1635,1191–92
11.2583176		vacuum	$^{14}C^{16}O_2$	0	1640
11.258318		vacuum	$^{14}C^{16}O_2$	0	1640
11.260			NH_3	0	1189–90,1192
11.2603		vacuum	$^{14}NH_3$	0	1630,1189–92

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.260448		vacuum	$^{13}C^{16}O_2$	0	1640
11.261		vacuum	$^{14}NH_3$	0	1191,1192
11.26229275		vacuum	$^{13}C^{16}O_2$	0	1640
11.2622928		vacuum	$^{13}C^{16}O_2$	0	1640
11.2628		vacuum	$^{14}NH_3$	0	1630,1189–92
11.263			NH_3	0	1189–90,1192
11.27488285		vacuum	$^{14}C^{16}O_2$	0	1640
11.274883		vacuum	$^{14}C^{16}O_2$	0	1640
11.283472		vacuum	$^{13}C^{16}O_2$	0	1640
11.28589935		vacuum	$^{13}C^{16}O_2$	0	1640
11.2858994		vacuum	$^{13}C^{16}O_2$	0	1640
11.291712		vacuum	$^{14}C^{16}O_2$	0	1640
11.29171205		vacuum	$^{14}C^{16}O_2$	0	1640
11.298683		vacuum	Xe	0	559,564
11.299632		vacuum	$^{14}C^{18}O_2$	0	1640
11.299632		vacuum	$^{14}C^{18}O_2$	0	1640
11.306840		vacuum	$^{13}C^{16}O_2$	0	1640
11.308807		vacuum	$^{14}C^{16}O_2$	0	1640
11.30880736		vacuum	$^{14}C^{16}O_2$	0	1640
11.30985858		vacuum	$^{13}C^{16}O_2$	0	1640
11.3098586		vacuum	$^{13}C^{16}O_2$	0	1640
11.318130		vacuum	$^{14}C^{18}O_2$	0	1640
11.318130		vacuum	$^{14}C^{18}O_2$	0	1640
11.326170		vacuum	$^{14}C^{16}O_2$	0	1640
11.32617017		vacuum	$^{14}C^{16}O_2$	0	1640
11.330556		vacuum	$^{13}C^{16}O_2$	0	1640
11.3341751		vacuum	$^{13}C^{16}O_2$	0	1640
11.33417514		vacuum	$^{13}C^{16}O_2$	0	1640
11.3369254		vacuum	$^{14}C^{18}O_2$	0	1640
11.336926		vacuum	$^{14}C^{18}O_2$	0	1640
11.34380199		vacuum	$^{14}C^{16}O_2$	0	1640
11.343802		vacuum	$^{14}C^{16}O_2$	0	1640
11.354624		vacuum	$^{13}C^{16}O_2$	0	1640
11.356021		vacuum	$^{14}C^{18}O_2$	0	1640
11.3560210		vacuum	$^{14}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.35885386		vacuum	$^{13}C^{16}O_2$	0	1640
11.3588539		vacuum	$^{13}C^{16}O_2$	0	1640
11.361704		vacuum	$^{14}C^{16}O_2$	0	1640
11.36170437		vacuum	$^{14}C^{16}O_2$	0	1640
11.3754195		vacuum	$^{14}C^{18}O_2$	0	1640
11.375420		vacuum	$^{14}C^{18}O_2$	0	1640
11.379049		vacuum	$^{13}C^{16}O_2$	0	1640
11.37987894		vacuum	$^{14}C^{16}O_2$	0	1640
11.379879		vacuum	$^{14}C^{16}O_2$	0	1640
11.38389979		vacuum	$^{13}C^{16}O_2$	0	1640
11.3838998		vacuum	$^{13}C^{16}O_2$	0	1640
11.395124		vacuum	$^{14}C^{18}O_2$	0	1640
11.3951240		vacuum	$^{14}C^{18}O_2$	0	1640
11.398327		vacuum	$^{14}C^{16}O_2$	0	1640
11.39832741		vacuum	$^{14}C^{16}O_2$	0	1640
11.403836		vacuum	$^{13}C^{16}O_2$	0	1640
11.40931817		vacuum	$^{13}C^{16}O_2$	0	1640
11.4093182		vacuum	$^{13}C^{16}O_2$	0	1640
11.4151374		vacuum	$^{14}C^{18}O_2$	0	1640
11.415138		vacuum	$^{14}C^{18}O_2$	0	1640
11.4161330		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.41705156		vacuum	$^{14}C^{16}O_2$	0	1640
11.417052		vacuum	$^{14}C^{16}O_2$	0	1640
11.4273891		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.428989		vacuum	$^{13}C^{16}O_2$	0	1640
11.43511443		vacuum	$^{13}C^{16}O_2$	0	1640
11.435115		vacuum	$^{13}C^{16}O_2$	0	1640
11.435463		vacuum	$^{14}C^{18}O_2$	0	1640
11.4354630		vacuum	$^{14}C^{18}O_2$	0	1640
11.436053		vacuum	$^{14}C^{16}O_2$	0	1640
11.43605325		vacuum	$^{14}C^{16}O_2$	0	1640
11.4376785		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.4492864		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.454515		vacuum	$^{13}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.455334		vacuum	$^{14}C^{16}O_2$	0	1640
11.45533442		vacuum	$^{14}C^{16}O_2$	0	1640
11.456104		vacuum	$^{14}C^{18}O_2$	0	1640
11.4561042		vacuum	$^{14}C^{18}O_2$	0	1640
11.4595534		vacuum	$^{13}C^{16}O_2$	0	1640
11.460			NH_3	0	1189–90,1192
11.46044		vacuum	$^{14}NH_3$	0	1189–95
11.461294		vacuum	$^{13}C^{16}O_2$	0	1640
11.46129419		vacuum	$^{13}C^{16}O_2$	0	1640
11.471			NH_3	0	1189–90,1192
11.47135		vacuum	$^{14}NH_3$	0	1191
11.4715433		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.474897		vacuum	$^{14}C^{16}O_2$	0	1640
11.47489707		vacuum	$^{14}C^{16}O_2$	0	1640
11.476		vacuum	$^{12}CS_2$	0	1321–1323
11.477064		vacuum	$^{14}C^{18}O_2$	0	1640
11.4770642		vacuum	$^{14}C^{18}O_2$	0	1640
11.480419		vacuum	$^{13}C^{16}O_2$	0	1640
11.4817608		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.4823		vacuum	$^{12}CS_2$	0	1321–1323
11.487863		vacuum	$^{13}C^{16}O_2$	0	1640
11.48786331		vacuum	$^{13}C^{16}O_2$	0	1640
11.4893		vacuum	$^{12}CS_2$	0	1321–1323
11.4941634		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.494743		vacuum	$^{14}C^{16}O_2$	0	1640
11.49474329		vacuum	$^{14}C^{16}O_2$	0	1640
11.4962		vacuum	$^{12}CS_2$	0	1321–1323
11.4983468		vacuum	$^{14}C^{18}O_2$	0	1640
11.498347		vacuum	$^{14}C^{18}O_2$	0	1640
11.5031		vacuum	$^{12}CS_2$	0	1321–1323
11.5043041		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.506706		vacuum	$^{13}C^{16}O_2$	0	1640
11.5099		vacuum	$^{12}CS_2$	0	1321–1323
11.5166		vacuum	$^{12}CS_2$	0	1321–1323
11.5171508		vacuum	$^{13}C^{16}O_2$	0	1625,1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.5199556		vacuum	$^{14}C^{18}O_2$	0	1640
11.519956		vacuum	$^{14}C^{18}O_2$	0	1640
11.52074		vacuum	$^{14}NH_3$	0	1189–1195
11.521			NH_3	0	1774,1775
11.5212		vacuum	$^{14}NH_3$	0	1189–5,1243–4
11.5237		vacuum	$^{12}CS_2$	0	1321–1323
11.52446		vacuum	$^{14}NH_3$	0	1243,1244
11.5271866		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.5307		vacuum	$^{12}CS_2$	0	1321–1323
11.5376		vacuum	$^{12}CS_2$	0	1321–1323
11.5405096		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.541894		vacuum	$^{14}C^{18}O_2$	0	1640
11.5418945		vacuum	$^{14}C^{18}O_2$	0	1640
11.5446		vacuum	$^{12}CS_2$	0	1321–1323
11.5504119		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.553		vacuum	$^{12}CS_2$	0	1321–1323
11.55466		vacuum	$^{14}NH_3$	0	1203
11.560		vacuum	$^{12}CS_2$	0	1321–1323
11.5641676		vacuum	$^{14}C^{18}O_2$	0	1640
11.564168		vacuum	$^{14}C^{18}O_2$	0	1640
11.5642439		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.568		vacuum	$^{12}CS_2$	0	1321–1323
11.5739835		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.582		vacuum	$^{12}CS_2$	0	1321–1323
11.5821		air	Xe	0	1498
11.586			NH_3	0	1189,1191–92
11.586		vacuum	$^{15}NH_3$	0	1635,1191–92
11.586779		vacuum	$^{14}C^{18}O_2$	0	1640
11.5867790		vacuum	$^{14}C^{18}O_2$	0	1640
11.5883582		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.5979053		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.609067		vacuum	$^{14}C^{16}O_2$	0	1640
11.60906705		vacuum	$^{14}C^{16}O_2$	0	1640
11.609733		vacuum	$^{14}C^{18}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.6097330		vacuum	$^{14}C^{18}O_2$	0	1640
11.6128570		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.6221811		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.63081284		vacuum	$^{14}C^{16}O_2$	0	1640
11.630813		vacuum	$^{14}C^{16}O_2$	0	1640
11.633034		vacuum	$^{14}C^{18}O_2$	0	1640
11.6330341		vacuum	$^{14}C^{18}O_2$	0	1640
11.6377451		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.6468149		vacuum	$^{13}C^{16}O_2$	0	1640
11.652860		vacuum	$^{14}C^{16}O_2$	0	1640
11.65286043		vacuum	$^{14}C^{16}O_2$	0	1640
11.656687		vacuum	$^{14}C^{18}O_2$	0	1640
11.6566870		vacuum	$^{14}C^{18}O_2$	0	1640
11.6630274		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.6718107		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.67521261		vacuum	$^{14}C^{16}O_2$	0	1640
11.675213		vacuum	$^{14}C^{16}O_2$	0	1640
11.6806966		vacuum	$^{14}C^{18}O_2$	0	1640
11.680697		vacuum	$^{14}C^{18}O_2$	0	1640
11.6887088		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.6971729		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.697872		vacuum	$^{14}C^{16}O_2$	0	1640
11.69787227		vacuum	$^{14}C^{16}O_2$	0	1640
11.7050679		vacuum	$^{14}C^{18}O_2$	0	1640
11.705068		vacuum	$^{14}C^{18}O_2$	0	1640
11.712			NH_3	0	1189,1191–92
11.71208		vacuum	$^{14}NH_3$	0	1630,1189–92
11.7147947		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.71582		vacuum	$^{14}NH_3$	0	1630,1189–92
11.716			NH_3	0	1189–90,1192
11.720842		vacuum	$^{14}C^{16}O_2$	0	1640
11.72084238		vacuum	$^{14}C^{16}O_2$	0	1640
11.7229056		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.727			NH_3	0	1189–90,1192
11.72712		vacuum	$^{14}NH_3$	0	1190,1191

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Medium	Species	Charge	Reference
11.729806		vacuum	$^{14}C^{18}O_2$	0	1640
11.7298063		vacuum	$^{14}C^{18}O_2$	0	1640
11.7412905		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.744126		vacuum	$^{14}C^{16}O_2$	0	1640
11.74412603		vacuum	$^{14}C^{16}O_2$	0	1640
11.746			NH_3	0	1189,1191–92
11.74637		vacuum	$^{14}NH_3$	0	1190,1191
11.7490134		vacuum	$^{13}C^{16}O_2$	0	1640
11.763			NH_3	0	1189,1191–92
11.763		vacuum	$^{15}NH_3$	0	1635,1191–92
11.767726		vacuum	$^{14}C^{16}O_2$	0	1640
11.76772638		vacuum	$^{14}C^{16}O_2$	0	1640
11.7682017		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.7755010		vacuum	$^{13}C^{16}O_2$	0	1625,1640
11.79164670		vacuum	$^{14}C^{16}O_2$	0	1640
11.791647		vacuum	$^{14}C^{16}O_2$	0	1640
11.794			NH_3	0	1189–90,1192
11.7942		vacuum	$^{14}NH_3$	0	1630,1189–92
11.796		vacuum	$^{14}NH_3$	0	1191
11.798			NH_3	0	1189,1191–92
11.798		vacuum	$^{15}NH_3$	0	1635,1191–92
11.7983		vacuum	$^{14}NH_3$	0	1630,1189–92
11.80167		vacuum	$^{14}NH_3$	0	1191,1195
11.815890		vacuum	$^{14}C^{16}O_2$	0	1640
11.81589039		vacuum	$^{14}C^{16}O_2$	0	1640
11.83		vacuum	H_2O	0	1328
11.84046091		vacuum	$^{14}C^{16}O_2$	0	1640
11.840461		vacuum	$^{14}C^{16}O_2$	0	1640
11.859		vacuum	$^{15}NH_3$	0	1635,1191–92
11.8605		vacuum	Ne	0	564
11.863			HF	0	1735
11.86536187		vacuum	$^{14}C^{16}O_2$	0	1640
11.865362		vacuum	$^{14}C^{16}O_2$	0	1640
11.866			NH_3	0	1189,1191–92
11.866		vacuum	$^{15}NH_3$	0	1635,1191–92

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
11.890597		vacuum	$^{14}C^{16}O_2$	0	1640
11.8905970		vacuum	$^{14}C^{16}O_2$	0	1640
11.9020		vacuum	Ne	0	195
11.916170		vacuum	$^{14}C^{16}O_2$	0	1640
11.9161700		vacuum	$^{14}C^{16}O_2$	0	1640
11.942085		vacuum	$^{14}C^{16}O_2$	0	1640
11.9420850		vacuum	$^{14}C^{16}O_2$	0	1640
11.959		vacuum	$^{13}CS_2$	0	1323
11.96		vacuum	H_2O	0	1328
11.963		vacuum	$^{13}CS_2$	0	1323
11.968346		vacuum	$^{14}C^{16}O_2$	0	1640
11.9683460		vacuum	$^{14}C^{16}O_2$	0	1640
11.97859		vacuum	$^{14}NH_3$	0	1189–1192
11.979			NH_3	0	1189–90,1192
11.983		vacuum	$^{13}CS_2$	0	1323
11.990			NH_3	0	1189–90,1192
11.99025		vacuum	$^{14}NH_3$	0	1189–1192
11.994957		vacuum	$^{14}C^{16}O_2$	0	1640
11.9949572		vacuum	$^{14}C^{16}O_2$	0	1640
12.010			NH_3	0	1189,1191–92
12.01008		vacuum	$^{14}NH_3$	0	1189–1196
12.0219229		vacuum	$^{14}C^{16}O_2$	0	1640
12.021923		vacuum	$^{14}C^{16}O_2$	0	1640
12.03872		vacuum	$^{14}NH_3$	0	1189–1196
12.039			NH_3	0	1189–90,1192
12.0492476		vacuum	$^{14}C^{16}O_2$	0	1640
12.049248		vacuum	$^{14}C^{16}O_2$	0	1640
12.063			NH_3	0	1189,1191–92
12.063		vacuum	$^{15}NH_3$	0	1635,1191–92
12.076936		vacuum	$^{14}C^{16}O_2$	0	1640
12.0769360		vacuum	$^{14}C^{16}O_2$	0	1640
12.079			NH_3	0	1189,1191–92
12.07912		vacuum	$^{14}NH_3$	0	1630,1189–92
12.0797		vacuum	$^{14}NH_3$	0	1189–1199
12.080			NH_3	0	1189–90,1192
12.0997		vacuum	$^{14}NH_3$	0	1630,1189–92

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
12.100			NH_3	0	1189–90,1192
12.1049927		vacuum	$^{14}C^{16}O_2$	0	1640
12.104993		vacuum	$^{14}C^{16}O_2$	0	1640
12.11418		vacuum	$^{14}NH_3$	0	1203,1204
12.1334228		vacuum	$^{14}C^{16}O_2$	0	1640
12.133423		vacuum	$^{14}C^{16}O_2$	0	1640
12.140	±0.0012	vacuum	Ar	0	1452
12.1405		vacuum	Ar	0	195,559,564
12.1464		vacuum	Ar	0	195,559,564
12.147	±0.0012	vacuum	Ar	0	1452
12.148			NH_3	0	1189,1191–92
12.148		vacuum	$^{15}NH_3$	0	1211
12.15575		vacuum	$^{14}NH_3$	0	1203
12.18444		vacuum	$^{14}NH_3$	0	1203
12.214		vacuum	$^{13}CS_2$	0	1323
12.237		vacuum	$^{13}CS_2$	0	1323
12.245			NH_3	0	1189,1191–92
12.24521		vacuum	$^{14}NH_3$	0	1189–1199
12.247		vacuum	$^{13}CS_2$	0	1323
12.249			NH_3	0	1189–90,1192
12.24911		vacuum	$^{14}NH_3$	0	1189–1192
12.261			NH_3	0	1189–90,1192
12.26105		vacuum	$^{14}NH_3$	0	1189–1192
12.262			HF	0	1618
12.266	±0.0037	vacuum	Xe	0	1452
12.2663		vacuum	Xe	0	559,582
12.281			NH_3	0	1189,1191–92
12.28136		vacuum	$^{14}NH_3$	0	1189–1192
12.299			NH_3	0	1189,1191–92
12.299		vacuum	$^{15}NH_3$	0	1635,1191–92
12.31072		vacuum	$^{14}NH_3$	0	1189–1192
12.311			NH_3	0	1189–90,1192
12.336			NH_3	0	1189,1191–92
12.336		vacuum	$^{15}NH_3$	0	1635,1191–92
12.350			NH_3	0	1189–90,1192

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
12.35002		vacuum	$^{14}NH_3$	0	1189–1192
12.37821		vacuum	$^{14}NH_3$	0	1191
12.384			NH_3	0	1189,1191–92
12.38425		vacuum	$^{14}NH_3$	0	1191
12.39560		vacuum	$^{14}NH_3$	0	1191
12.4027		vacuum	$^{14}NH_3$	0	1630,1189–92
12.403			NH_3	0	1189–90,1192
12.447		vacuum	$^{15}NH_3$	0	1635,1191–92
12.52781		vacuum	$^{14}NH_3$	0	1189–2,1243–4
12.528			NH_3	0	1189–90,1192
12.53999		vacuum	$^{14}NH_3$	0	1189–2,1243–4
12.540			NH_3	0	1189–90,1192
12.56068		vacuum	$^{14}NH_3$	0	1189–2,1243–4
12.561			NH_3	0	1189,1191–92
12.5688		vacuum	K	0	131,142
12.59		vacuum	$^{14}NH_3$	0	1631–1634
12.59059		vacuum	$^{14}NH_3$	0	1189–2,1243–4
12.591			NH_3	0	1189–90,1192
12.616			NH_3	0	1189,1191–92
12.616		vacuum	$^{15}NH_3$	0	1635,1191–92
12.63063		vacuum	$^{14}NH_3$	0	1189–2,1243–4
12.631			NH_3	0	1189–90,1192
12.678			HF	0	1618
12.682			NH_3	0	1189,1191–92
12.68213		vacuum	$^{14}NH_3$	0	1189–92
12.697			NH_3	0	1189–90,1192
12.69716		vacuum	$^{14}NH_3$	0	1191
12.701			HF	0	1618
12.7196		vacuum	$^{14}NH_3$	0	1630,1189–92
12.720			NH_3	0	1189–90,1192
12.739			NH_3	0	1189,1191–92
12.739		vacuum	$^{15}NH_3$	0	1635,1191–92
12.80959		vacuum	$^{14}NH_3$	0	1205
12.811			NH_3	0	1189,1191–92
12.81145		vacuum	$^{14}NH_3$	0	1189–04,1244
12.81532		vacuum	$^{14}NH_3$	0	1189–92

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
12.82765		vacuum	$^{14}NH_3$	0	1190–91,1244
12.835	±0.0039	vacuum	Ne	0	583,586,1452
12.8353		vacuum	Ne	0	195,564
12.84863		vacuum	$^{14}NH_3$	0	1189–1192
12.849			NH_3	0	1189,1191–92
12.85		vacuum	HCN	0	1328
12.867		vacuum	$^{15}NH_3$	0	1635,1191–92
12.87890		vacuum	$^{14}NH_3$	0	1189–1192
12.905			NH_3	0	1189,1191–92
12.905		vacuum	$^{15}NH_3$	0	1635,1191–92
12.917	±0.0039		vacuum	Xe	1452
12.9173		vacuum	Xe	0	559,582
12.91946		vacuum	$^{14}NH_3$	0	1189–1192
12.967			NH_3	0	1189,1191–92
12.97163		vacuum	$^{14}NH_3$	0	1189–1192
12.976			NH_3	0	1189,1191–92
12.977			NH_3	0	1189,1191–92
12.977		vacuum	$^{15}NH_3$	0	1635,1191–92
12.98352		vacuum	$^{14}NH_3$	0	1205
13.024			NH_3	0	1189–90,1192
13.0241		vacuum	$^{14}NH_3$	0	1630,1189–92
13.030			NH_3	0	1189,1191–92
13.030		vacuum	$^{15}NH_3$	0	1635,1191–92
13.03715		vacuum	$^{14}NH_3$	0	1189–1192
13.0505		vacuum	$^{14}NH_3$	0	1630,1189–92
13.051			NH_3	0	1189–90,1192
13.11233		vacuum	$^{14}NH_3$	0	1189,1210
13.12477		vacuum	$^{14}NH_3$	0	1189,1210
13.144		vacuum	$^{12}C^{16}O_2$	0	1640
13.14593		vacuum	$^{14}NH_3$	0	1630,1189–92
13.146			NH_3	0	1189,1191–92
13.154		vacuum	$^{12}C^{16}O_2$	0	1640
13.160		vacuum	$^{12}C^{16}O_2$	0	1640
13.17643		vacuum	$^{14}NH_3$	0	1189,1210
13.188			HF	0	1618

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
13.1887		vacuum	Cd	0	155
13.201			HF	0	1618
13.204		vacuum	$^{15}NH_3$	0	1635,1191–92
13.21725		vacuum	$^{14}NH_3$	0	1189,1210
13.221			HF	0	1618
13.23390		vacuum	$^{14}NH_3$	0	1196
13.26978		vacuum	$^{14}NH_3$	0	1189,1210
13.270			NH_3	0	1189,1191–92
13.323		vacuum	$^{15}NH_3$	0	1635,1191–92
13.33580		vacuum	$^{14}NH_3$	0	1210
13.411		vacuum	$^{14}NH_3$	0	1210
13.415			NH_3	0	1189–90,1192
13.4153		vacuum	$^{14}NH_3$	0	1630,1189–92
13.453			NH_3	0	1189–90,1192
13.4534		vacuum	$^{14}NH_3$	0	1630,1189–92
13.473		vacuum	$^{15}NH_3$	0	1635,1191–92
13.475		air	Ar	0	1498
13.54		vacuum	CF_3I	0	1181
13.541		vacuum	$^{12}C^{16}O_2$	0	1640
13.57		vacuum	CF_3I	0	1181
13.57749		vacuum	$^{14}NH_3$	0	1210
13.578			NH_3	0	1189–90,1192
13.63		vacuum	CF_3I	0	1181
13.65533		vacuum	$^{14}NH_3$	0	1196
13.72555		vacuum	$^{14}NH_3$	0	1204,1205
13.728			HF	0	1618
13.7583		vacuum	Ne	0	195,559,564
13.7584		vacuum	Ne	0	195,559,564
13.759	±0.0041	vacuum	Ne	0	583,586,1452
13.784			HF	0	1618
13.826			NH_3	0	1189–90,1192
13.82608		vacuum	$^{14}NH_3$	0	1210
13.87		vacuum	$^{12}C^{16}O_2$	0	1640
13.872			HCl	0	1755
13.910		vacuum	$^{15}NH_3$	0	1636
14.099			HCl	0	1755

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
14.1		vacuum	$^{12}C^{16}O_2$	0	1640
14.1681		vacuum	$^{2}C^{16}O_2$	0	1640
14.2001		vacuum	$^{12}C^{16}O_2$	0	1640
14.2325		vacuum	$^{12}C^{16}O_2$	0	1640
14.288			HF	0	1618
14.3		vacuum	$^{15}NH_3$	0	1211
14.441			HF	0	1618
14.5820		vacuum	Cd	0	155
14.78		vacuum	$^{14}NH_3$	0	1206
14.78			NH_3	0	1811
14.8		vacuum	$^{15}NH_3$	0	1211
14.930		vacuum	Ne	0	564
15.022	±0.0015	vacuum	Ar	0	1452
15.037	±0.0015	vacuum	Ar	0	1452
15.0370		air	Ar	0	559,564
15.039	±0.0015	vacuum	Ar	0	1452
15.04		vacuum	$^{14}NH_3$	0	1206
15.04			NH_3	0	1811
15.0421		vacuum	Ar	0	559,564
15.061			HF	0	1618
15.08		vacuum	$^{14}NH_3$	0	1206
15.08			NH_3	0	1811
15.19		vacuum	NSF	0	1239
15.2		vacuum	$^{15}NH_3$	0	1211
15.26		vacuum	NSF	0	1239
15.29		vacuum	$^{13}CF_4$	0	1217,1337
15.306		vacuum	$^{12}CF_4$	0	1181,1212
15.32		vacuum	$^{13}CF_4$	0	1217,1337
15.34		vacuum	NSF	0	1239
15.39		vacuum	$^{14}CF_4$	0	1337,1488
15.40		vacuum	$^{12}CF_4$	0	1181,1212
15.41		vacuum	$^{14}NH_3$	0	1206
15.41			NH_3	0	1811
15.42		vacuum	NSF	0	1239
15.42		vacuum	$^{13}CF_4$	0	1217,1337

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
15.44		vacuum	$^{13}CF_4$	0	1217,1337
15.45		vacuum	$^{13}CF_4$	0	1213
15.46		vacuum	$^{12}CF_4$	0	1181
15.46		vacuum	$^{14}CF_4$	0	1337,1488
15.47		vacuum	$^{13}CF_4$	0	1217,1337
15.47		vacuum	NSF	0	1239
15.47		vacuum	$^{14}NH_3$	0	1206
15.47			NH_3	0	1811
15.48		vacuum	$^{12}CF_4$	0	1212–13,1488
15.49		vacuum	$^{12}CF_4$	0	1488
15.51		vacuum	$^{14}CF_4$	0	1337,1488
15.53		vacuum	$^{13}CF_4$	0	1217,1337
15.53		vacuum	CH_3CCH	0	1637
15.54		vacuum	$^{14}CF_4$	0	1337,1488
15.54		vacuum	CH_3CCH	0	1637
15.54		vacuum	$^{14}CF_4$	0	1337,1488
15.54		vacuum	$^{13}CF_4$	0	1213,1217
15.547		vacuum	$^{12}CF_4$	0	1181,1212–13
15.57		vacuum	$^{12}CF_4$	0	1181,1488
15.58		vacuum	$^{14}CF_4$	0	1337,1488
15.58		vacuum	$^{12}CF_4$	0	1213
15.59		vacuum	$^{13}CF_4$	0	1217,1337
15.5936		vacuum	$^{12}C^{16}O_2$	0	1640
15.60		vacuum	$^{14}CF_4$	0	1337,1488
15.60		vacuum	$^{12}CF_4$	0	1213
15.607		vacuum	$^{12}CF_4$	0	1181,1212–13
15.61		vacuum	NSF	0	1239
15.61		vacuum	$^{14}CF_4$	0	1337,1488
15.62		vacuum	$^{13}CF_4$	0	1217,1337
15.62		vacuum	$^{14}CF_4$	0	1337,1488
15.6311		vacuum	$^{12}C^{16}O_2$	0	1640
15.64		vacuum	$^{14}CF_4$	0	1337,1488
15.65		vacuum	$^{14}CF_4$	0	1337,1488
15.6688		vacuum	$^{12}C^{16}O_2$	0	1640
15.68		vacuum	$^{14}NH_3$	0	1206
15.7		vacuum	$^{15}NH_3$	0	1211

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
15.70		vacuum	$^{14}NH_3$	0	1631–1634
15.7067		vacuum	$^{12}C^{16}O_2$	0	1640
15.71		vacuum	$^{12}CF_4$	0	1181,1488
15.71		vacuum	$^{14}CF_4$	0	1337,1488
15.711		vacuum	CH_3CCH	0	1246
15.716		vacuum	CH_3CCH	0	1246
15.72		vacuum	CH_3CCH	0	1637
15.72		vacuum	CH_3CCH	0	1246
15.721		vacuum	CH_3CCH	0	1246
15.74		vacuum	$^{13}CF_4$	0	1213
15.74		vacuum	$^{12}CF_4$	0	1488
15.7449		vacuum	$^{12}C^{16}O_2$	0	1640
15.75		vacuum	$^{13}CF_4$	0	1213
15.78		vacuum	$^{13}CF_4$	0	1217,1337
15.78148		vacuum	$^{14}NH_3$	0	1196
15.7833		vacuum	$^{12}C^{16}O_2$	0	1640
15.79		vacuum	$^{14}CF_4$	0	1337,1488
15.80		vacuum	CH_3CCH	0	1637
15.80		vacuum	$^{13}CF_4$	0	1488
15.81600		vacuum	$^{14}NH_3$	0	1205
15.82		vacuum	$^{13}CF_4$	0	1213
15.82		vacuum	$^{14}CF_4$	0	1337,1488
15.8220		vacuum	$^{12}C^{16}O_2$	0	1640
15.83		vacuum	$^{12}CF_4$	0	1212
15.83		vacuum	CH_3CCH	0	1637
15.84		vacuum	$^{12}CF_4$	0	1488
15.838		vacuum	NSF	0	1239
15.84		vacuum	$^{12}CF_4$	0	1212
15.844		vacuum	$^{12}CF_4$	0	1212,1213
15.845		vacuum	$^{12}CF_4$	0	1181
15.847		vacuum	$^{12}CF_4$	0	1181,1212
15.85		vacuum	$^{12}CF_4$	0	1212
15.85726		vacuum	$^{14}NH_3$	0	1196
15.8609		vacuum	$^{12}C^{16}O_2$	0	1640
15.87758		vacuum	$^{14}NH_3$	0	1196

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
15.89		vacuum	$^{13}CF_4$	0	1217,1337
15.89		vacuum	NSF	0	1239
15.9000		vacuum	$^{12}C^{16}O_2$	0	1640
15.905		vacuum	SF_6	0	1221
15.91		vacuum	$^{12}CF_4$	0	1213,1488
15.91292		vacuum	$^{14}NH_3$	0	1205
15.913		vacuum	$^{14}NH_3$	0	1631–1634
15.92		vacuum	$^{12}CF_4$	0	1488
15.93		vacuum	$^{14}CF_4$	0	1337,1488
15.94		vacuum	$^{14}CF_4$	0	1337,1488
15.9394		vacuum	$^{12}C^{16}O_2$	0	1640
15.94		vacuum	$^{12}CF_4$	0	1488
15.94		vacuum	$^{14}CF_4$	0	1337,1488
15.94637		vacuum	$^{14}NH_3$	0	1203,1204
15.95		vacuum	$^{14}CF_4$	0	1337,1488
15.9680		vacuum	K	0	131,142
15.98		vacuum	NSF	0	1239
15.9790		vacuum	$^{12}C^{16}O_2$	0	1640
15.99		vacuum	$^{14}CF_4$	0	1337,1488
16.0		vacuum	$^{15}NH_3$	0	1211
16.00		vacuum	$^{13}CF_4$	0	1217
16.00		vacuum	$^{12}CF_4$	0	1488
16.02		vacuum	$^{12}CF_4$	0	1213
16.022			HF	0	1618
16.03		vacuum	NSF	0	1239
16.04		vacuum	$^{14}CF_4$	0	1337,1488
16.04		vacuum	$^{14}NH_3$	0	1631–1634
16.06		vacuum	$^{12}CF_4$	0	1488
16.06		vacuum	CH_3CCH	0	1637
16.07		vacuum	$^{12}CF_4$	0	1488
16.08		vacuum	$^{14}CF_4$	0	1337,1488
16.09		vacuum	$^{12}CF_4$	0	1488
16.09		vacuum	$^{13}CF_4$	0	1488
16.10		vacuum	CH_3CCH	0	1637
16.10		vacuum	$^{13}CF_4$	0	1488
16.11		vacuum	$^{13}CF_4$	0	1488

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
16.11		vacuum	$^{12}CF_4$	0	1212,1488
16.121		vacuum	CH_3CCH	0	1246
16.14		vacuum	$^{14}CF_4$	0	1337,1488
16.15		vacuum	$^{13}CF_4$	0	1213
16.15		vacuum	$^{14}CF_4$	0	1337,1488
16.15		vacuum	NSF	0	1239
16.16		vacuum	$^{13}CF_4$	0	1217
16.178		vacuum	$^{12}CF_4$	0	1181,1212–13
16.1819		vacuum	$^{12}C^{16}O_2$	0	1640
16.1827		vacuum	$^{12}C^{16}O_2$	0	1640
16.1836		vacuum	$^{12}C^{16}O_2$	0	1640
16.1847		vacuum	$^{12}C^{16}O_2$	0	1640
16.1860		vacuum	$^{12}C^{16}O_2$	0	1640
16.1874		vacuum	$^{12}C^{16}O_2$	0	1640
16.1891		vacuum	$^{12}C^{16}O_2$	0	1640
16.19		vacuum	NSF	0	1239
16.1908		vacuum	$^{12}C^{16}O_2$	0	1640
16.1928		vacuum	$^{12}C^{16}O_2$	0	1640
16.1949		vacuum	$^{12}C^{16}O_2$	0	1640
16.1972		vacuum	$^{12}C^{16}O_2$	0	1640
16.20		vacuum	$^{13}CF_4$	0	1217
16.21		vacuum	$^{12}CF_4$	0	1212
16.21		vacuum	$^{14}CF_4$	0	1337,1488
16.213			HCl	0	1755
16.22		vacuum	$^{14}CF_4$	0	1337,1488
16.23		vacuum	$^{13}CF_4$	0	1213,1337
16.24		vacuum	$^{12}CF_4$	0	1212
16.25		vacuum	$^{12}CF_4$	0	1488
16.25		vacuum	$^{13}CF_4$	0	1488
16.25		vacuum	$^{14}CF_4$	0	1337,1488
16.259		vacuum	$^{12}CF_4$	0	1181,1212–13
16.26		vacuum	$^{13}CF_4$	0	1337
16.27		vacuum	$^{12}CF_4$	0	1212
16.27		vacuum	$^{13}CF_4$	0	1488
16.28		vacuum	$^{14}CF_4$	0	1337,1488

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
16.29		vacuum	$^{12}CF_4$	0	1212
16.29		vacuum	$^{13}CF_4$	0	1217
16.30		vacuum	$^{14}CF_4$	0	1337,1488
16.30		vacuum	$^{13}CF_4$	0	1213
16.32		vacuum	$^{13}CF_4$	0	1337
16.32		vacuum	$FClO_3$	0	1245
16.33		vacuum	$^{14}CF_4$	0	1337,1488
16.33		vacuum	$FClO_3$	0	1245
16.340		vacuum	$^{12}CF_4$	0	1181,1212–13
16.35		vacuum	$^{14}CF_4$	0	1337,1488
16.35		vacuum	$FClO_3$	0	1245
16.36		vacuum	$^{13}CF_4$	0	1337
16.3670		vacuum	$^{12}C^{16}O_2$	0	1640
16.39		vacuum	CH_3CCH	0	1246
16.4	±0.1	vacuum	NOCl	0	1180,1181
16.40		vacuum	$^{12}CF_4$	0	1212
16.4091		vacuum	$^{12}C^{16}O_2$	0	1640
16.42		vacuum	CH_3CCH	0	1246
16.44		vacuum	$^{14}CF_4$	0	1337,1488
16.444			HF	0	1735
16.45		vacuum	$FClO_3$	0	1245
16.4515		vacuum	$^{12}C^{16}O_2$	0	1640
16.48		vacuum	$^{13}CF_4$	0	1337
16.49		vacuum	$FClO_3$	0	1245
16.49		vacuum	$FClO_3$	0	1245
16.4941		vacuum	$^{12}C^{16}O_2$	0	1640
16.50		vacuum	$FClO_3$	0	1245
16.52		vacuum	$FClO_3$	0	1245
16.52		vacuum	NOCl	0	1180,1181
16.52		vacuum	$FClO_3$	0	1245
16.5370		vacuum	$^{12}C^{16}O_2$	0	1640
16.56		vacuum	$FClO_3$	0	1245
16.56		vacuum	$FClO_3$	0	1245
16.57		vacuum	NOCl	0	1180,1181
16.5801		vacuum	$^{12}C^{16}O_2$	0	1640
16.585		vacuum	$^{12}C^{16}O_2$	0	1640

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
16.596		vacuum	$^{12}C^{16}O^{18}O$	0	1640
16.597		vacuum	$^{12}C^{16}O_2$	0	1640
16.609			HCl	0	1755
16.61		vacuum	$FClO_3$	0	1245
16.6235		vacuum	$^{12}C^{16}O_2$	0	1640
16.638	±0.005	vacuum	Ne	0	583,586,1452
16.638076		vacuum	Ne	0	195,564
16.644			HCl	0	1735
16.655			HF	0	1735
16.66		vacuum	$FClO_3$	0	1245
16.6672		vacuum	$^{12}C^{16}O_2$	0	1640
16.667472		vacuum	Ne	0	564
16.668	±0.005	vacuum	Ne	0	583,586,1452
16.69		vacuum	NOCl	0	1180,1181
16.7	±0.1	vacuum	NOCl	0	1180,1181
16.7111		vacuum	$^{12}C^{16}O_2$	0	1640
16.73		vacuum	$FClO_3$	0	1245
16.75		vacuum	NOCl	0	1180,1181
16.75		vacuum	$FClO_3$	0	1245
16.7553		vacuum	$^{12}C^{16}O_2$	0	1640
16.76		vacuum	$FClO_3$	0	1245
16.76		vacuum	$^{12}C^{16}O^{18}O$	0	1640
16.76		vacuum	$FClO_3$	0	1245
16.765			HCl	0	1735
16.77		vacuum	$FClO_3$	0	1245
16.79		vacuum	$FClO_3$	0	1245
16.7998		vacuum	$^{12}C^{16}O_2$	0	1640
16.82		vacuum	$FClO_3$	0	1245
16.86		vacuum	NOCl	0	1180,1181
16.893	±0.005	vacuum	Ne	0	583,586,1452
16.8932		vacuum	Ne	0	559,564
16.9	±0.1	vacuum	NOCl	0	1180,1181
16.927		vacuum	$^{12}C^{16}O^{18}O$	0	1640
16.93		vacuum	$FClO_3$	0	1245
16.931			H_2O	0	1713

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
16.936		vacuum	$^{14}NH_3$	0	1631–1634
16.946194		vacuum	Ne	0	195,559,564
16.947	±0.005	vacuum	Ne	0	583,586,1452
16.95		vacuum	$^{14}NH_3$	0	1631–1634
16.970		vacuum	$^{12}C^{16}O^{18}O$	0	1640
16.975			HF	0	1735
16.99		vacuum	NOCl	0	1180,1181
17.000		vacuum	$FClO_3$	0	1245
17.023		vacuum	$^{12}C^{16}O_2$	0	1640
17.029		vacuum	$^{12}C^{16}O_2$	0	1640
17.034			HCl	0	1755
17.036		vacuum	$^{12}C^{16}O_2$	0	1640
17.048		vacuum	$^{12}C^{16}O_2$	0	1640
17.0709		air	Kr	0	1498
17.125			HCl	0	1735
17.15		vacuum	$FClO_3$	0	1245
17.1572		vacuum	Ne	0	559,564
17.158	±0.0051	vacuum	Ne	0	583,586,1452
17.188155		vacuum	Ne	0	564
17.189	±0.0052	vacuum	Ne	0	583,586,1452
17.19		vacuum	$FClO_3$	0	1245
17.22		vacuum	$FClO_3$	0	1245
17.2328		air	Kr	0	1498
17.26		vacuum	$FClO_3$	0	1245
17.28		vacuum	$FClO_3$	0	1245
17.32		vacuum	$FClO_3$	0	1245
17.325			HF	0	1735
17.36		vacuum	$FClO_3$	0	1245
17.370		vacuum	$^{12}C^{16}O_2$	0	1640
17.376		vacuum	$^{12}C^{16}O_2$	0	1640
17.390		vacuum	$^{12}C^{16}O_2$	0	1640
17.44		vacuum	$FClO_3$	0	1245
17.45		vacuum	C_2D_2	0	835,836,1242
17.46		vacuum	$FClO_3$	0	1245
17.463		vacuum	$^{12}C^{18}O_2$	0	1640
17.492			HCl	0	1755

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
17.498		vacuum	C_2D_2	0	835,836,1242
17.56		vacuum	C_2D_2	0	835,836,1242
17.575			HCl	0	1735
17.58		vacuum	$FClO_3$	0	1245
17.61		vacuum	C_2D_2	0	835,836,1242
17.610		vacuum	C_2D_2	0	835,836,1242
17.645			HF	0	1735
17.665		vacuum	C_2D_2	0	835,836,1242
17.71		vacuum	$FClO_3$	0	1245
17.71		vacuum	$^{12}C_2HD$	0	1627
17.722		vacuum	C_2D_2	0	835,836,1242
17.730		vacuum	$^{12}C^{18}O_2$	0	1640
17.775		vacuum	$^{12}C^{18}O_2$	0	1640
17.778		vacuum	C_2D_2	0	835,836,1242
17.8		vacuum	$^{15}NH_3$	0	1211
17.8035		vacuum	Ne	0	559,564
17.804	±0.0053	vacuum	Ne	0	583,586,1452
17.821		vacuum	$^{12}C^{18}O_2$	0	1640
17.835		vacuum	C_2D_2	0	835,836,1242
17.839876		vacuum	Ne	0	559,564
17.841	±0.0054	vacuum	Ne	0	583,586,1452
17.888	±0.0054	vacuum	Ne	0	583,586,1452
17.888255		vacuum	Ne	0	195,559,564
17.893		vacuum	$^{12}C_2D_2$	0	1628
17.915		vacuum	$^{12}C^{18}O_2$	0	1640
17.962		vacuum	$^{12}C^{18}O_2$	0	1640
17.987			HCl	0	1755
17.997			HCl	0	1735
18.010		vacuum	$^{12}C^{18}O_2$	0	1640
18.035			HCl	0	1735
18.046		vacuum	$^{14}NH_3$	0	1631–1634
18.053		vacuum	$^{12}C^{18}O_2$	0	1640
18.085			HF	0	1735
18.09		vacuum	$^{12}C_2HD$	0	1627
18.203		vacuum	$^{14}NH_3$	0	1631–1634

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
18.21			NH_3	0	1811
18.21		vacuum	$^{14}NH_3$	0	1631–1634
18.3		vacuum	BCl_3	0	1183,1431
18.30	±0.090	vacuum	$^{10}BCl_3$	0	1183,1431
18.395067		vacuum	Ne	0	195,559,564
18.396	±0.0055	vacuum	Ne	0	583,586,1452
18.42		vacuum	$^{12}C^{16}O_2$	0	1642
18.45		vacuum	$^{12}C_2HD$	0	1627
18.505324		vacuum	Xe	0	559,564
18.506	±0.0056	vacuum	Xe	0	1452
18.522			HCl	0	1755
18.555			HCl	0	1735
18.593			HCl	0	1735
18.64		vacuum	$^{12}C_2HD$	0	1627
18.67		vacuum	C_2D_2	0	835,836,1242
18.79		vacuum	C_2D_2	0	835,836,1242
18.79		vacuum	C_2D_2	0	835,836,1242
18.798		vacuum	$^{14}NH_3$	0	1631–1634
18.8		vacuum	BCl_3	0	1183,1431
18.80	±0.092	vacuum	$^{11}BCl_3$	0	1183,1431
18.801			HF	0	1618
18.84		vacuum	$^{12}C_2D_2$	0	1628
18.84		vacuum	C_2D_2	0	835,836,1242
18.85		vacuum	C_2D_2	0	835,836,1242
18.92674		vacuum	$^{14}NH_3$	0	1203,1204
18.960		vacuum	C_2D_2	0	835,836,1242
18.97		vacuum	C_2D_2	0	835,836,1242
18.983		vacuum	^{12}COS	0	1320
19.03		vacuum	C_2D_2	0	835,836,1242
19.03		vacuum	C_2D_2	0	835,836,1242
19.03		vacuum	C_2D_2	0	835,836,1242
19.057		vacuum	^{12}COS	0	1320
19.081		vacuum	C_2D_2	0	835,836,1242
19.1		vacuum	BCl_3	0	1183,1431
19.10±0.094		vacuum	$^{10}BCl_3$	0	1183,1431
19.113			HF	0	1618

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
19.122			HCl	0	1735
19.13		vacuum	$^{12}C_2HD$	0	1627
19.13		vacuum	C_2D_2	0	835,836,1242
19.145			HCl	0	1735
19.18		vacuum	$^{12}C_2HD$	0	1627
19.183			HCl	0	1735
19.20		vacuum	C_2D_2	0	835,836,1242
19.27		vacuum	C_2D_2	0	835,836,1242
19.29		vacuum	$^{14}NH_3$	0	1631–1634
19.33		vacuum	$^{12}C_2HD$	0	1627
19.37		vacuum	$^{12}C_2HD$	0	1627
19.399			HBr	0	1735
19.4		vacuum	BCl_3	0	1183,1431
19.40		vacuum	$^{12}C_2HD$	0	1627
19.40		vacuum	$^{12}C_2HD$	0	1627
19.40	±0.095	vacuum	$^{10}BCl_3$	0	1183,1431
19.401		vacuum	$^{14}NH_3$	0	1631–1634
19.48		vacuum	$^{12}C_2HD$	0	1627
19.511		vacuum	$^{12}C_2D_2$	0	1627
19.52			CH_3OH	0	1759
19.55019		vacuum	$^{14}NH_3$	0	1203,1204
19.634		vacuum	$^{12}C_2D_2$	0	1628
19.67		vacuum	C_2D_2	0	835,836,1242
19.700			HCl	0	1755
19.758		vacuum	$^{12}C_2D_2$	0	1628
19.783			HCl	0	1735
19.821			HCl	0	1735
19.884		vacuum	$^{12}C_2D_2$	0	1628
19.947		vacuum	C_2D_2	0	835,836,1242
19.988			HBr	0	1735
20.134			HF	0	1618
20.2	±0.099	vacuum	BCl_3	0	1183,1431
20.346			HCl	0	1755
20.351			HF	0	1618
20.360			HBr	0	1735

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
20.38798		vacuum	$^{14}NH_3$	0	1205
20.411			HCl	0	1755
20.480	±0.0051	vacuum	Ne	0	583,586,1452
20.6	±0.10	vacuum	BCl_3	0	1183,1431
20.896			HBr	0	1735
20.939			HF	0	1618
20.949			HBr	0	1735
20.999			HCl	0	1755
21.047			HCl	0	1755
21.05409		vacuum	$^{14}NH_3$	0	1205
21.156			HCl	0	1755
21.333			NH_3	0	1631–1634
21.46			NH_3	0	1811
21.471		vacuum	$^{14}NH_3$	0	1206–1208
21.501			HBr	0	1735
21.546			HBr	0	1735
21.699			HF	0	1618
21.752	±0.0054	vacuum	Ne	0	583,586,1452
21.789			HF	0	1618
21.813			HCl	0	1755
21.971			HCl	0	1755
22.136			HBr	0	1735
22.226			HBr	0	1735
22.4	±0.11	vacuum	BCl_3	0	1183,1431
22.54			NH_3	0	1811
22.542		vacuum	$^{14}NH_3$	0	1206–1208
22.563		vacuum	$^{14}NH_3$	0	1206–1208
22.651			HCl	0	1755
22.71			NH_3	0	1206,1811
22.836	±0.0057	vacuum	Ne	0	583,586,1452
22.855			HBr	0	1735
22.864			HCl	0	1755
23.0	±0.11	vacuum	BCl_3	0	1183,1431
23.359			H_2O	0	1713
23.436			HBr	0	1735
23.571			HCl	0	1755

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
23.675		vacuum	$^{14}NH_3$	0	1206–1208
23.68			NH_3	0	1759
23.849			HCl	0	1755
23.86			NH_3	0	1206,1759
24.318			HCl	0	1755
24.583			HCl	0	1755
24.618			HCl	0	1755
24.918		vacuum	$^{14}NH_3$	0	1206–1208
24.92			NH_3	0	1759
24.937			HCl	0	1755
25.12			NH_3	0	1206,1759
25.423	±0.0051	vacuum	Ne	0	583,586,1452
25.704			HCl	0	1755
26.146			HCl	0	1755
26.247			HCl	0	1735
26.27			NH_3	0	1759
26.282		vacuum	$^{14}NH_3$	0	1206–1208
26.666			H_2O	0	1713
26.933	±0.0027	vacuum	Ar	0	1452
26.936	±0.0027	vacuum	Ar	0	1452
26.944			Ar	0	1452
27.508			HCl	0	1735
27.9707534	±0.00000025	vacuum	H_2O	0	1369,1407
28.053	±0.0056	vacuum	Ne	0	583,586,1452
28.054			H_2O	0	1713
28.273			H_2O	0	1713
28.356			H_2O	0	1713
29.786			HBr	0	1735
30.445			HBr	0	1735
30.69			NH_3	0	1206,1759
30.948			HBr	0	1735
31.368			HBr	0	1735
31.47			NH_3	0	759,1206
31.553	±0.0047	vacuum	Ne	0	583,586,1452
31.849			HBr	0	1735

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
31.92			NH_3	0	1759
31.928	±0.0048	vacuum	Ne	0	583,586,1452
31.951		vacuum	$^{14}NH_3$	0	1206–1208
32.016	±0.0048	vacuum	Ne	0	583,586,1452
32.13			NH_3	0	1206,1759
32.469			HBr	0	1735
32.516	±0.0049	vacuum	Ne	0	583,586,1452
32.799			HBr	0	1735
32.830	±0.0066	vacuum	Ne	0	583,586,1452
32.929			H_2O	0	1713
33.029	±0.0033	vacuum	H_2O	0	1368
33.033			H_2O	0	1713
33.409			HBr	0	1735
33.47			H_2S	0	1806
33.64			H_2S	0	1806
33.896			D_2O	0	1713
34.552	±0.0052	vacuum	Ne	0	583,586,1452
34.679	±0.0052	vacuum	Ne	0	583,586,1452
35.000			H_2O	0	1713
35.090			D_2O	0	1713
35.602	±0.0053	vacuum	Ne	0	583,586,1452
35.841			H_2O	0	1713
36.319			D_2O	0	1713
36.524			D_2O	0	1713
36.619			H_2O	0	1713
37.231	±0.0056	vacuum	Ne	0	583,586,1452
37.791			D_2O	0	1713
37.859			H_2O	0	1713
38.094			H_2O	0	1713
39.698			H_2O	0	1713
40.526			HBr	0	1735
40.629			H_2O	0	1713
40.994			D_2O	0	1713
41.741	±0.0042	vacuum	Ne	0	583,586,1452
45.523			H_2O	0	1713
47.244	±0.0047	vacuum	H_2O	0	1368

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
47.251			H_2O	0	1713
47.46315	±0.000095	vacuum	H_2O	0	1368,1383
47.687	±0.0048	vacuum	H_2O	0	1368
47.693			H_2O	0	1713
48.677			H_2O	0	1713
49.62			H_2S	0	1746
50.705	±0.0051	vacuum	Ne	0	583,586,1452
52.030	±0.0083	vacuum	NH_3	0	1461–4,1393
52.40			H_2S	0	1746
52.425	±0.0052	vacuum	Ne	0	583,586,1452
52.800	±0.0084	vacuum	NH_3	0	1393,1461–4
53.486	±0.0053	vacuum	Ne	0	583,586,1452
53.906			H_2O	0	1713
54.019	±0.0054	vacuum	Ne	0	583,586,1452
54.117	±0.0054	vacuum	Ne	0	583,586,1452
54.460	±0.0087	vacuum	NH_3	0	1393,1461–4
55.077			H_2O	0	1713
55.088	±0.0055	vacuum	H_2O	0	1368
55.537	±0.0056	vacuum	Ne	0	583,586,1452
56.84			H_2S	0	1746
56.845			D_2O	0	1713
57.040	±0.0097	vacuum	NH_3	0	1393,1461–4
57.355	±0.0057	vacuum	Ne	0	583,586,1452
57.660			H_2O	0	1713
60.29			H_2S	0	1746
61.50			H_2S	0	1746
67.177			H_2O	0	1713
68.329	±0.0068	vacuum	Ne	0	583,586,1452
71.899			HCN	0	1445
71.965			D_2O	0	1713
72.108	±0.0072	vacuum	Ne	0	583,586,1452
72.429			D_2O	0	1713
72.747780	±0.000022	vacuum	D_2O	0	1368,1455
72.748			D_2O	0	1455
73.101			HCN	0	1445

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
73.337			D_2O	0	1713
73.401	±0.0073	vacuum	H_2O	0	1368
73.402			H_2O	0	1713
73.52			H_2S	0	1746
74.545			D_2O	0	1713
75.578			Xe	0	652
76.093			HCN	0	1445
76.305			D_2O	0	1713
77.001			HCN	0	1445
78.443327	±0.000024	vacuum	H_2O	0	1368,1455
79.091010	±0.000024	vacuum	H_2O	0	1368,1455
80.50			H_2S	0	1746
81.554			HCN	0	1445
83.43			H_2S	0	1746
84.111			D_2O	0	1713
85.047	±0.0085	vacuum	Ne	0	583,586,1452
86.962	±0.0087	vacuum	Ne	0	583,586,1452
87.47			H_2S	0	1746
88.471	±0.0088	vacuum	Ne	0	583,586,1452
89.775			H_2O	0	1713
89.859	±0.0090	vacuum	Ne	0	583,586,1452
92.00			H_2S	0	1746
93.0	±0.22	vacuum	Ne	0	583,586,1452
95.763			He	0	435
95.788	±0.0018	vacuum	He	0	434,435
96.38			H_2S	0	1746
96.401			HCN	0	1445
98.693			HCN	0	1445
101.257			HCN	0	1445
101.9			H_2CO	0	1804
103.3			H_2S	0	1746
106.07	±0.053	vacuum	Ne	0	583,586,1452
107.720			D_2O	0	1455
108.8			H_2S	0	1746
110.240			HCN	0	1445
112.066			HCN	0	1445

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
113.311			HCN	0	1445
115.420			H_2O	0	1713
116.132			HCN	0	1445
116.8			H_2S	0	1746
118.5910			H_2O	0	1713
119.6			H_2CO	0	1734
120.080			H_2O	0	1713
122.8			H_2CO	0	1734
123			OCS	0	1753
124.4	±0.30	vacuum	Ne	0	583,586,1452
125.9			H_2CO	0	1734
126.1	±0.30	vacuum	Ne	0	583,586,1452
126.164			HCN	0	1447
126.2			H_2S	0	1746
128.629			HCN	0	1445
129.1			H_2S	0	1746
130.8			H_2S	0	1746
130.839			HCN	0	1447
132			OCS	0	1753
132.8	±0.32	vacuum	Ne	0	583,586,1452
134.933			HCN	0	1447
135.5			H_2S	0	1746
138.768			HCN	0	1445
140.6			H_2S	0	1746
140.89	±0.042	vacuum	SO_2	0	1395,1468
155.1			H_2CO	0	1734
157.6			H_2CO	0	1734
159.5			H_2CO	0	1734
162.4			H_2S	0	1746
163.8			H_2CO	0	1734
165.150			HCN	0	1445
170.2			H_2CO	0	1734
171.67	±0.017	vacuum	D_2O	0	1368,1393
184.4			H_2CO	0	1734
189.9490	±0.00038	vacuum	DCN	0	1423,1447

Table 4.1.1—*continued*
Neutral Atom, Ion, and Molecular Gas Lasers
Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Medium	Species	Charge	Reference
192.9			H_2S	0	1746
194.7027	±0.00039	vacuum	DCN	0	1423,1447
194.7644	±0.00039	vacuum	DCN	0	1423,1447
201.059			HCN	0	1445
204.3872	±0.00041	vacuum	DCN	0	1423,1447
211.00	±0.017	vacuum	HCN	0	1445–1449
216.12			He	0	1756
216.3	±0.43	vacuum	He	0	435
220.2279	±0.00022	vacuum	H_2O	0	1368,1457
222.949			HCN	0	1445
225.3			H_2S	0	1746
284.000			HCN	0	1422
309.7140	±0.00031	vacuum	HCN	0	1422,1447–9
310.8870	±0.00031	vacuum	HCN	0	1421,1447–9
335.1831	±0.00034	vacuum	HCN	0	1422,1447–9
336.5578	±0.00034	vacuum	HCN	0	1421,1447–9
372.528		vacuum	HCN	0	1422
791.06			H_2O	0	1746

Section 4.2
OPTICALLY PUMPED FAR INFRARED AND MILLIMETER WAVE GAS LASERS

Introduction to the Table

Optically-pumped far infrared and millimeter wave lasers are listed in order of increasing wavelength in Table 4.2.1. Most of the lasers operate continuous wave. The uncertainty in the wavelength determination, if stated in the reference, is noted in the second column. Accurate measurements, typically 1 part in 10^5 or better, refer to vacuum since they are calculated from frequency measurements. Interferometric wavelength measurements may refer to vacuum, the laser medium, or air but are of low accuracy, ranging from a few percent to (rarely) 1 part in 10^4. Thus within the measurement uncertainties almost all measurements may be considered to refer to vacuum. The lasing molecule is given in the third column. References with titles or descriptions of the contents are given in Section 4.3. The references generally include the original report of lasing and other reports relevant to the identification of the transition and laser operation.

Pumping transitions used for lasing are given in the book by Douglas or the tabulations of Inguscio et al., Knight (1982), and Tobin (see Further Reading below).

Further Reading

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Evans, J. D., Ed., *Selected Papers on CO_2 Lasers*, SPIE Milestone Series, Vol. MS22, SPIE Optical Engineering Press, Bellingham, WA (1990).

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Moruzzi, G., Winnewisser, B. P., Winnewisser, M., Mukkopadhyay, I. and Strumia, F., Microwave, infrared and laser transitions of methanol: atlas of assigned lines from 0 to 1258 cm^{-1}, CRC Press, Boca Raton, FL (1995).

Tobin, M. S., A review of optically pumped NMMW lasers, *Proc. IEEE* 73, 61 (1985).

Witteman, W. J., *The CO_2 Laser*, Springer Verlag, Berlin (1987).

See, also, *International Journal of Infrared and Millimeter Waves* (proceedings of the Infrared and Millimeter Wave Conference series are published in this journal), *Infrared Physics and Technology, Journal of Molecular Spectroscopy, Journal of Applied Physics, IEEE Journal of Quantum Electronics, and Russian Quantum Electronics* for reports of new infrared lasers.

Table 4.2.1
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
20.008		$^{14}NH_3$	1632
20.010		C_2D_2	827
20.073		C_2D_2	827
20.13		C_2D_2	827
20.15		$^{12}C_2HD$	826
20.202		C_2D_2	827
20.267		C_2D_2	1801
20.332		C_2D_2	827
20.358		$^{14}NH_3$	1632
20.38		$^{12}C_2HD$	826
20.38798		$^{14}NH_3$	1205
20.44		C_2D_2	1802
20.47		$^{12}C_2HD$	826
20.48		$^{14}NH_3$	1632
20.604		$^{14}NH_3$	1632
20.622		$^{14}NH_3$	1632
21.05409		$^{14}NH_3$	1205
21.333		$^{14}NH_3$	1632
21.38		$^{12}C_2HD$	826
21.471		$^{14}NH_3$	1208,1209
22.542		$^{14}NH_3$	1208,1209
22.563		$^{14}NH_3$	1208,1209
23.675		$^{14}NH_3$	1208,1209
24.4		$^{13}CH_3OH$	1706
24.78		SiF_4	1219
24.918		$^{14}NH_3$	1208,1209
25.270		CH_3OH	179
25.31		SiF_4	1219
25.36		SiF_4	1219
25.40		SiF_4	1219
25.67		SiF_4	1219
25.68		SiF_4	1219
25.77		SiF_4	1219
25.79		SiF_4	1219

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
26.01		SiF_4	1219
26.14		SiF_4	1219
26.282		$^{14}NH_3$	1208,1209
27.7		CD_3OH	1720
27.9707534	±0.00000025	H_2O	1369
30.7		CD_3OH	1720
31.1		CD_3OH	1720
31.951		$^{14}NH_3$	1208,1209
33.029	±0.0033	H_2O	1368
33.500		CH_3OH	179
33.6		CH2CHF	1730
34.2		CD_3OH	1720
34.60		$CH_3{}^{18}OH$	1741
34.79	±0.010	$^{13}CH_3OH$	1415,1417
34.8	±0.17	CD_3OH	1391
35.0	±0.70	CD_3OD	1425
35.00		$CH_3{}^{18}OH$	1741
35.7		CD_3OH	1720
35.860		CH_3OH	179
35.968		CH_3OH	179
36.666		CH_3OH	179
37.1		CD_3OH	1720
37.6	±0.18	CD_3OH	1391
37.85421	±0.000019	CH_3OH	1481
39.785		CH_3OH	823
39.92423	±0.0000205	CH_3OH	1481
40.00		$CH_3{}^{18}OH$	1741
40.1	±0.20	CD_3OH	1391
41.0	±0.82	CD_3OD	1425,1432
41.034		CH_3OH	179
41.06		CH_3OH	829
41.171		CH_3OH	179
41.25	±0.021	CD_3OH	1405
41.33		CH_3OH	830
41.35487	±0.000021	CD_3OH	1481

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
41.355		CD_3OH	826
41.40	±0.021	CD_3OH	1391,1405
41.46		CD_3OH	1718
41.500		CH_3OH	823
41.8		CHD_2OH	663
41.871		CH_3OH	179
41.90	±0.013	$^{13}CH_3OH$	1415,1417
42.15908	±0.000021	CH_3OH	1481
42.31	±0.042	CH_3OH	1414,1420
42.400		CH_3OH	179
42.5		CD_3OH	1720
42.5		CD_3OH	1720
42.50	±0.094	CH_2DOH	1467
42.6		CD_3OH	1720
42.92		CD_3OH	1718
42.953		CH_3OH	179
43.1		CD_3OH	1720
43.1	±0.21	CH_3OH	1414,1427
43.47	±0.013	CH_3OH	1414,1427
43.697		CD_3OH	826
43.69729	±0.000022	CD_3OH	1481
43.70		CD_3OH	1718
43.70		$CH_3{}^{18}OH$	1741
43.784		CH_3OH	823
44.0	±0.48	CH_2DOH	1467
44.24		CH_3OH	179
44.3		CD_3OH	1720
44.307		CH_3OH	823
44.55		CD_3OH	1718
44.70		CD_3OH	1718
44.70		CD_3OH	1718
45.00		CD_3OH	1718
45.1		CHD_2OH	663
45.66		CD_3OH	1718
46.164		CH_3OH	179

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
46.6		CH_3OD	113
46.7	±0.47	CH_3OD	1367,1370
47.1		CD_3OH	1720
47.244	±0.0047	H_2O	1368
47.46315	±0.000095	H_2O	1368,1383
47.687	±0.0048	H_2O	1368
47.910	±0.0067	NH_3	1393,1461–1464
48.363		CH_3OH	179
48.40		$CH_3{}^{18}OH$	1741
48.6		CD_3OH	1720
48.630		CH_3OH	179
48.7		CD_3OH	1720
48.760		CH_3OH	823
49.07		CD_3OH	1718
49.50		$CH_3{}^{18}OH$	1741
49.78		CD_3OH	1718
49.8	±0.24	CD_3OH	1410
50.1		CD_3OH	1720
50.224		CH_3OH	179
50.30		CD_3OH	1718
51.207		CH_3OH	823
51.240		CH_3OH	823
51.85		CH_3OH	829
52.		NH_3	816
52.030	±0.0083	NH_3	1393,1461,1464
52.1		$^{13}CD_3OH$	1703
52.2		$^{13}CD_3OH$	1703
52.27		CH_3OH	830
52.4		CD_3OD	1714
52.48		CH_3OH	829
52.70		$CH_3{}^{18}OH$	1741
52.800	±0.0084	NH_3	1393,1461,1464
53.10		CD_3OH	1718
53.5	±0.26	CH_3OH	1414,1427
53.6		CD_3OD	1716

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
53.60		$CH_3{}^{18}OH$	1741
53.82	±0.027	CD_3OH	1405,1410
53.831		CH_3OH	823
53.988		CH_3OH	823
54.1		CD_3OH	1720
54.460	±0.0087	NH_3	1393,1461–1464
54.7		CD_3OH	1719
55.088	±0.0055	H_2O	1368
55.370041	±0.000028	CH_3OH	1481
55.56	±0.028	CD_3OH	1405
55.59		CH_3OD	121
55.6		CHD_2OH	663
55.8		$^{13}CD_3OH$	1703
56.23		CH_3OH	829
56.5		CD_3OH	1720
56.7		CD_3OH	1720
56.730		CH_3OH	179
56.87		CD_3OH	1718
57.0	±0.57	CH_3OD	1433
57.040	±0.0097	NH_3	1393,1461–1464
57.24		CH_3OD	121
57.3		$^{13}CD_3OD$	453
57.355	±0.0057	Ne	583,586,1452
57.4		NH_3	975
57.9		CHD_2OH	663
58.		NH_3	816
58.010	±0.0099	NH_3	1393,1461–1464
58.5		CD_3OD	1715
59.368	±0.010	NH_3	1393,1461–1464
59.60		CD_3OH	1718
60.00		$^{13}CH_3OH$	1707
60.10	±0.030	CD_3OH	1405,1410
60.173273	0.000030	CH_3OH	1484
60.35		CH_3OH	829
60.58		CH_3OH	829

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
60.6		CD_3OD	1716
61.40		CD_3OH	1718
61.613300	±0.000031	CH_3OH	1484
61.7		CD_3OH	1720
62.171		CH_3OH	823
62.965968	±0.000031	CH_3OH	1484
63.006		CH_3OH	823
63.096391	±0.000032	$^{13}CH_3OH$	1415
63.369541	±0.000032	CH_3OH	1481
63.681		CH_3OH	823
63.88		CH_3OH	830
63.948		CH_3OH	823
64.397		CH_3OH	823
64.499	±0.012	NH_3	1393,1461–1464
64.9		H_2O	975
65.4		$^{13}CD_3OH$	1703
65.509	±0.013	NH_3	1393,1461–1464
65.544		CH_3OH	823
65.55		$CH_3{}^{18}OH$	1741
65.87		CD_3OH	1718
66.21		CH_3OH	830
66.249		CH_3OH	179
66.40		CD_3OH	1718
66.78		CD_3OD	1717
66.80		CD_3OH	1718
67.224		CH_3OH	823
67.240	±0.013	NH_3	1393,1461–1464
67.3		$^{15}NH_3$	905
67.430		CH_3OH	179
67.479		CD_3OH	826
67.479411	±0.000034	CD_3OH	1481
67.495361	±0.000034	CH_3OH	1414,1427,1481
67.751	±0.014	NH_3	1393,1461–1464
67.8		$^{13}CD_3OH$	1703
68.		CH_3NH_2	1752

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
68.45		CD_3OH	1718
68.698		CH_3OH	179
68.70		CD_3OH	1718
68.93		CD_3OD	1717
69.18		CD_3OH	1718
69.5	±0.70	CH_3OD	1440
69.679560	±0.000035	CH_3OH	1484
69.90		$CH_3{}^{18}OH$	1741
69.95		CH_3OH	830
70.00		$^{13}CH_3OH$	1707
70.3	±0.28	CH_3OD	1440
70.511628	±0.000014	CH_3OH	1371,1484
70.989		CD_3OH	826
71.0	±0.35	CD_3OH	1391
71.50		CD_3OH	1718
71.70		$^{13}CH_3OH$	1707
71.70		CD_3OH	1718
72.00		$^{13}CH_3OH$	1707
72.747780	±0.000022	D_2O	1368,1393,1455
72.9		$^{13}CD_3OH$	1703
73.20		CH_3OH	829
73.306420	±0.000037	CH_3OH	1484
73.401	±0.0073	H_2O	1368
73.467		$^{13}CD_3OH$	1703
73.467		$^{13}CD_3OH$	1703
73.8		CD_3OD	1714
74.1		CHD_2OH	663
74.38		CH_3OD	121
74.384		CH_3OH	179
74.8		CHD_2OH	663
75.06		CH_3OH	829
75.275		$^{13}CD_3OD$	1702
75.5		$^{13}CD_3OD$	1702
75.821		CH_3OH	179
75.932		CH_3OH	179

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
76.00		CD_3OH	1718
76.1	±0.37	CD_3OH	1391
76.3		CD_3OD	1716
76.4		$^{15}NH_3$	905
76.90		CD_3OH	1718
76.93		CD_3OH	1718
77.07	±1.5	NH_2D	1437
77.405648	±0.000039	CH_3OH	1484
77.487		CH_3OH	823
77.489387	±0.000039	$^{13}CH_3OH$	1415
77.65		$CH_3{}^{18}OH$	1741
77.84		CH_3OH	830
77.904888	±0.000039	CH_3OH	1484
77.93		CH_3OD	121
78.0	±0.78	CD_3OD	1425
78.272	±0.018	NH_3	1393,1461–1464
78.39		CH_3OH	830
78.443327	±0.000024	H_2O	1368,1455
78.60		CD_3OH	1718
78.78		CD_3OH	1718
79.05		CD_3OD	1717
79.091010	±0.000024	H_2O	1368,1455
79.618	±0.019	NH_3	1393,1461–1464
79.98		CH_3OH	829
80.	±2.4	CH_3OH	1420
80.0	±0.16	CH_3OD	1397,1436
80.1		CD_3OD	1715
80.3		$^{13}CH_3OH$	1706
80.44		CD_3OH	1718
80.5		CD_3OD	1714
80.5122.304		CD_3OD	1714
80.6	±0.39	CH_3OH	1473,1475
80.8		CHD_2OH	663
80.843		CH_3OH	179
81.01		$^{13}CH_3OH$	1707

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
81.480	±0.020	NH_3	1393,1461–1464
81.500	±0.049	NH_3	1376,1393,1464
81.557101	±0.000041	CD_3OH	1391,1481
81.8		$^{13}CD_3OD$	453
81.9	±0.40	CH_3OD	1451
81.903		CH_3OH	179
82.1		$^{13}CD_3OD$	1702
82.2		CD_3OD	1714
82.4		$^{13}CD_3OD$	1702
82.6		CD_3OD	1715
82.7		CD_3OH	1719
83.6		CD_3OD	1715
83.7		CHD_2OH	663
83.70		CD_3OH	1718
83.77		PH_3	815
83.9		CD_3OH	1719
83.9		CHD_2OH	663
84.005		CH_3OH	179
84.278893	±0.000025	D_2O	1368,1393,1455
84.4		$^{13}CD_3OD$	1702
84.406		$^{13}CD_3OH$	1703
84.5		CD_3OH	1719
84.7		$^{13}CD_3OD$	453
84.908		CH_3OH	823
84.913		CH_3OH	179
85.317287	±0.000043	$^{13}CH_3OH$	1415
85.5		CD_3OD	1715
85.600931	±0.000043	CH_3OH	1484
85.79	±0.026	$^{13}CH_3OH$	1415,1417
85.83		CH_3OH	829
85.90	±1.7	NH_2D	1437
86.111788	±0.000043	$^{13}CH_3OH$	1415
86.239385	±0.000043	CH_3OH	1481
86.30		CD_3OH	1718
86.4	±0.42	CD_3OH	1391

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
86.5		CD_3OD	1714
86.741		CD_3OH	826
86.90	±1.7	ND_3	1437
87.		CH_3NH_2	1752
87.09	±0.022	NH_3	1393,1461–1464
87.10	±0.096	CH_2DOH	1467
87.20		$CH_3{}^{18}OH$	1741
87.3		CD_3OD	1714
87.4	±0.43	NH_3	1393,1461–1464
87.65		$CH_3{}^{18}OH$	1741
87.8		CD_3OH	1719
87.9		CD_3OH	1719
87.90	±0.026	$^{13}CH_3OH$	1415,1417
87.90	±0.097	CH_2DOH	1467
88.		NH_3	816
88.059	±0.018	NH_3	1393,1461–1464
88.819		CH_3OH	179
89.		NH_3	816
89.00		$^{13}CH_3OH$	1707
89.31		CH_3OH	830
89.6	±0.44	CH_3OD	1451
89.98		CH_3OH	830
90.		NH_3	816
90.16		CD_3OH	1718
90.303		CH_3OH	823
90.4		$^{15}NH_3$	905
90.40	±0.099	CH_2DOH	1467
90.934	±0.025	NH_3	1393,1461–1464
90.97		$CH_3{}^{18}OH$	1741
91.08		CH_3OD	121
92.		CH_3NH_2	1752
92.543913	±0.000046	CH_3OH	1484
92.60		$CH_3{}^{18}OH$	1741
92.664287	±0.000046	CH_3OH	1481
92.876	±0.026	NH_3	1393,1461–1464

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
92.9		$^{13}CD_3OD$	453
93.0		CHD_2OH	663
93.40		$CH_3{}^{18}OH$	1741
93.6		$^{13}CD_3OD$	1702
93.6		NH_3	827
93.88		CD_3OH	1718
93.96		CH_3OH	829,830
94.3		CD_3OD	1716
94.447	±0.026	NH_3	1393,1461–1464
94.52	±0.46	D_2O	1368,1393
94.90		CD_3OH	1718
95.10		CH_3OH	830
95.24		$^{13}CH_3OH$	1707
95.25		CH_3OH	829
95.551		CH_2F_2	1738
95.551057	±0.000048	CH_2F_2	1392,1454,1466
96.522395	±0.000015	CH_3OH	1455
96.674	±0.028	NH_3	1393,1461–1464
96.812		CH_3OH	823
97.29		CH_3OH	830
97.518534	±0.000049	CH_3OH	1481
97.800		CH_3OH	179
98.	±2.9	CH_3OH	1471
98.0		$^{13}CH_3OH$	1706
98.5		$^{13}CD_3OH$	1703
98.65		$CH_3{}^{18}OH$	1741
98.862		CH_3OH	823
99.14		$CH_3{}^{18}OH$	1741
99.861		CH_3OH	834
100.		CH_3NH_2	1751
100.	±2.0	CH_3NH_2	1437
100.00	±0.10	CH_2DOH	1467
100.010		CH_3OH	179
100.166		CH_3OH	834
100.80647	±0.000050	CH_3OH	1484

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
101.3		$^{13}CH_3OH$	1706
101.6	±0.50	CH_3OD	1440,1436,1451
101.9		$^{13}CD_3OD$	453
102.		CH_3NH_2	1752
102.02349	±0.000051	CH_2DOH	1467
102.2		CD_3OD	1715
102.3		CH_3OH	829
102.6	±0.50	CD_3OH	1391
102.60		CH_3OH	830
103.0		CD_3OH	1719
103.0		CHD_2OH	663
103.00		$^{13}CH_3OH$	1707
103.12463	±0.000018	CH_3OD	1397,1483
103.48079	±0.000052	$^{13}CH_3OH$	1415
103.58629	±0.000052	$^{13}CH_3OH$	1415
104.00		PH_3	815
104.3		CD_3OD	1714
104.6		CHD_2OH	663
104.60		$CH_3{}^{18}OH$	1741
105.		CH_3NH_2	1752
105.0		CHD_2OH	663
105.07		$^{13}CH_3OH$	1707
105.14719	±0.000053	$^{13}CH_3OH$	1415
105.35	±0.034	NH_3	1393,1461–1464
105.35	±0.034	NH_3	1393,1461–1464
105.4		CD_3OD	1715
105.518		CH_2F_2	1738
105.51827	±0.000053	CH_2F_2	1392,1454,1466
106.	±2.1	CH_3OD	1436
106.400		$^{13}CH_2F_2$	1704
107.20		CD_3OH	1718
107.4		CHD_2OH	663
107.538		CD_3OD	1714
107.72019	±0.000043	D_2O	1368,1393,1455
107.8		$^{13}CH_3OH$	1706

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
107.8	±2.2	NH_2D	1437
108.6		CH_3OH	829
108.668		CD_3OH	826
108.66842	±0.000054	CD_3OH	1481
108.7		CD_3OD	1714
108.81775	±0.000054	CH_2DOH	1467,1478
108.94124	±0.000054	CH_2DOH	1467
109.		CH_3NH_2	1752
109.1		CD_3OH	1719
109.29579	±0.000055	CH_2F_2	1392,1454,1466
109.296		CH_2F_2	1738
109.3		CHD_2OH	663
109.30		$CH_3{}^{18}OH$	1741
109.4		CH_3OH	829
109.926		$^{13}CD_3OD$	1702
109.938		$^{13}CD_3OD$	1702
110.	±1.1	CH_3OD	1433,1436
110.0		$^{13}CD_3OH$	1703
110.43238	±0.000055	$^{13}CH_3OH$	1415
110.7	±0.54	CH_3OD	1436,1451
110.716		CH_3OH	834
110.9		$^{13}CH_3OH$	1706
111.3		CD_3OD	1715
111.4		CHD_2OH	663
111.40		CD_3OH	1718
111.6		CHD_2OH	663
111.60		$CH_3{}^{18}OH$	1741
111.9		CHD_2OH	663
111.9	±0.55	$^{15}NH_3$	1390
112.000		$^{13}CH_2F_2$	1704
112.10		CD_3OH	1718
112.22	±0.038	NH_3	1461,1479
112.3		NH_3	827
112.3	±0.55	CD_3OH	1391
112.53224	±0.000056	CH_2DOH	1467

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
112.6	±0.55	D_2O	1368,1393
112.946		CH_3OH	834
113.1	±2.3	NH_2D	1437
113.4		$^{13}CH_3OH$	1706
113.450		CH_3OH	179
113.5		$^{15}NH_3$	905
113.5		CH_3OD	113
113.60		$^{13}CH_3OH$	1707
113.73188	±0.000057	CH_3OH	1484
113.8	±0.56	CH_3OD	1451
114.20		$CH_3{}^{18}OH$	1741
114.29	±0.040	NH_3	1393,1461–1464
114.40		CD_3OH	1718
115.0		N_2D_4	735
115.00		$^{13}CH_3OH$	1707
115.2		$^{13}CD_3OD$	453
115.32	±0.012	H_2O	1368
115.70		$CH_3{}^{18}OH$	1741
115.80		$CH_3{}^{18}OH$	1741
115.82318	±0.000058	$^{13}CH_3OH$	1415
115.935		CH_2F_2	1739
116.		CH_3NH_2	1751
116.		CH_3SH	485
116.	±2.3	CH_3NH_2	1437
116.	±2.3	CH_3SH	1435
116.00		CH_3OH	830
116.27	±0.041	NH_3	1393,1461–1464
116.5		CD_3OH	1719
117.		CH_3SH	485
117.	±2.3	CH_3SH	1435
117.000		CH_3OH	179
117.08507	±0.000059	CH_2DOH	1467
117.22707	±0.000022	CH_3OD	1397,1483
117.3		CHD_2OH	663
117.4		CH_3OH	829

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
117.62		CD_3OH	1718
117.630		CH_3OH	179
117.727		CH_2F_2	1738
117.72748	±0.000059	CH_2F_2	1392,1454,1466
117.92		$^{13}CH_3OH$	1707
117.95948	±0.000059	CH_3OH	1481
118.01308	±0.000059	$^{13}CH_3OH$	1415
118.553		$^{13}CD_3OD$	1702
118.5910	±0.00012	H_2O	1368,1457
118.8		CD_3OH	1719
118.83409	±0.000024	CH_3OH	1427,1455
119.		CH_3NH_2	1751
119.	±1.2	CD_3OD	1425
119.	±2.4	CH_3NH_2	1437
119.02	±0.042	NH_3	1393,1461–1464
119.057		CD_3OD	1714
119.1		$^{13}CD_3OH$	1703
119.4		$^{13}CD_3OH$	1703
119.7		CH_3OH	829
119.800		CH_3OH	179
119.84		$CH_3{}^{18}OH$	1741
119.9		CD_3OH	1718
120.		CH_3NH_2	1751
120.		CHFO	820
120.	±2.4	CH_3NH_2	1437
120.3		CD_3OH	1719
120.45		CD_3OH	1718
120.469		CD_2F_2	1710
120.661		CD_3OH	826
120.9		CHD_2OH	663
120.902		CH_3OH	834
121.	±2.8	CH_3OH	1427–1429,1471
121.0		CH2CHF	1730
121.20	±0.036	$^{13}CH_3OH$	1415,1417
121.270		CH_3OH	179

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
122.00		$^{13}CH_3OH$	1707
122.154		CD_3OH	826
122.46551	±0.000061	CH_2F_2	1392,1454,1466
122.466		CH_2F_2	1738
122.466		CH_2F_2	1738
123.26	±0.037	$^{13}CH_3OH$	1415,1417
123.55		CD3OH	1718
123.640		CH_3OH	179
123.7		$^{13}CD_3OD$	453
123.8		CHD_2OH	663
123.85		$CH_3{}^{18}OH$	1741
123.9		CH_3OH	829
123.9		CHD_2OH	663
123.9	±2.5	NH_2D	1437
123.90		$CH_3{}^{18}OH$	1741
123.90		$CH_3{}^{18}OH$	1741
124.		CH_3SH	485
124.		DFCO	684
124.	±2.5	CH_3SH	1435
124.253		$^{13}CD_3OD$	1702
124.3		$^{13}CD_3OH$	1703
124.4		CHD_2OH	663
124.43170	±0.000062	CH_2DOH	1467,1478
124.7		CH_3OH	829
124.798		CD_3OD	1714
125.4		CHD_2OH	663
126.	±2.5	CH_3NH_2	1437
126.1		$^{13}CD_3OH$	1703
126.2		$^{13}CD_3OD$	1702
126.2		$^{13}CD_3OD$	1702
126.545		CH_2F_2	1739
126.6		CH_3OH	829
127.		CH_3SH	485
127.	±2.5	CH_3SH	1435
127.021		$^{13}CD_3OH$	1703

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
127.021		$^{13}CD_3OH$	1703
127.3		CD_3OH	1719
127.30		CH_2F_2	808
127.4		CHD_2OH	663
127.656		$^{13}CD_3OH$	1703
127.656		$^{13}CD_3OH$	1703
127.77		$CH_3{}^{18}OH$	1741
128.		CH_3NH_2	1751
128.		CH_3SH	485
128.		CHFO	821
128.	±2.6	CH_3NH_2	1437
128.	±2.6	CH_3SH	1435
128.0	±0.26	CH_3OD	1397
128.034		CD_3OH	826
128.1		$^{13}CD_3OD$	1702
128.1		SO_2	812
128.5		CHD_2OH	663
128.629	±0.0063	HCN	1445
128.7	±0.63	CD_3OH	1391
129.10		CH_2F_2	808
129.2		$^{13}CD_3OD$	1702
129.5497	±0.00013	CH_3OH	1414,1427–1429
129.6		CD_3OD	1715
130.		CH_3NH_2	1752
131.2		CH_3OD	113
131.560		CH_3OH	823
131.56276	±0.000066	CD_3OH	1481
131.563		CD_3OH	826
131.6		CH_3OH	829
131.69		$CH_3{}^{18}OH$	1741
132.2		CHD_2OH	663
132.7		$^{13}CD_3OD$	453
132.9		CH_3OH	829
133.1196	±0.00013	CH_3OH	1427–1429,1481
133.7		$^{13}CH_3OH$	1706

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
133.7		CD_3OH	1719
133.9	±0.27	HCOOH	1366,1384
133.99765	±0.000067	CH_2F_2	1392,1454,1466
133.998		CH_2F_2	1738
134.0		N_2D_4	735
134.0	±0.54	CH_3OD	1425,1436,1440
134.2		SO_2	810
134.60		$CH_3{}^{18}OH$	1741
134.900		CH_2F_2	1739
135.	±1.4	CH_3OD	1367
135.0		CHD_2OH	663
135.000		CH_3OH	179
135.17175	±0.000068	CH_2DOH	1467
135.17256	±0.000068	CH_2DOH	1467
135.269		CH_2F_2	1738
135.26932	±0.000068	CH_2F_2	1392,1454,1466
135.4		CD_3OH	1719
135.5		$^{15}NH_3$	905
135.523		$^{13}CH_2F_2$	1704
135.83350	±0.000068	CH_2DOH	1467
135.9		CD_3OD	1716
135.94		PH_3	815
136.	±1.4	CH_3OD	1425,1436
136.120		CH_3OH	179
136.2		CHD_2OH	663
136.5		CD_3OH	1719
136.627		CD_3OH	826
136.62721	±0.000068	CD_3OH	1481
137.		CH_3NH_2	1752
137.	±2.7	CH_3OD	1436
137.0		CHD_2OH	663
138.281		$^{13}CH_2F_2$	1704
138.4		CD_3OH	1718
139.0		$^{13}CD_3OD$	453
139.266		CD_2F_2	1710

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
140.0		CD_3OH	1719
140.30	±0.098	CH_2DOH	1467
140.4		CH_3OD	113
140.405		$^{13}CH_2F_2$	1704
140.89	±0.042	SO_2	1395,1426,1468
140.9		$^{13}CH_3OH$	1706
140.95		CD_3OH	1718
141.	±2.8	CH_3OD	1436
141.3		CD_3OD	1714
141.7		CD_3OD	1715
142.		CH_3NH_2	1751
142.		CH_3NH_2	1752
142.	±2.8	CH_3NH_2	1437
142.1		SO_2	812
142.43		$CH_3{}^{18}OH$	1741
142.6		CH2CHF	1732
142.80		$CH_3{}^{18}OH$	1741
142.9		CHD_2OH	663
143.186		CH_2F_2	1739
143.3		H_2O	975
143.64		$CH_3{}^{18}OH$	1741
143.8		CD_3OD	1717
143.8		CD_3OD	1717
143.80		CD3OH	1718
144.		DFCO	684
144.11787	±0.000072	CD_3OH	1391,1481
144.118		CD_3OH	826
144.18		$CH_3{}^{18}OH$	1741
144.40		CD_3OH	1718
144.8		CHD_2OH	663
145.		CH_3NH_2	1751
145.	±2.9	CH_3NH_2	1437
145.0		CH_3OH	829
145.081		CH_2F_2	1739
145.252		CH_3OH	834

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
145.3		CHD_2OH	663
145.5	±0.71	CH_3OH	1427,1473
145.563		$^{13}CD_3OH$	1703
145.6	±0.71	CH_3OD	1451
145.66171	±0.000022	CH_3OD	1370,1433
145.7		CD_3OH	1719
146.		CH_3NH_2	1751
146.	±2.9	CH_3NH_2	1437
146.09738	±0.000073	$^{13}CH_3OH$	1415
146.2		SO_2	812
146.326		$^{13}CD_3OH$	1703
146.6		$^{15}NH_3$	905
147.		CH_3NH_2	1751
147.		CH_3SH	485
147.	±2.9	CH_3NH_2	1437
147.	±2.9	CH_3SH	1435
147.15	±0.065	NH_3	1393,1461–1464
147.28		CD_3OH	1718
147.349		CD_3OH	826
147.65		CD_3OH	1718
147.84469	±0.000030	CH_3NH_2	1437,1483
147.97	±0.044	$^{13}CH_3OH$	1415,1417
148.		C_3H_2O	681
148.0		CD_3OD	829,1717
148.2		CH2CHF	1732
148.3		$^{13}CD_3OH$	1703
148.59041	±0.000074	$^{13}CH_3OH$	1415,1417,1481
148.617		$^{13}CD_3OD$	1702
148.94		CD_3OH	1718
149.0		$SiHF_3$	814
149.00		$CH_3{}^{18}OH$	1741
149.2		$^{13}CD_3OD$	453
149.27228	±0.000075	$^{13}CH_3OH$	1415
149.38792	±0.000075	CH_2DOH	1467
149.61284	±0.000075	CH_2DOH	1467

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
149.7		SO_2	812
149.8		CH_3OH	829
149.800		CH_3OH	179
150.		CH_3NH_2	1752
150.	±1.5	CD_3OD	1425
150.2		$^{13}CD_3OH$	1703
150.3		$^{13}CD_3OD$	1702
150.438		CD_2F_2	1710
150.5		CD_3OD	1715
150.57167	±0.000075	CH_2DOH	1467
150.8		CD_3OH	1719
150.81629	±0.000075	CH_2DOH	1467,1478
151.		CH_3OH	203
151.0		$^{13}CD_3OD$	1702,1703
151.25369	±0.000076	CH_3OH	1481
151.3		CD_3OD	1715
151.49	±0.068	NH_3	1393,1461–1464
151.65		$CH_3{}^{18}OH$	1741
151.8		$^{13}CD_3OD$	1702
151.8		$^{15}NH_3$	905
151.80		CD_3OH	1718
152.	±3.0	CH_3OH	1427,11436,473
152.0		CH_3OH	820
152.07569	±0.000076	$^{13}CH_3OH$	1415,1417,1481
152.3		CD_3OD	1715
152.6		CHD_2OH	663
152.670		CH_3OH	823
152.7	±0.11	CH_2DOH	1467
152.9	±0.31	$^{15}NH_3$	1390,1476,1477
153.195		CH_2F_2	1739
153.54		$CH_3{}^{18}OH$	1741
153.694		$^{13}CD_3OH$	1703
153.70		CD_3OH	1718
154.160		CH_2F_2	1739
154.2		CD_3OD	1717

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
155.0		$^{13}CH_3OH$	1706
155.28	±0.071	NH_3	1393,1461–1464
155.6	±0.45	CD_3F	1472,1485
156.		C_3H_2O	681
156.0		$^{13}CD_3OH$	1703
156.5		$^{13}CD_3OD$	453
156.510		CH_3OH	823
157.		CH_2CHCl	1697,1747
157.92848	±0.000079	$^{13}CH_3OH$	1415
158.0	±0.77	CD_3OH	1410
158.513		CH_2F_2	1738
158.51348	±0.000079	CH_2F_2	1392,1454,1466
158.9		CD_3OH	1719
158.960		CH_2F_2	1738
158.96020	±0.000080	CH_2F_2	1392,1454,1466
159.2	±0.78	CH_3OH	1475
159.21794	±0.000080	CH_2DOH	1467
159.400		CD_3OH	826
159.5		N_2D_4	735
159.5		SO_2	811
159.67569	±0.000080	CH_3OH	1481
161.		CH_3SH	485
161.	±3.2	CH_3SH	1435
161.10		CD_3OH	1718
161.3		CD_3OD	1715
161.530		CH_3OH	179
161.8		CHFCHF	665
162.218		CH_3OH	834
162.670		CH_3OH	179
162.70	±0.098	CH_2DOH	1467
162.85		CD_3OH	1718
163.		CHD_2F	662
163.03353	±0.000046	CH_3OH	1455
163.120		CH_2F_2	1739
163.574		CH_3OH	834

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
164.		DFCO	684
164.0	±0.80	CH_3OH	1427
164.2		CH_3OD	113
164.4		CHD_2OH	663
164.40		CH_3OH	830
164.5076	±0.00016	CH_3OH	1418,1429,1481
164.56421	±0.000082	CH_3OH	1484
164.60038	±0.000082	CH_3OH	1375,1427,1481
164.656		$^{13}CH_2F_2$	1704
164.69747	±0.000082	CH_3OH	1484
164.74645	±0.000082	CH_2DOH	1467
164.7832	±0.00016	CH_3OH	1418,1429,1481
164.815		$^{13}CH_2F_2$	1704
165.		CH_3NH_2	1751
165.	±1.7	CD_3OD	1425
165.	±3.3	CH_3NH_2	1437
165.0	±0.81	CHD_2OH	1478
165.1		CHD_2OH	663
165.10		$CH_3{}^{18}OH$	1741
165.2		SO_2	812
165.3		CD_3OD	1715
165.604		CD_3OD	1714
166.		CH_3NH_2	1752
166.	±3.3	CH_3NH_2	1437
166.28		$^{13}CH_3OH$	1707
166.631		CH_2F_2	1738
166.63105	±0.000083	CH_2F_2	1392,1454,1466
166.67665	±0.000083	CH_2F_2	1392,1454,1466
166.677		CH_2F_2	1738
166.76		CD_3OH	1718
166.8		SO_2	810
166.879		CD_2F_2	1710
167.1		CH_3OH	829
167.35235	±0.000084	CH_2DOH	1467
167.54117	±0.000084	CH_2DOH	1467,1478

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
167.58700	±0.000084	CH_3OH	1484
167.810		CH_3OH	179
168.0	±0.82	CHD_2OH	1478
168.083		CD_3OH	826
168.1	±0.34	CH_3OD	1397
168.84	±0.051	$^{13}CH_3OH$	1415,1417
169.		CH_3NH_2	1751
169.	±3.4	CH_3NH_2	1437
169.	±3.4	CH_3OD	1436
169.0		SiH_2F_2	814
169.6		SO_2	812
170.10		$CH_3{}^{18}OH$	1741
170.18		$CH_3{}^{18}OH$	1741
170.57637	±0.000048	CH_3OH	1397,1427,1455,1469
170.9		$^{13}CD_3OD$	453
171.1		CHD_2OH	663
171.3	±0.84	CH_3OH	1473,1475
171.4		SO_2	812
171.67	±0.017	D_2O	1368,1393
171.75758	±0.000086	$^{13}CH_3OH$	1415
171.8	±0.10	CH_2DOH	1467
172.0		CD_3OD	1715
172.000		CH_3OH	179
172.020		CH_3OH	823
172.1		CHD_2OH	663
172.4		CHD_2OH	663
172.6		CH_3OD	121
172.620272.30		CD_3OH	1718
172.7		CH_3OD	121
172.8		C_2H_3Cl	1730
172.8	±0.50	CD_3F	1472,1485
172.84620	±0.000086	CH_2DOH	1467,1478
173.5		CH_3OD	113
173.637		$^{13}CD_3OD$	1702
173.637		$^{13}CD_3OD$	1702

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
174.00		CD_3OH	1718
174.3		CD_3OD	1717
174.7		SO_2	810
175.1		$^{13}CD_3OD$	1702
175.5		SiH_2F_2	814
176.		C_2H_4O	1748
176.		CH_2ClF	1737
176.		ClO_2	1823
176.	±3.5	CH_3OH	1427,1436
176.000		CH_3OH	179
176.45		$CH_3{}^{18}OH$	1741
176.5		CH_3OH	829
176.80		CD_3OH	1718
177.0		CH_3OH	829
177.00		CD_3OH	1718
177.4		CD_3OH	1719
177.6		$^{13}CD_3OH$	1703
178.		CH_3NH_2	1751
178.	±3.6	CH_3NH_2	1437
178.	±3.6	CH_3OH	1427,1436
178.0		CD_2Cl_2	1709
178.410		CH_3OH	823
178.6		CD_3OD	1715
179.		CH_3NH_2	1751
179.	±3.6	CH_3NH_2	1437
179.0	±0.36	CH_3OD	1397,1437
179.0	±0.88	CD_3OH	1410
179.0	±0.88	CHD_2OH	1478
179.72791	±0.000090	CH_3OH	1484
179.8		CHD_2OH	663
179.80		$CH_3{}^{18}OH$	1741
180.	±3.6	CH_3NH_2	1437,1459
180.0		SO_2	812
180.4	±0.36	CH_3OH	1397,1427
180.600		$^{13}CH_2F_2$	1704

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
180.600		CH_3OH	179
180.74051	±0.000090	CD_3OH	1391,1481
180.741		CD_3OH	826
180.75		CD_3OH	1718
181.10		$CH_3{}^{18}OH$	1741
181.2		$^{13}CH_3OH$	1706
181.20		$CH_3{}^{18}OH$	1741
181.580		CH_3OH	823
181.60		$CH_3{}^{18}OH$	1741
181.711		CD_3OH	826
181.92643	±0.000055	N_2H_4	1483
182.	±3.6	CH_3OD	1436
182.0		SO_2	811
182.1	±0.89	CH_3OD	1451
182.10	±0.091	CH_2DOH	1467
182.19		$CH_3{}^{18}OH$	1741
182.2		CH_3OD	113
182.381		$^{13}CH_2F_22$	1704
182.566		CD_3OH	826
182.56629	±0.000091	CD_3OH	1481
183.289		$1^{13}CH_2F_2$	1704
183.36		$CH_3{}^{18}OH$	1741
183.4		$^{13}CD_3F$	1699
183.62132	±0.000092	CH_2DOH	1467
183.680		CH_3OH	823
184.	±3.7	CD_3OD	1425,1432
184.0	±0.90	CD_3OH	1402
184.1		SO_2	810
184.2		CD_3OD	1715
184.30590	±0.000092	CH_2F_2	1392,1454,1466
184.306		CH_2F_2	1738
184.4		CD_2Cl_2	1708
184.5		SiH_2F_2	814
184.766		CD_3OD	1714
184.80		$CH_3{}^{18}OH$	1741

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
185.		CH_3NH_2	1751
185.		CH_3SH	485
185.	±1.9	CHF_2	1362,1389
185.	±3.7	CH_3NH_2	1437
185.	±3.7	CH_3SH	1435
185.0		CD_3OH	1719
185.1		SO_2	810
185.50040	±0.000093	CH_3OH	1375,1427,1481
185.9	±0.37	CH_3OH	1397,1427
186.		CH_2CHCl	1697,1747
186.	±3.7	CH_3OD	1436
186.04219	±0.000093	CH_3OH	1397,1427,1481
186.043		$^{13}CH_2F_2$	1704
186.4		CH_3OD	113
187.		CH_3NH_2	1752
187.0		SiH_3F	813
187.05		CD_3OH	1718
187.20		CH_3OH	830
187.5		CHD_2OH	663
187.819		CD_2F_2	1710
188.41111	±0.000094	CH_2DOH	1467
188.42390	±0.000094	CD_3OH	1481
188.424		CD_3OH	826
188.9		CD_3OH	1719
188.96		$^{13}CH_3OH$	1707
189.190		CH_3OH	179
189.2		CD_3OD	1716
189.30	±0.095	CH_2DOH	1467
189.730		CD_3OH	826
189.832		CD_2F_2	1710
189.9		CD_3OD	1717
189.9490	±0.00038	DCN	1423,1447
190.	±1.9	CHFF	1362,1389
190.0090	±0.00038	DCN	1423,1447
190.270		CH_3OH	823

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
190.3		$^{13}CH_3OH$	1706
190.5		SiH_2F_2	814
190.72590	±0.000095	CH_3OH	1375,1427,1481
191.04		$CH_3{}^{18}OH$	1741
191.356		CD_3OH	826
191.5		CD_2Cl_2	1709
191.5	±0.38	CH_3OH	1397,1427
191.61960	±0.000096	CH_3OH	1484
191.683		CH_3OH	179
191.848		CH_2F_2	1738
191.84803	±0.000096	CH_2F_2	1392,1454,1466
191.9	±0.94	CD_3OH	1391
192.0		SiH_2F_2	814
192.0		SO_2	810
192.000		CD_2F_2	1710
192.5		CD_3OD	1714
192.72	±0.058	SO_2	1395,1426,1468
192.78	±0.048	CH_3F	1374,1377,1393
192.790		CD_2F_2	1710
192.9072	±0.00035	N_2H_4	1398,1483
193.0		SiH_2F_2	814
193.1		SO_2	812
193.14158	±0.000097	CH_3OH	1375,1427,1481
193.173		CH_2F_2	1739
193.25		$CH_3{}^{18}OH$	1741
193.3		$^{13}CD_3OD$	453
193.4		CHD_2F	662
193.497		$1^{13}CH_2F_2$	1704
193.5		CH_3OH	829
193.55		$CH_3{}^{18}OH$	1741
193.904		CH_2F_2	1738
193.90445	±0.00010	CH_2F_2	1392,1454,1466
194.00		PH_3	815
194.06320	±0.000097	CH_3OH	1484
194.2		CH2CHF	1732

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
194.260		CH_3OH	823
194.300		CH_3OH	179
194.44761	±0.00010	CH_2F_2	1392,1454,1466
194.448		CH_2F_2	1738
194.5		SO_2	810
194.7027	±0.00039	DCN	1423,1447
194.7644	±0.00039	DCN	1423,1447
195.0	±0.96	HDCO	1380,1382
195.158		$^{13}CH_2F_2$	1704
195.3		CH_2Cl_2	1736
195.49558	±0.0000980	CH_2DOH	1467
195.5		SiH_2F_2	814
196.		CHFO	820,821
196.		ClO_2	681
196.0	±0.96	HDCO	1380,1382
196.10	±0.098	CH_2DOH	1467
196.2		$^{13}CD_3OH$	1703
196.3		CHFCHF	665
196.5	±0.39	HCOOH	1366,1384
196.564		CH_3OH	834
196.6		CD_3OH	1719
196.8		CHD_2OH	663
196.95		CD_3OH	1718
197.046		$^{13}CD_3OH$	1703
197.388		$^{13}CH_2F_2$	1704
198.		DFCO	684
198.	±2.0	CHFF	1362,1389
198.0	±0.40	CH_3NH_2	1396,1437
198.66433	±0.000099	CH_3OH	1375,1427,1481
198.682		CD_3OH	826
198.79		$^{13}CH_3OH$	1707
199.		CH_3NH_2	1752
199.50		CD_3OH	1718
199.81		CD_3OH	1718
199.90		$CH_3{}^{18}OH$	1741

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
200.0	±0.48	CD_3F	1472,1485
200.0	±0.48	CH_2DOH	1467
200.210		CH_3OH	179
200.295		$^{13}CH_2F_2$	1704
200.87		CD_3OH	1718
200.9		CH_3OH	830
201.	±0.98	CD_3OH	1410
201.5	±0.48	CD_3F	1472,1485
201.9		CH2CHF	1732
202.0		CD_3OD	1715
202.40	±0.051	CH_3OH	1375,1427
202.4649	±0.00010	CH_2F_2	1392,1454,1466
202.465		CH_2F_2	1738
202.6		$^{13}CD_3OD$	453
202.6		CHD_2OH	663
203.		CH2CHF	1733
203.		CH_2CHF	1733
203.		CH_3NH_2	1752
203.1		CHD_2OH	663
203.300		CD_2F_2	1710
203.5		CD_3OH	1719
203.6358	±0.00010	$^{13}CH_3OH$	1415
203.80		$CH_3{}^{18}OH$	1741
203.96		$^{13}CH_3OH$	1707
204.		ClO_2	681
204.0		CHD_2F	662
204.3872	±0.00041	DCN	1423,1447
204.7		CHD_2OH	663
204.8		CD_3OD	1717
205.		CH_3SH	485
205.	±1.0	CH_3OH	1427
205.	±4.1	CH_3SH	1435
205.00		$^{13}CH_3OH$	1707
205.1		CH_3OH	829
205.3		SO_2	812

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
205.8		CD_3OH	1719
205.981		CH_2F_2	1739
206.0	±0.49	CD_3F	1472,1485
206.043		$^{13}CH_2F_2$	1704
206.60		$CH_3{}^{18}OH$	1741
206.6874	±0.00010	CH_2DOH	1467,1478
206.90	±0.062	CH_3OH	1414,1427,1481
207.		ClO_2	1008
207.835		CD_2F_2	1710
208.	±2.1	CH_3OH	1427
208.0		SO_2	811
208.3		CD_3OD	1715
208.3		CH_2Cl_2	1736
208.4121	±0.00010	$^{13}CH_3OH$	1415
208.8		SO_2	810
208.950		CH_3OH	823
209.0		$^{13}CD_3OH$	1703
209.1		$^{13}CD_3F$	1699
209.223		$^{13}CD_3OD$	1702
209.3		CH_3OCH_3	1754
209.6		CH_3OD	121
209.9302	±0.00010	CH_3OH	1484
210.00		CH_2F_2	808
210.5		CD_3OD	1714,1715
211.0		CH_3OH	829
211.00	±0.017	HCN	1445
211.2629	±0.00011	CH_3OH	1427,1471,1481
211.3148	±0.00011	CH_3OH	1484
212.	±2.1	CH_3OD	1436,1440
212.2		CH_3OH	829
212.5	±0.11	CH_2DOH	1467
212.9		CH_3OD	121
212.9		CHD_2OH	663
213.3		CHFCHF	665
213.351		$^{13}CH_2F_2$	1704

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
213.4625	±0.00011	CH_3OH	1397,1427,1481
214.20		$CH_3{}^{18}OH$	1741
214.3		$^{13}CH_3OH$	1706
214.35	±0.064	CH_3OH	1414,1427,1481
214.579		CH_2F_2	1738
214.5791	±0.00011	CH_2F_2	1386,1454,1466
214.597		$^{13}CH_2F_2$	1704
214.714		CD_2F_2	1710
215.		ClO_2	1008
215.01	±0.14	NH_3	1393,1461–1464
215.081		CD_3OH	826
215.0812	±0.00011	CD_3OH	1481
215.25		CD_3OH	1718
215.3		SO_2	810
215.37246	±0.000032	CH_3OD	1370,1433
215.6		CD_3OH	1719
215.80		$CH_3{}^{18}OH$	1741
216		ClO_2	681
216.100		CH_3OH	823
216.356		$^{13}CD_3OD$	1702
216.5		$^{13}CH_3OH$	1706
216.5		CH_3OH	829
216.8	±0.11	CH_2DOH	1467
216.9		CD_3OD	1715
217.0		N_2D_4	735
217.20		CD_3OH	1718
217.9		CH_3OD	121
217.9		CHD_2OH	663
218.		CH_2ClF	1737
218.0	±0.11	CH_2DOH	1467
218.0	±0.44	CH_3NH_2	1396,1437
218.0	±0.44	DCOOD	1384,1403
218.0	±1.1	$^{15}NH_3$	1390
218.2		SO_2	810
218.22	±0.065	CH_3OH	1427

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
218.267		CD_2F_2	1710
218.28	±0.14	NH_3	1393,1461–1464
218.28	±0.14	NH_3	1393,1461–1464
218.500		CH_3OH	179
218.6		NH_3	827
218.70		$CH_3{}^{18}OH$	1741
219.0		CD_3OH	1719
219.0960	±0.00011	CH_2DOH	1467
219.3		CHFCHF	665
219.4		CD_2Cl_2	1708
219.5		CHFCHF	665
219.600		CD_2F_2	1710
219.70		CD_3OH	1718
219.80		$CH_3{}^{18}OH$	1741
219.90		$CH_3{}^{18}OH$	1741
220.		CH_3NH_2	1751
220.		CHFO	821
220.	±1.1	CD_3OH	1391
220.	±4.4	CH_3NH_2	1437
220.0		$^{15}NH_3$	905
220.1		CH_3OD	121
220.2279	±0.00022	H_2O	1368,1457
220.27		$CH_3{}^{18}OH$	1741
220.3		CH_3OCH_3	1754
220.7		CHFCHF	665
221.		CH_2ClF	1737
221.		CH_3NH_2	1751
221.	±4.4	CH_3NH_2	1437
221.0		$^{13}CD_3OH$	1703
221.0		SiH_3F	813
221.2		CHD_2OH	663
221.2		SO_2	810
221.5		CH_3OD	113
221.86		$CH_3{}^{18}OH$	1741
221.88		CD_3OH	1718

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
221.9		CD_3OH	1719
222.	±1.1	CD_3OH	1402
222.0		CD_3OD	1715
222.1		$^{13}CD_3OD$	453
222.217		CD_3OH	826
222.3		CH2CHF	1732
222.50		$CH_3{}^{18}OH$	1741
222.70		CD_3OH	1718
222.8		$^{13}CH_3OH$	1706
223.	±1.1	CD_3OH	1410
223.50	±0.056	CH_3OH	1375,1427
223.57		CH_2F_2	808
223.7		CH_3OD	113
223.800		CH_3OH	823
223.840		CH_3OH	179
223.91	±0.15	NH_3	1393,1461–1464
224.		CH_3SH	485
224.	±1.1	CD_3Cl	1388,1401
224.	±4.5	CH_3OD	1436
224.	±4.5	CH_3SH	1435
224.2256	±0.00011	CH_2DOH	1467
224.7		CH_3OH	829
225.	±2.3	CH_3OD	1436,1440
225.0		CD_3OH	1719
225.07	±0.15	NH_3	1393,1461–1464
225.2		CH_3OD	121
225.5159	±0.00011	CH_3OH	1397,1427,1481
225.8		CD_3OH	1719
226.		CH_3NH_2	1752
226.2974	±0.00011	CH_2DOH	1467
226.3		CH_3OD	113
226.8		CHD_2OH	663
226.9		CD_3OH	1719
227.0		$^{13}CD_3OD$	1702
227.00		$CH_3{}^{18}OH$	1741

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
227.15	±0.10	CH_3Cl	1378,1385
227.5		CHD_2OH	663
227.657		CH_2F_2	1738
227.6570	±0.00011	CH_2F_2	1392,1454,1466
227.661		CD_3OD	1714
228.	±2.3	CHFF	1362,1389
228.1		CHFCHF	665
228.3		CD_3OH	1718
228.7		CHD_2OH	663
229.	±1.1	CH_3OD	1367
229.	±4.6	CD_3OD	1425,1432
229.067		CD_2F_2	1710
229.10		CD_3OH	1718
229.3		CH2CHF	1730
229.40		$CH_3{}^{18}OH$	1741
230.1059	±0.00012	CH_2F_2	1392,1454,1466
230.106		CH_2F_2	1738
230.70		$CH_3{}^{18}OH$	1741
231.0		CH_2Cl_2	1736
231.0		CHD_2F	662
231.0	±0.51	CHFF	1389
231.1		CD_3OH	1719
231.1		CHFCHF	665
232.	±1.1	CD_3OH	1402
232.0		CD_2Cl_2	1709
232.0		CHD_2F	662
232.08		CH_3OH	179
232.1		CD_3OH	1719
232.4		CD_3OD	1714
232.65		$CH_3{}^{18}OH$	1741
232.7	±0.47	CH_3OH	1397,1427
232.7884	±0.00012	CH_3OH	1484
232.8		CHFCHF	665
232.9		SO_2	810
232.93906	±0.000091	CH_3OH	1397,1427,1455

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
233.		CH_3OH	203
233.		ClO_2	1008
233.	±1.1	D_2CO	1380,1382
233.4		CH_3OH	829
233.685		CD_2F_2	1710
233.9157	±0.00019	N_2H_4	1398,1483
234.		CH_3SH	485
234.	±1.1	CH_3OD	1451
234.	±4.7	CH_3SH	1435
234.0	±0.47	N_2H_4	1398
234.610		CH_3OH	823
234.8		CD_3OH	1719
234.800		$^{13}CH_2F_2$	1704
235.2		CD_3OD	1717
235.3		$^{13}CD_3OD$	453
235.40		CD_3OH	1718
235.5		CH_2Cl_2	1736
235.654		CH_2F_2	1738
235.6541	±0.00012	CH_2F_2	1394,1454,1466
235.7		CD_3OD	1715
235.80		CD_3OH	1718
235.9		CH_3OD	113
236.	±1.2	CD_3OH	1410
236.0		SiH_3F	813
236.1		CD_3OD	1715
236.108		CD_2F_2	1710
236.25	±0.097	CH_3Cl	1378,1385
236.5303	±0.00012	$^{13}CH_3OH$	1415,1417,1481
236.5915	±0.00012	CH_2F_2	1392,1454,1466
236.592		CH_2F_2	1738
236.599		CH_2F_2	1739
236.6008	±0.00012	CH_2F_2	1392,1454,1466
236.601		CH_2F_2	1738
237		CH_2F_2	1739
237.1		CD_3OH	1719

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
237.5		CD_2Cl_2	1709
237.5230	±0.00012	$^{13}CH_3OH$	1415
237.60	±0.048	CH_3OH	1375,1427
238.	±1.2	CD_3OH	1391
238.	±1.2	CH_3OD	1451
238.	±1.2	CHD_2OH	1478
238.	±2.4	CH_3OD	1436,1440
238.5227	±0.00012	$^{13}CH_3OH$	1415
238.65		CD_3OH	1718
240.		CH_3OH	203
240.0	±0.48	HCOOD	1384,1403
240.1		$^{13}CH_3OH$	1706
240.290		CH_3OH	179
240.4		CH_3OH	829
240.98	±0.096	CH_3Cl	1378,1385
241.	±1.2	CH_3OD	1436,1451
241.1		CD_2Cl_2	1708
241.2	±0.48	DCOOD	1384,1403
241.5		CHFCHF	665
241.50		$CH_3{}^{18}OH$	1741
241.6		$^{13}CD_3OD$	1702
241.75		$CH_3{}^{18}OH$	1741
242.310		CH_3OH	823
242.47		$CH_3{}^{18}OH$	1741
242.4727	±0.00012	CH_3OH	1427,1473,1481
242.5	±0.49	CH_3OH	1397,1427
242.6	±0.49	CHFF	1389
242.79	±0.024	CH_3OH	1427,1474
242.847		CH_3OH	834
242.9		CD_3OD	1715
243.0		$^{13}CD_3OD$	1702
243.356		CH_2F_2	1739
243.5		CH_3OD	113
244.		CH_2ClF	1737
244.		CH_3OH	203

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
244.	±4.9	D_2CO	1382,1439,1438
244.0		N_2D_4	735
244.1		CH2CHF	1732
244.89.		CH_3NH_2	1752
245.		CH_3NH_2	1752
245.	±1.2	CD_3Cl	1388,1401
245.	±1.2	D_2CO	1380,1382
245.	±4.9	D_2CO	1382,1438,1439
245.0	±0.098	CH_3Br	1378
245.652		$^{13}CH_2F_2$	1704
246.		CH_2ClF	1737
246.		CH_3NH_2	1751
246.	±1.2	CD_3Cl	1388,1401
246.	±4.9	CH_3NH_2	1437
246.1		CHD_2OH	663
246.33		CH_2F_2	808
246.5	±0.49	N_2H_4	1398
246.8		CHD_2OH	663
247.		ClO_2	1008
247.0		$^{13}CD_3OD$	1702
247.3	±0.49	CD_3F	1472,1485
247.4		CH_3OH	829
247.5		CD_3OD	1715
247.5	±0.50	CD_3F	1472,1485
247.679		CH_2F_2	1739
248.1220	±0.00012	CH_2DOH	1467
248.606		$^{13}CH_2F_2$	1704
248.620		CH_3OH	823
249.	±1.2	CD_2Cl_2	1478
249.	±1.2	CD_3Cl	1388,1401
249.0		N_2D_4	735
249.1		$^{13}CH_3OH$	1706
249.392		CD_2F_2	1710
249.6		CHD_2OH	663
249.7		CH_3OD	113

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
249.7		CHD_2OH	663
249.7204	±0.00012	CH_2DOH	1467,1478
249.800		CD_2F_2	1710
249.9		$^{13}CD_3F$	1699
250.		C_2H_3N	1750
250.06	±0.19	NH_3	1393,1461–1464
250.1		CD_3OH	1719
250.5	±0.50	N_2H_4	1398
250.7813	±0.00010	CH_3OH	1455
250.97		CH_2F_2	808
251.		CH_3NH_2	1751
251.	±2.8	CH_3OH	1427,1471,1472
251.	±5.0	CH_3NH_2	1437
251.1398	±0.00010	CH_3OH	1455
251.18.		CH_3NH_2	1752
251.3	±0.50	CH_3NH_2	1396,1437
251.40		CD_3OH	1718
251.4324	±0.00013	CH_3OH	1484
251.90		$CH_3{}^{18}OH$	1741
251.91	±0.050	CH_3F	1377,1374,1393
251.912		CH_3OH	834
252.0		N_2D_4	735
252.3		CD_3OH	1719
252.336		CH_2F_2	1739
253.1		CD_3OH	1719
253.50		$^{13}CH_3OH$	1707
253.5530	±0.00013	CH_3OH	1375,1427,1481
253.60	±0.051	CH_3OH	1375,1427
253.7196	±0.00013	CD_3OH	1391,1481
253.720		CD_3OH	826
253.8		CD_3OH	1719
253.8		CD_3OH	1719
254.		CH_3NH_2	1751
254.	±1.2	CD_2Cl_2	1478
254.	±5.1	CH_3NH_2	1437

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
254.230		CH_3OH	823
254.3		CHD_2OH	663
254.5	±0.51	HCOOH	1384,1400,1403
254.7		CH_2Cl_2	1736
254.7		CH_3OH	830
254.802		$^{13}CH_2F_2$	1704
255.		ClO_2	1008
255.	±5.1	CD_3OD	1432,1425
255.0		CD_3OD	1715
255.000		$H^{13}COOH$	683
255.2		CD_3OH	1719
255.3		CD_3OD	1714
255.3		CHD_2OH	663
256.	±5.1	D_2CO	1382,1438,1439
256.027		CH_2F_2	1738
256.0270	±0.00013	CH_2F_2	1392,1454,1466
256.4		CD_3OD	1715
257.13	±0.20	NH_3	1393,1461–1464
257.4		CH_2CF_2	1725
258.		CHFO	821
258.	±2.6	CH_2Cl_2	1430
258.0		SO_2	811
258.30		CD_3OH	1718
258.425		$H^{13}COOH$	683
258.4356	±0.00013	CD_3OH	1402,1481
258.436		CD_3OH	826
259.		CH_3OH	203
259.		NH_3	816
259.9		CHD_2OH	663
260.		CHFO	821
260.	±1.3	CHD_2OH	1478
260.	±1.3	$H^{13}COOH$	1384
260.0		CHD_2F	662
260.042		$^{13}CH_2F_22$	1704
260.1	±0.47	CHFF	1389,1362

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
261.	±5.2	CH_3OH	1427,1436
261.03	±0.099	CH_3Cl	1378,1385
261.2		$^{13}CD_3OD$	453
261.200		CH_3OH	823
261.5		SiH_2F_2	814
261.729		CH_2F_2	1738
261.7292	±0.00013	CH_2F_2	1392,1454,1466
262.		CH_3OH	203
262.		CH_3SH	485
262.	±2.6	CHFF	1362,1389
262.	±5.2	CH_3SH	1435
262.0	±0.52	N_2H_4	1398
262.1		CD_3OD	1715
262.248		CH_2F_2	1739
262.4		CH_3OH	829
262.40		$CH_3{}^{18}OH$	1741
263.0		SiH_2F_2	814
263.2		CD_3OD	1716
263.40	±0.053	NH_3	1376,1393,1464
263.44	±0.21	NH_3	1393,1461–1464
263.5		CH2CHF	1732
263.70	±0.053	CH_3OH	1375,1427
264.		ClO_2	1008
264.		ClO_2	1008
264.1	±0.10	$CH_3{}^{79}Br$	1378,1450
264.5		SiH_3F	813
264.5359	±0.00013	CH_3OH	1375,1427,1481
264.7	±0.10	CH3CH2F	1459,1474
264.70		CD_3OH	1718
264.759		CD_3OH	826
264.8014	±0.00024	N_2H_4	1398,1483
264.9		CH_2NOH	1740
265.	±1.3	CD_3OH	1402
265.	±5.0	CD_3F	1472,1485
265.0		CD_3OH	1719

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
265.0	±0.53	N_2H_4	1398
265.1	±0.53	DCOOH	1403
265.3		CD_3OH	1719
265.6		CD_2Cl_2	1708
266.	±1.3	CD_3OH	1402
266.0		CD_3OH	1719
266.0		CDF_3	1672
266.1	±0.53	DCOOD	1384,1403
266.5		CD_2Cl_2	1709
266.7352	±0.00013	CH_2DOH	1467
266.866		$^{13}CH_2F_22$	1704
266.9		CDF_3	1672
267.	±1.3	CD_3OH	1402
267.20		CD_3OH	1718
267.4432	±0.00013	CH_3OH	1427,1481
267.823		CD_2F_2	1710
267.9		CD_2Cl_2	1708
268.	±1.3	CD_3OH	1402
268.062		CH_2F_2	1739
268.30		$CH_3{}^{18}OH$	1741
268.5722	±0.00013	$^{13}CH_3OH$	1415
268.6		$^{13}CH_3OH$	1706
268.6		CD_3OH	1719
268.82	±0.22	NH_3	1393,1461–1464
269.9		$^{13}CH_3OH$	1706
270.		CH_3NH_2	1751
270.	±1.3	CH_3OH	1427
270.	±5.4	CH_3NH_2	1437
270.0		CHD_2OH	663
270.005		CH_2F_2	1738
270.0055	±0.00014	CH_2F_2	1392,1454,1466
270.6	±0.54	CH_2CHCN	1396
270.700		CH_3OH	179
270.733		CD_3OD	1714
271.		CH_3NH_2	1751

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
271.	±5.4	CH_3NH_2	1437
271.3	±0.10	CH_3Cl	1378,1385
271.5		CH_3OH	829
271.5	±0.54	N_2H_4	1398
272.	±1.3	CD_3I	1401
272.0	±0.54	DCOOH	1403
272.1		CHFCHF	665
272.2516	±0.00014	CH_2DOH	1467,1478
272.3389	±0.00014	CH_2F_2	1392,1454,1466
272.339		CH_2F_2	1738
272.5		CD_3OD	1715
272.9		CH_3OH	829
272.958		$^{13}CD_3OD$	1702
273.0		CH_3OH	830
273.0037	±0.00014	CH_2DOH	1467
273.36	±0.22	NH_3	1393,1461–1464
273.4		NH_3	827
273.400		CH_2F_2	1739
273.764		$^{13}CH_2F_22$	1704
274.	±2.7	CH_3OH	1427,1471
274.245		CH_3OH	834
274.776		CD_2F_2	1710
275.		CH_3OH	203
275.0		N_2D_4	735
275.00	±0.096	CH_3Cl	1378,1385
275.09	±0.096	CH_3Cl	1378,1385
275.1		CH_3OD	121
275.5		CH2CHF	1732
275.61		$^{13}CH_3OH$	1707
276.1	±0.55	DCOOD	1384,1403
276.6		CD_3OH	1719
276.7157	±0.00014	CD_3OH	1402,1481
276.716		CD_3OH	826
276.79	±0.23	NH_3	1393,1461–1464
276.9		CD_3OH	1719

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
277.		C_2H_3N	1750
277.		NH_2OH	682
277.	±1.4	CD_3OH	1402
277.00		$CH_3{}^{18}OH$	1741
277.2		CD_2Cl_2	1708
278.	±1.4	CD_3OH	1402
278.0		N_2D_4	735
278.3		CH_2NOH	1740
278.4		CHD_2OH	663
278.5	±0.56	HCOOH	1384,1400,1403
278.8048	±0.00014	CH_3OH	1375,1427,1481
279.		$(H_2CO)_3$	809
279.	±1.4	D_2CO	1380,1382
279.0		CHD_2OH	663
279.014		$^{13}CH_2F_2$	1704
279.32	±0.23	NH_3	1393,1461–1464
279.4		CH_3OD	113
279.4	±0.56	CH_3OD	1397,1436
279.8		CD_2Cl_2	1708
279.8		CH_3OH	830
279.8	±0.098	CH_3Br	1378
279.9		SO_2	810
280.		CH_3NC	681
280.		CHFO	821
280.	±1.4	CH_3OD	1451
280.2183	±0.00014	$^{13}CH_3OH$	1415,1417,1481
280.2397	±0.00014	$^{13}CH_3OH$	1415,1417,1481
280.5		SiH_3F	813
280.512		CD_2F_2	1710
280.8		$^{13}CD_3F$	1699
280.8		CHD_2OH	663
280.9341	±0.00014	CH_3OH	1484
281.		CH_3NH_2	1752
281.0		$^{13}CH_3OH$	1706
281.053		CH_2F_2	1739

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
281.18	±0.098	CH_3CN	1365,1378
281.6		CH_2CF_2	1725
281.6		CH2CHF	1732
281.7	±0.099	CH_3Cl	1378,1385
281.98	±0.099	CH_3CN	1365,1378
282.		CHFO	821
282.0		CH_3OD	121
282.1		SO_2	812
282.80		CD_3OH	1718
282.900		CH_2F_2	1739
282.96		$^{13}CH_3OH$	1707
283.		CH_3NH_2	1751
283.	±5.7	CH_3NH_2	1437
283.0	±0.57	C_2H_3Br	1404
283.1	±0.57	DCOOD	1384,1403
283.2		CH_3OD	113
283.75		CD_3OH	1718
283.783		CH_2F_2	1739
284.		C_2H_3N	807
284.		CH_2ClF	1737
284.15		$CH_3{}^{18}OH$	1741
284.3		CD_3OH	1719
284.330		CH_3OH	179
284.354		CH_2F_2	1739
284.40		CD_3OH1718	
284.50		$CH_3{}^{18}OH$	1741
284.6		CHFCHF	665
284.90		$CH_3{}^{18}OH$	1741
285.		CH_3OH	203
285.		ClO_2	1008
285.0		N_2D_4	735
285.1		CHD_2F	662
285.25		$CH_3{}^{18}OH$	1741
285.3		C_2H_5OH	1746
285.5		N_2D_4	735

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
286.	±2.9	CH_3OH	1427,1471
286.0		N_2D_4	735
286.155		CH_3OH	834
286.197		CD_3OH	826
286.1974	±0.00014	CD_3OH	1402,1481
286.2		CD_3OH	1719
286.3		CDF_3	1672
286.398		CD_2F_2	1710
286.5	±0.46	CHFF	1389
286.724		CD_3OH	826
286.7242	±0.00014	CD_3OH	1402,1481
286.8		CDF_3	1672
286.8	±0.10	CH_3Cl	1378,1385
286.9	±0.10	CH_3CN	1365,1378
287.3076	±0.00014	CD_3OH	1402,1481
287.308		CD_3OH	826
287.667		CH_2F_2	1738
287.6672	±0.00014	CH_2F_2	1392,1454,1466
287.908		CH_2F_2	1739
287.95		CD_3OH	1718
288.		CH_3NC	681
288.	±1.4	CD_3Cl	1388,1401
288.	±5.8	CH_3NH_2	1437,1459
288.3		CHD_2OH	663
288.5	±0.58	CF_2CH_2	1387,1388,1396
288.51	±0.25	NH_3	1393,1461–1464
289.1		$^{15}NH_3$	905
289.139		CH_2F_2	1739
289.35	±0.25	NH_3	1393,1461–1464
289.4		CD_2Cl_2	1708
289.4999	±0.00014	CH_2F_2	1392,1454,1466
289.5		CD_3OD	1715
289.500		CH_2F_2	1738
289.6		CD_3OD	121,1715
289.8		CHFCHF	665

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
289.8		CH_2CF_2	1725
290.		CD_3Br	1712
290.		CH2CHF	1733
290.		CH_3OH	203
290.		NH_2OH	682
290.	±1.4	CD_3OH	1391
290.	±5.8	CD_3Br	1438,1439
290.0		N_2D_4	735
290.2		CHD_2OH	663
290.2	±1.4	NH_3	1393,1461–1464
290.44	±0.25	NH_3	1393,1461–1464
290.62	±0.087	CH_3OH	1427
290.812		CH_2F_2	1739
290.95	±0.25	NH_3	1461,1479
290.95	±0.25	NH_3	1393,1461–1464
291.0		$^{13}CD_3OH$	1703
291.3		CH_2CF_2	1725
291.3		CH_2NOH	1740
291.3		CHD_2OH	663
291.61	±0.087	$^{13}CH_3OH$	1415,1417
291.9	±0.58	HCOOD	1384,1403
292.		CH_2ClF	1737
292.		NH_2OH	682
292.1415	±0.00015	CH_3OH	1375,1427,1481
292.50	±0.050	CH_3OH	1375,1427
292.7		CHD_2F	662
293.0		N_2D_4	735
293.13		$^{13}CH_3I$	1705
293.4		CH2CHF	1730
293.6480	±0.00059	CD_3Cl	1388,1401
293.8		C_2H_3Cl	1728
293.8		CH_2CF_2	1725
293.8		CH_2CHCl	1728
293.8217	±0.00015	CH_3OH	1484
293.901		CH_2F_2	1738

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
293.9015	±0.00015	CH_2F_2	1392,1454,1466
294.	±5.9	D_2CO	1382,1438,1439
294.04		$^{13}CH_3OH$	1707
294.3		CH_3OD	121
294.3	±0.10	CH_3Br	1378
294.30		$CH_3{}^{18}OH$	1741
294.6		CD_3OD	1715
294.6		CH_2Cl_2	1736
294.7		CH_3OD	113
294.81098	±0.000029	CH_3OD	1370,1433
295.3967	±0.00015	CH_2DOH	1467,1478
295.6394	±0.00015	CH_2DOH	1467,1478
296.		CH_2ClF	1737
296.0		N_2D_4	735
296.480		CH_3OH	179
297.		CD_3Br	1712
297.	±1.5	CD_3OH	1402
297.	±1.5	CD_3OH	1402
297.	±5.9	CD_3Br	1438,1439
297.0		CD_3OD	1716
297.09		COF_2	828
297.1		CD_3OH	1719
297.7		CH_3OH	829
298.		CH2CHF	1733
298.		CH_3SH	485
298.	±6.0	CH_3SH	1435
298.0		CD_3I	1701
298.0	±0.60	DCOOD	1384,1403
298.211		CH_2F_2	1738
298.2910	±0.00015	CH_2F_2	1392,1454,1466
298.470		CH_2F_2	1739
298.5		CH_2Cl_2	1736
298.6		$^{13}CD_3OD$	453
298.736		CD_3OD	1714
298.9		SO_2	810

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
299.	±1.5	CD_3OH	1402
299.	±6.0	CD_3OD	1425,1432
299.5		$^{13}CD_3F$	1699
299.9		CH_2CF_2	1725
300.		ClO_2	1008
300.0	±0.48	CH_2DOH	1467
300.1		CD_3OD	1716
300.233		$^{13}CH_2F_22$	1704
300.246		$^{13}CH_2F_22$	1704
300.476		CH_2F_2	1739
300.5		$^{13}CD_3OD$	453
300.60		$CH_3{}^{18}OH$	1741
301.	±1.5	CD_3I	1401
301.0		CHD_2F	662
301.0		N_2D_4	735
301.0		$SiHF_3$	814
301.1		CD_2Cl_2	1708
301.2		CH_2NOH	1740
301.2754	±0.00045	N_2H_4	1398,1483
301.3	±0.27	NH_3	1393,1461–1464
301.37		COF_2	828
301.654		$^{13}CH_2F_22$	1704
301.9943	±0.00015	CH_3OH	1414,1427,1481
302.2781	±0.00030	HCOOH	1381,1384,1439
303.		CH_3OH	203
303.800		CD_2F_2	1710
304.0832	±0.00030	DCOOD	1384,1403
304.1	±0.61	HCOOD	1384,1403
304.3		CH_3OCH_3	1754
304.35		COF_2	828
305.24		COF_2	828
305.6		CHD_2OH	663
305.72611	±0.000031	CH_3OD	1370,1433
306.		CHFO	821
306.3	±0.28	NH_3	1393,1461–1464

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
306.5		$^{13}CH_3OH$	1706
306.5		CH_3OD	113
306.7		CH_2CF_2	1725
306.993		$^{13}CH_2F_2$	1704
307.07		$^{13}CH_3OH$	1707
307.20		$CH_3{}^{18}OH$	1741
307.5		CH_3OD	113
307.5	±0.49	CHFF	1362,1389
307.65	±0.098	CH_3Cl	1378,1385
307.78	±0.092	$^{13}CH_3OH$	1415
308.		CH_2ClF	1737
308.		FCN	681
308.0		CD_3OD	1716
308.0405	±0.00015	CH_2DOH	1467,1478
308.2957	±0.00015	CH_2DOH	1467
308.5		CD_3OH	1719
309.	±1.5	CD_3OH	1402
309.193		CH_2F_2	1739
309.5		CD_2Cl_2	1709
309.5		CH2CHF	1730
309.5	±0.29	NH_3	1393,1461–1464
309.5	±0.62	HCOOH	1366,1384
309.7		CD_2Cl_2	1708
310.		CH_3OH	203
310.	±1.5	CD_3OH	1402
310.	±3.1	CHFF	1362,1389
310.0	±0.62	DCOOD	1384,1403
310.000		$H^{13}COOH$	683
310.10		CD_3OH	1718
310.35		CD_3OH	1718
310.7		CD_3OH	1719
310.8	±0.50	CHFF	1389
310.80		CD_3OH	1718
311.		CH_3NO_2	1753
311.0		CD_3OD	1715

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
311.0		N_2D_4	735
311.07	±0.10	CH_3Br	1378
311.0747	±0.00031	N_2H_4	1398,1483
311.1		$^{13}CH_3OH$	1706
311.10	±0.10	CH_3Br	1378
311.2	±0.62	CH_3OH	1397,1427
311.20	±0.10	$CH_3{}^{81}Br$	1378,1450
311.21	±0.10	CH_3Br	1378
311.213		$^{13}CH_2F_2$	1704
311.554	±0.0015	HCOOH	1381,1384,1439
311.9		C_2H_5OH	1746
312.		CH_3OH	203
312.	±6.2	CD_3OD	1425,1432
312.0	±0.62	DCOOH	1403
312.1		CH_3OH	829
312.1		SO_2	811
312.276		$^{13}CH_2F_2$	1704
312.50		CD_3OH	1718
312.7		CD_3OD	1715
312.9		CD_3OH	1719
312.91		COF_2	828
313.	±1.5	$H^{13}COOH$	1384
313.5		CH_3OH	830
313.797		$H^{13}COOH$	683
313.88		CH_3OH	179
314.1		$^{13}CD_3OD$	453
314.646		CD_2F_2	1710
314.841		CD_3OD	1714
314.8469	±0.00047	CH_3NH_2	1437,1459,1483
316.		CH_3SH	485
316.	±6.3	CH_3SH	1435
316.329		$^{13}CH_2F_2$	1704
316.6		CDF_3	1672
316.7		CH_2CF_2	1725
317.0		CHD_2OH	663

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
317.052		CD_2F_2	1710
317.5		SiH_2F_2	814
318.		CH_3NO_2	1753
318.	±1.6	CD_3Cl	1388,1401
318.080		$^{13}CH_2F_2$	1704
318.600		CD_2F_2	1710
319.		CH_3OH	203
319.		CH_3SH	485
319.	±6.4	CH_3SH	1435
319.0		CH_3CHF_2	1747
319.4		CD_3OD	1715
319.7		$^{13}CH_3OH$	1706
319.9	±0.64	HCOOH	1366,1384,1403
320.	±6.4	D_2CO	1382,1438,1439
320.O	±0.64	CH_3OD	1397
320.4		$^{13}CH_3OH$	1706
320.597		CD_2F_2	1710
320.7		CH_3OD	121
321.	±1.6	CD_3OH	1402
321.0		CH2CHF	1732
321.140		$^{13}CD_3OD$	1702
322.10		CD_3OH	1718
322.35		CD_3OH	1718
322.4		$^{13}CD_3OD$	453
322.4522	±0.00016	CH_2DOH	1467,1478
322.5		$^{13}CD_3OD$	453
322.5		$SiHF_3$	814
322.8		CH2CHF	1732
323.1	±0.65	DCOOD	1384,1403
323.179		CD_2F_2	1710
323.3	±0.45	CD_3F	1472,1485
323.5		CD_2Cl_2	1709
323.50		CD_3OH	1718
324.		CH_2ClF	1737
324.		CH_3SH	485

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
324.	±6.5	CH_3SH	1435
324.	±6.5	D_2CO	1382,1438,1439
324.1	±0.65	HCOOD	1384,1403
324.140		$^{13}CD_3OD$	1702
325.17	±0.098	$^{13}CH_3OH$	1415,1417
325.2	±0.65	DCOOD	1384,1403
325.3		CH_2CF_2	1725
325.9		$^{13}CD_3F$	1699
325.9	±0.65	HCOOD	1384,1403
326.423		CH_2F_2	1738
326.4230	±0.00016	CH_2F_2	1392,1454,1466
326.5		CD_2Cl_2	1708
326.6		CHFCHF	665
327.0	±0.65	N_2H_4	1398
327.50		$CH_3{}^{18}OH$	1741
327.6		C_2H_5Br	1744
327.770		CH_3OH	179
327.8		CD_3OD	1714
328.		C_2H_4O	1748
328.4570	±0.00033	DCOOH	1403
328.9		$^{13}CH_3OH$	1706
329.		CH_3OH	203
329.2		CD_3OD	1715
329.5		CD_3OH	1719
329.5		CH_2CF_2	1725
329.8		CH2CHF	1730
329.9		CD_3OD	1715
330.	±1.6	CH_3OD	1367
330.0		SiH_2F_2	814
330.0		SiH_3F	813
330.0		$SiHF_3$	814
330.019		CDF3	1721
330.1		CH2CHF	1732
330.991		CD_2F_2	1710
331.5	±0.66	N_2H_4	1398

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
331.6694	±0.00036	N_2H_4	1398,1483
331.7		CD_3OD	1716
331.79		CD_3I	1713
331.79		CD_3I	1713
332.		CH_3OH	203
332.6		CH_3OD	121
332.6034	±0.00017	$^{13}CH_3OH$	1415,1417,1481
332.86	±0.10	CH_3Br	1378
333.15	±0.10	CH_3Br	1378
333.261		$^{13}CD_3OH$	1703
333.90		CD_3OH	1718
333.926		$^{13}CH_2F_2$	1704
334.0		$SiHF_3$	814
334.0	±0.10	CH_3Cl	1378,1385
334.6		$^{13}CH_3OH$	1706
335.		CH2CHF	1733
335.1		$^{13}CD_3OD$	453
335.6		$^{13}CD_3OD$	453
335.7087	±0.00034	DCOOD	1384,1403
335.85		COF_2	828
336.		C_3H_2O	681
336.		CH2CHF	1733
336.	±1.6	CD_3OH	1402
336.0	±0.67	N_2H_4	1398
336.2461	±0.00017	CH_2DOH	1467
336.3	±0.67	HCOOH	1384,1400,1403
336.5		$^{13}CD_3F$	1699
336.5		$^{13}CD_3OH$	1703
336.5		CD_3OH	1719
336.6	±0.44	CD_3F	1472,1485
336.7	±0.10	CH3CH2F	1459,1474
336.8		CD_3OH	1719
337.		ClO_2	1008
337.		NH_3	816
337.040		CH_3OH	179

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
337.3		CD_3OH	1719
337.5		CD_3OH	1719
338.9		CH_3OCH_3	1754
338.9638	±0.00017	$^{13}CH_3OH$	1415
339.	±6.8	CD_3OD	1425,1432
339.0		CHFCHF	665
339.1		CH_2CF_2	1725
339.3		CH_2CF_2	1725
339.8		CH_2CHCN	1731
339.9		$^{13}CH_3OH$	1706
339.9	±0.68	HCOOD	1384,1403
340.		CH_3NO_2	1753
340.		ClO_2	1008
340.0		SiH_3F	813
340.00		$^{13}CH_3OH$	1707
340.300		$CHCl_2F$	487
340.3566	±0.00017	CH_2DOH	1467
340.6		CD_2Cl_2	1708
340.627		$^{13}CD_3OH$	1703
340.7		CD_3OD	1715
340.7		CD_3OD	1715
341.		CD_3Br	1712
341.		CH_3SH	485
341.	±6.8	CD_3Br	1438,1439
341.	±6.8	CH_3SH	1435
341.	±6.8	D_2CO	1382,1438,1439
341.8	±0.68	DCOOH	1403
342.	±1.7	CD_2Cl_2	1478
342.127		CD_2F_2	1710
342.7		CD_3OD	1715
342.8		CD_3OD	1715
342.80		$CH_3{}^{18}OH$	1741
343.		C_2H_4O	1748
343.0		SiH_2F_2	814
343.26		C_2H_3CN	1731

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
343.26		CH_2CHCN	1731
343.3		$^{13}CD_3OD$	453
343.5		SiH_3F	813
344.		CH_2ClF	1737
344.		CH_3NO_2	1753
344.521		$^{13}CH_2F_2$	1704
344.778		CD_3OD	1714
344.8		CH2CHF	1730
344.9		CHD_2OH	663
345.0		$SiHF_3$	814
345.5		CH2CHF	1732
345.50		COF_2	828
345.8		CDF_3	1672
346.		CH_3OH	203
346.	±1.7	CD_3OH	1410
346.	±1.7	CHD_2OH	1478
346.	±6.9	D_2CO	1382,1438,1439
346.3	±0.10	CH_3CN	1365,1378
346.4875	±0.00017	CH_3OH	1397,1427,1481
346.67		$^{13}CH_3I$	1675
346.67		$^{13}CH_3I$	1705
346.67		CD_3I	1713
347.0		$^{13}CD_3OD$	453
347.0	±0.69	HCOOD	1384,1403
347.640		CH_3OH	179
348.1		CD_3OD	1715
348.3		CH_3OH	829
348.6		CD_3OD	1717
349.		CH_2ClF	1737
349.		CH_3NH_2	1751
349.	±7.0	CH_3NH_2	1437
349.0	±0.45	CD_3F	1472,1485
349.1		SO_2	812
349.3	±0.10	CH_3Cl	1378,1385,1430
349.5		CH_2CF_2	1725

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
350.	±1.7	CD_3OH	1402
350.0		CH_2CF_2	1726
350.0		CHFCHF	665
350.2	±0.70	DCOOD	1384,1403
350.5		CD_3OH	1719
351.		CH_3NH_2	1751
351.		CH_3NO_2	1753
351.		CH_3SH	485
351.	±1.7	CD_3OH	1402
351.	±7.0	CH_3NH_2	1437
351.	±7.0	CH_3SH	1435
351.0		CH_2CF_2	1725
351.0		CH2CHF	1730
351.0		CH_3OH	830
351.0	±0.70	HCOOD	1384,1403
351.1		CH_3OH	829
351.2		CD_3OH	1719
351.3		CH_3OD	113
351.4		CD_3OH	1719
351.8		$^{13}CD_3OD$	453
351.9	±0.70	DCOOD	1384,1403
351.9	±0.70	HCOOD	1384,1403
352.	±1.7	CD_3OH	1402
352.3		CD_3OH	1719
352.5		SiH_2F_2	814
352.5	±0.71	CH_3OD	1397
352.503		CD_3OH	826
352.75	±0.099	CH_3Br	1378
352.8		CH2CHF	1730
352.902		CD_2F_2	1710
353.	±1.7	CD_3OH	1402
353.0		CH2CHF	1730
353.1		$^{13}CD_3OD$	1702
353.1	±0.71	HCOOD	1384,1403
353.8		CD_3OD	1715

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
354.		DFCO	684
354.	±3.5	CD_3OD	1425
354.176		CD_3OD	1714
354.5		CH2CHF	1730
354.5		N_2D_4	735
354.63		COF_2	828
355.		CH2CHF	1733
355.	±1.7	CHD_2OH	1478
355.0		SiH_2F_2	814
355.126		CH_2F_2	1738
355.1261	±0.00018	CH_2F_2	1392,1454,1466
355.2	±0.71	HCOOD	1384,1403
355.5		$SiHF_3$	814
355.55		$^{13}CH_3I$	1705
355.9		CD_2Cl_2	1708
356.0		CH2CHF	1730
356.0	±0.71	C_2H_3Br	1404
356.0	±0.71	HCOOD	1384,1403
356.4		CD_3OD	1715
356.5		CD_3OD	1715
356.5		CH_3OH	830
356.6		CH2CHF	1730
357.867		$^{13}CH_2F_2$	1704
357.901		CH_2F_2	1739
358.		DFCO	684
358.0		CH_2CF_2	1725
358.1		CD_2Cl_2	1708
358.111		COF_2	998
358.2	±0.72	HCOOD	1384,1403
358.4		$^{13}CD_3OD$	1702
358.9	±0.11	$13CH_3OH$	1415,1417
359.20		$CH_3{}^{18}OH$	1741
359.362		$^{13}CH_2F_2$	1704
359.9	±0.72	HCOOH	1366,1384,1403
360.0		CD_2Cl_2	1708

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
360.00		CD_3I	1713
360.053		CH_2F_2	1739
360.2		CD_2Cl_2	1708
360.5		CHFCHF	665
360.504		$^{13}CH_2F_2$	1704
360.9		CH2CHF	1730
361.2		CD_2Cl_2	1708
361.2	±0.72	HCOOD	1384,1403
361.231		CDF3	1721
361.5		$SiHF_3$	814
361.8		CH2CHF	1730
362.1	±0.72	DCOOH	1403
362.2		CH2CHF	1732
362.423		CDF3	1721
362.65		$CH_3{}^{18}OH$	1741
362.8		CD_3OH	1719
362.8		CH2CHF	1732
362.8		CH_2CHF	1732
363.		$C_2H_3O_2D$	1749
363.		CH_3OH	203
363.	±1.8	CHD_2OH	1478
363.86		$CH_3{}^{18}OH$	1741
363.9		CH_2CF_2	1725
364.30		$CH_3{}^{18}OH$	1741
364.50		$CH_3{}^{18}OH$	1741
364.6		CH_2CF_2	1726
365.2	±0.73	DCOOH	1403
365.725		$CHCl_2F$	487
365.830		CH_3OH	823
365.866		CD_2F_2	1710
366.		$(H_2CO)_3$	809
366.420		CH_3OH	823
366.625		CD_3Br	1711
366.9	±0.73	DCOOD	1384,1403
366.92		$^{13}CH_3I$	1675

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
366.92		$^{13}CH_3I$	1705
367.	±7.3	CD_3Br	1438,1439
367.399		CD_2F_2	1710
367.6		CH_2CF_2	1725
368.		CH_3OH	203
368.4	±0.48	CD_3F	1472,1485
368.862	±0.0023	N_2H_4	1398,1483
368.9		CH_3OH	830
369.0		SiH_3F	813
369.1		$C_2H_3F_3$	1743
369.1137	±0.00023	CH_3OH	1375,1427,1455
369.4		CD_2Cl_2	1708
369.550124.93		CD_3OH	1718
369.62		COF_2	828
369.70		CD_3OH	1718
369.9678	±0.00037	HCOOD	1384,1403
370.		CH_3SH	485
370.	±1.8	CD_3OH	1402
370.	±7.4	CH_3SH	1435
370.0		CD_2Cl_2	1709
370.0	±0.74	C_2H_3Br	1404
370.483		CD_3OH	826
370.8		CH_3CHF_2	1747
371.3		CH_3CHF_2	1747
372.		CH2CHF	1733
372.		CH_3OH	203
372.0		CD_3OD	1715
372.0	±0.74	HCOOD	1384,1403
372.36		CD_3OH	1718
372.4		CH_3OD	113
372.5	±0.75	N_2H_4	1398
372.68	±0.045	CH_3F	1374,1377,1393
372.80		$^{13}CH_3I$	1705
372.87	±0.045	CH_3CN	1365,1459,1469
373.0		CD_2Cl_2	1709

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
373.0	±0.75	N_2H_4	1398
373.4		$^{15}NH_3$	905
373.4		CD_3OD	1715
373.4		NH_3	827
373.8	±0.75	HCOOD	1384,1403
374.0861	±0.00019	CH_2DOH	1467,1478
375.		NH_3	816
375.	±1.8	$^{15}NH_3$	1390,1476
375.1		CH_2CF_2	1725
375.3		CD_3OD	1715
375.4		CH_2CF_2	1725
375.407		CHD_2F	662
375.5		SiH_2F_2	814
375.5449	±0.00045	CF_2CH_2	1483
375.980		$CHCl_2F$	487
376.		CH_3NO_2	1753
376.6		CH_2CF_2	1725
376.7		CHFCHF	665
376.8		$^{13}CD_3F$	1699
376.9		CD_2Cl_2	1708
377.		CH_3NH_2	1752
377.45	±0.094	CH_3I	1378,1399,1409
377.5		CH_2CF_2	1725
377.718		$^{13}CH_2F_2$	1704
378.		CH_3NO_2	1753
378.2		CH_3OCH_3	1754
378.4	±0.76	OCS	1436
378.5		CH_2CF_2	1725
378.57	±0.095	CH_3Cl	1378,1385
378.880		CD_2F_2	1710
379.		CH_3SH	485
379.	±7.6	CH_3SH	1435
379.242		COF_2	668
379.59		COF_2	828
380.		ClO_2	1008

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
380.02	±0.095	CH_3Br	1378
380.5654	±0.00038	DCOOD	1384,1403
380.8		CD_3OH	1719
381.		$(H_2CO)_3$	809
381.615		$H^{13}COOH$	683
381.820		CH_3OH	179
381.9956	±0.00019	CH_2F_2	1392,1454,1466
381.996		CH_2F_2	1738
382.0		CD_2Cl_2	1709
382.357		$H^{13}COOH$	683
382.639		CH_2F_2	1738
382.6392	±0.00019	CH_2F_2	1392,1454,1466
382.88		$CH_3{}^{18}OH$	1741
383.0		CH_2CF_2	1726
383.2		$C_2H_3F_3$	1743
383.2845	±0.00077	CD_3Cl	1388,1401
384.		CH_3SH	485
384.		DFCO	684
384.	±1.9	$(H_2CO)_3$	1380
384.	±7.7	CH_3SH	1435
384.319		CHD_2F	662
384.7	±0.46	CD_3F	1472,1485
384.869		$(H_2CO)_3$	809
384.916		COF_2	998
385.		C_2H_4O	1748
385.	±1.9	CD_3OH	1402
385.4		CD_2Cl_2	1708
385.4		CH_2CF_2	1726
385.4		CHD_2OH	663
385.7		CD_3OH	1719
385.8		CH_2CHCN	1731
385.80		C_2H_3CN	1731
385.9092	±0.00046	H_2CCl	1375,1483
386.	±1.9	CD_3OH	1402
386.037		CD_3OH	826

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
386.3392	±0.00019	CH_3OH	1484
386.4	±0.097	CH_3CN	1365,1378
386.5		CHFCHF	665
386.5		N_2D_4	735
386.6		CD_3OH	1719
386.9		CD_3OH	1719
387.		CH_3NH_2	1752
387.2		$^{13}CD_3OH$	1703
387.31	±0.097	CH_3CN	1365,1378,1459
387.5		CD_3OD	1716
387.5591	±0.00019	CH_2DOH	1467
387.8		CH_3CHF_2	1747
387.8	±0.78	HCOOD	1384,1403
388.0		CD_3OH	1719
388.273		CDF3	1721
388.4	±0.097	CH_3CN	1365,1378
388.652		CDF3	1721
388.9		$C_2H_3F_3$	1743
389.		$(H_2CO)_3$	809
389.0		N_2D_4	735
389.6		$^{13}CD_3OH$	1703
389.9		CD_2Cl_2	1708
389.9070	±0.00039	DCOOD	1384,1403
390.		CH_3OH	203
390.	±1.9	CD_3I	1401
390.1	±0.78	CH_3OH	1473,1475
390.2		CH_3OH	830
390.4		C_2H_3Cl	1728
390.4		CH_2CHCl	1728
390.5	±0.098	CH_3I	1378,1409
390.780		COF_2	668
391.461		$^{13}CH_2F_2$	1704
391.6886	±0.00039	HCOOD	1384,1403
392.0		CD_2Cl_2	1708
392.0		CH_3OD	113

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
392.0687	±0.00026	CH_3OH	1427,1455
392.48	±0.098	CH_3I	1378,1409
392.9	±0.79	HCOOD	1384,1403
393.		$(H_2CO)_3$	809
393.000		CD_2F_2	1710
393.3		$C_2H_3F_3$	1743
393.33		COF_2	828
393.485		$H^{13}COOH$	683
393.6311	±0.00016	HCOOH	1379,1384,1434
394.2	±0.79	HCOOH	1384,1400,1439
394.7009	±0.00020	CH_2F_2	1392,1454,1466
394.701		CH_2F_2	1738
395.0	±0.79	HCOOD	1384,1403
395.0	±0.79	HCOOD	1384,1403
395.00		$^{13}CH_3I$	1705
395.1488	±0.00040	DCOOD	1384,1403
395.7124	±0.00040	HCOOD	1384,1403
396.	±4.0	C_2H_5OH	1430
396.0	±0.79	C_2H_3Br	1404
396.0	±0.79	DCOOD	1384,1403
396.00	±0.099	CH_2DOH	1467,1478
396.4		CD_3OH	1719
397.1	±0.79	DCOOD	1384,1403
397.7		CH_3CHF_2	1747
398.		CH_3NO_2	1753
398.	±2.0	CD_3OH	1402
398.1	±0.80	HCOOD	1384,1403
398.96		C_2H_3CN	1731
398.96		CH_2CHCN	1731
399.288		$^{13}CH_2F_2$	1704
399.42		C_2H_3CN	1731
399.42		CH_2CHCN	1731
399.8		$^{13}CD_3OH$	1703
399.80		C_2H_3CN	1731
400.1		$^{13}CH_3OH$	1706

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
400.2		CD_2Cl_2	1708
401.2		CH_2CHCN	1731
401.25		C_2H_3CN	1731
401.3		CH_2CF_2	1725
401.444		CH_2F_2	1739
402.		C_2H_3N	807
402.3		CH_2CF_2	1726
402.915		COF_2	668
403.		CH_3SH	485
403.	±8.1	CH_3SH	1435
403.710		CH_2F_2	1739
403.777		$^{13}CH_2F_2$	1704
404.		$(H_2CO)_3$	809
404.		CH_3NC	681
404.	±0.97	CH3CH2F	1459,1474
404.0	±0.81	HCOOH	1366,1384,1403
404.3		CD_3OD	1715
404.6		CHD_2OH	663
404.7	±0.45	NH_3	1393,1461–1464
405.0	±0.81	HCOOH	1384,1400,1403
405.5044	±0.00053	CH3CH2F	1459,1483
405.5848	±0.00039	HCOOH	1403,1483
405.95		C_2H_3CN	1731
405.95		CH_2CHCN	1731
406.	±8.1	CD_3OD	1425,1432
406.36		C_2H_3CN	1731
406.36		CH_2CHCN	1731
406.878		CHD_2F	662
407.	±2.0	CD_3OH	1402
407.1		$^{13}CD_3OD$	1702
407.2937	±0.00053	CF_2CH_2	1420,1465,1483
407.5		$CH_3{}^{18}OH$	1741
407.6		CH2CHF	1730
407.7	±0.10	CH_3Br	1378
407.9		CD_3OH	1719

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
408.8		CD_3OD	1715
409.		ClO_2	1008
409.	±2.0	CD_3OH	1402
409.10		CD_3OH	1718
409.3		CH_2CF_2	1725
409.6		CD_2Cl_2	1708
409.8		CD_2Cl_2	1708
410.	±2.0	CD_3OH	1402
410.1		$C_2H_3F_3$	1743
410.2		CD_3OD	1716
410.712		CD_3OD	1714
411.0	±0.82	C_2H_3Br	1404
411.1		CHFCHF	665
411.2		$C_2H_3F_3$	1743
411.2	±0.82	HCOOD	1384,1403
411.6		CD_3OD	1715
412.	±2.0	CD_3OH	1402
412.0		$SiHF_3$	814
412.2		CH2CHF	1732
414.		CH_3NO_2	1753
414.	±4.1	CD_3OD	1425,1432
414.1	±0.83	DCOOD	1384,1403
414.98	±0.10	$CH_3{}^{79}Br$	1378,1450
415.		C_2H_4O	1748
415.2	±0.83	DCOOD	1384,1403
415.363		$^{13}CH_2F_2$	1704
416.0	±0.83	C_2H_3Br	1404
416.5223	±0.00042	CH_3OH	1427,1473,1481
416.7		CH_3OD	113
416.71		CH_3OH	179
417.	±2.0	CH_3OD	1367
417.0	±0.83	HCOOD	1384,1403
417.00		CD_3OH	1718
417.244		CD_2F_2	1710
417.3		$^{13}CD_3OD$	1702

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
417.4		CD_3OD	1716
418.		CH_3OH	203
418.		ClO_2	1008
418.0827	±0.00021	CH_3OH	1375,1427,1481
418.1		CD_3OH	1719
418.1		CD_3OH	1719
418.1	±0.84	HCOOH	1384,1403,1439
418.2		CD_3OD	1716
418.270		CH_2F_2	1738
418.2703	±0.00021	CH_2F_2	1392,1454,1466
418.3	±0.10	CH_3Br	1378
418.6129	±0.00042	HCOOH	1381,1384,1439
418.7118	±0.00021	CD_3OH	1402,1481
418.712		CD_3OH	826
418.79		CH_3OH	179
419.		CH_3OH	203
419.0	±0.84	C_2H_3Br	1404
419.3		CH_3OH	829
419.839		$(H_2CO)_3$	809
420.		CH2CHF	1733
420.2		CH_3OD	113
420.3		CD_3OH	1719
420.311		CDF3	1721
420.3911	±0.00042	HCOOH	1384,1403,1439
420.980		CDF3	1721
421.	±2.1	CD_3OH	1402
421.053		$^{13}CH_2F_2$	1704
421.3		CH_3CHF_2	1747
421.8		CH2CHF	1730
422.	±2.1	CD_3OH	1402
422.0		$C_2H_3F_3$	1743
422.1512	±0.00021	CH_2DOH	1467
422.5		CHFCHF	665
422.8	±0.10	CH_3Br	1378
423.0		CH2CHF	1732

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
423.354		CH_2CHCl	1711
424.		CH_2CHCl	1459
424.		CH_3NO_2	1753
424.	±8.5	H_2CCl	1459
424.0		CHFCHF	665
424.0	±0.85	C_2H_3Br	1404
424.13		COF_2	828
424.55		CD_3I	1713
425.2	±0.85	DCOOD	1384,1403
425.65		C_2H_3CN	1731
425.65		CH_2CHCN	1731
425.8		$^{13}CH_3OH$	1706
425.87		C_2H_3CN	1731
425.87		CH_2CHCN	1731
426.		CH_3NO_2	1753
426.	±2.1	CHD_2OH	1478
426.8		CH_2CF_2	1725
427.0	±0.85	C_2H_3Br	1404
427.04	±0.098	CH_3CN	1365,1378
427.1		CHD_2OH	663
427.2		$^{13}CD_3OD$	453
427.2	±0.13	CH_2DOH	1467
427.3		$^{13}CD_3OD$	453
428.		CD_3Br	1712
428.	±8.6	CD_3Br	1438,1439
428.87	±0.099	CH_3CCH	1377,13787
429.6898	±0.00043	HCOOD	1384,1403
429.9		CH2CHF	1730
430.		CD_3Br	1712
430.		CH2CHF	1733
430.		CH_3OH	203
430.	±8.6	CD_3Br	1438,1439
430.1		CH_2CF_2	1725
430.4380	±0.00043	HCOOD	1384,1403
430.55	±0.052	CH_3CN	1364,1365,1377

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
430.91		COF_2	828
430.927		CD_3OH	826
431.14		C_2H_3CN	1731
431.14		CH_2CHCN	1731
431.4		CD_3OH	1719
431.736		CD_3Br	1711
432.		CHFO	821
432.1094	±0.00043	HCOOH	1381,1403,1439
432.6313	±0.00013	HCOOH	1434,,1384,1439
432.6665	±0.00043	HCOOH	1403,1366,1384
433.		$C_2H_3O_2D$	1749
433.		CH2CHF	1729
433.	±2.1	$(H_2CO)_3$	1380
433.1036	±0.00087	CD_3I	1401
433.2	±0.87	DCOOH	1403
433.2	±0.87	HCOOD	1384,1403
433.2353	±0.00043	DCOOH	1403
433.5		CH2CHF	1730
433.6		CD_3OH	1719
433.8		CHFCHF	665
433.9		CH_3CHF_2	1747
434.0		N_2D_4	735
434.95		$CH_3{}^{18}OH$	1741
434.951		CH_2F_2	1738
434.9514	±0.00022	CH_2F_2	1392,1454,1466
435.	±2.1	CD_3OH	1410
435.10		CD_3OH	1718
435.30		CD_3OH	1718
435.427		CHD_2F	662
435.5		$SiHF_3$	814
435.7718	±0.00031	N_2H_4	1398,1483
435.9		C_2H_3Cl	1730
435.9		CH_3CHF_2	1747
437.4		CHD_2OH	663
437.4510	±0.00044	HCOOH	1366,1384,1403

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
437.6		CHFCHF	665
438.		CH_2CHCl	1728
438.0		C_2H_3Cl	1728
438.022		$^{13}CH_2F_22$	1704
438.10		$CH_3{}^{18}OH$	1741
438.4		CD_2Cl_2	1708
438.5069	±0.00044	C_2H_3Br	1404
438.8		CD_3OD	1715
438.87		CD_3OH	1718
439.0		$SiHF_3$	814
439.063		CH_2F_2	1739
440.		CD_3Br	1712
440.	±8.8	CD_3Br	1438,1439
440.01		C_2H_3CN	1731
440.01		CH_2CHCN	1731
440.2		CD_2Cl_2	1708
440.884		CD_2F_2	1710
441.1	±0.10	CH_3CN	1365,1378
441.3		CH_2CF_2	1726
441.3		CH_3OCH_3	1754
441.674		CD_3Br	1711
441.7		CH2CHF	1732
442.1		CHFCHF	665
442.1678	±0.00066	H_2CCl	1483
442.8	±0.89	DCOOD	1384,1403
443.0		SiH_2F_2	814
443.2645	±0.00089	CD_3Cl	1401,1388
443.5	±0.89	C_2H_3Br	1404
443.6		CH_3CHF_2	1747
443.8		CH_3OH	830
444.3862	±0.00089	CD_3I	1401
444.745		COF_2	668
444.8	±0.89	HCOOH	1366,1384,1403
445.		CH_2CHCl	1459
445.	±8.9	H_2CCl	1459

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
445.0		CH_2CF_2	1726
445.0	±0.89	C_2H_3Br	1404
445.2		CH2CHF	1730
445.4		CH_3OD	113
445.663		CDF3	1721
445.8996	±0.00045	HCOOH	1366,1384,1403
446.5054	±0.00031	HCOOH	1400,1483
446.7		CH2CHF	1730,1732
446.8	±0.89	HCOOD	1384,1403
446.8730	±0.00045	HCOOH	1366,1384,1403
447.		C_2H_5Cl	1745
447.080		CH_3OH	179
447.1421	±0.00089	CH_3I	1378,1401,1409
447.6		CD_2Cl_2	1708
448.3		CH_3OH	829
448.455		CH_3OH	834
448.5335	±0.00045	$H^{13}COOH$	1384
448.534		$H^{13}COOH$	683
448.7		CD_3I	1701
449.0		C_2H_5OH	1746
449.2		CH_2CF_2	1726
449.3		CD_3OD	1716
449.3		CH_3CHF_2	1747
449.5		CH_3CHF_2	1747
449.7997	±0.00090	CD_3Cl	1388,1401
450.		CH_3NO_2	1753
450.		DFCO	684
450.1	±0.90	HCOOD	1384,1403
450.7		CD_3OD	1716
450.9799	±0.00045	HCOOD	1384,1403
451.		$C_2H_3O_2D$	1749
451.4754	±0.00023	CH_2DOH	1467
452.	±9.0	CH3CH2F	1483
452.2	±0.90	DCOOD	1384,1403
452.38		CD_3I	1713

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
452.4		$^{13}CH_3OH$	1706
452.40	±0.10	CH_2DOH	1467
452.425		$^{13}CH_2F_2$	1704
452.5		CHD_2OH	663
452.9		CD_3OH	1719
453.1		CD_3OD	1715
453.3974	±0.00068	CH_3CN	1378,1459,1483
453.57		C_2H_3CN	1731
453.57		CH_2CHCN	1731
453.6		C_2H_5Br	1744
453.6		CD_3OD	1715
453.8		C_2H_3Br	1727
454.		C_2H_3N	807
454.		CH_3NO_2	1753
454.0		N_2D_4	735
454.3		CH2CHF	1732
454.5		C_2H_3Cl	1728
454.5		CH_2CF_2	1725
454.6		$C_2H_3F_3$	1743
454.8		$C_2H_3F_3$	1743
455.	±2.2	CD_3OH	1402
455.5		$SiHF_3$	814
455.6		CD_3OH	1719
456.		CH2CHF	1729
456.		CH_2CHF	1729
456.		CH_3SH	485
456.	±9.1	CH_3SH	1435
456.1		CD_3OD	1715
456.200		CD_2F_2	1710
457.2	±0.10	CH_3I	1378,1409
457.3		CH_2CF_2	1725
457.3410	±0.00046	DCOOD	1384,1403
457.5		CD_3OD	1715
457.9		C_2H_3Br	1730
458.		CH2CHF	1729

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
458.0		CH2CHF	1732
458.0	±0.92	CF_2CH_2	1387,1388,1465
458.5229	±0.00069	HCOOH	1381,1384,1439
459.		CH_2CHCN	1731
459.00		C_2H_3CN	1731
459.2	±0.10	CH_3I	1378,1409
459.31		C_2H_3CN	1731
459.31		CH_2CHCN	1731
459.4		C_2H_3Cl	1728
459.4		CDF_3	1668
459.4		CDF_3	1722
459.4		CH_2CHCl	1728
459.428		$(H_2CO)_3$	809
459.6		CDF_3	1668
459.6		CDF_3	1722
459.8		CH2CHF	1732
459.886		ClO_2	1008
460.	±14.	CH_3CHF_2	1420
460.	±2.3	$(H_2CO)_3$	1380
460.440		CH_3OH	179
460.5619	±0.00092	CD_3I	1401
461.		CH_3OH	203
461.0		CH2CHF	1732
461.0718	±0.00069	N_2H_4	1398,1483
461.2	±0.10	CH_3Cl	1378,1385
461.2610	±0.00046	HCOOD	1384,1403
461.3847	±0.00023	$^{13}CH_3OH$	1415
462.8		$^{13}CD_3OH$	1703
463.0		$C_2H_3F_3$	1743
464.3	±0.93	CF_2CH_2	1387,1388,1465
464.40		C_2H_3CN	1731
464.40		CH_2CHCN	1731
464.412		CH_2F_2	1738
464.412		CH_2F_2	1738
464.4123	±0.00023	CH_2F_2	1392,1454,1466

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
464.627		$H^{13}COOH$	683
464.7		$^{13}CD_3OD$	1702
464.7567	±0.00093	CD_3Cl	1401,1388
464.8		CH_3CHF_2	1747
465.		$C_2H_3O_2D$	1749
465.		NH_3	816
465.0		$SiHF_3$	814
465.50		CD_3I	1713
465.50		CD_3I	1713
465.50		$CH_3{}^{18}OH$	1741
465.500		CD_2F_2	1710
465.70		$CH_3{}^{18}OH$	1741
466.00		CD_3I	1713
466.00		CD_3I	1713
466.25	±0.093	CH_3CN	1365,1378
466.5461	±0.00047	DCOOH	1403
466.643		CD_3Br	1711
467.		$(H_2CO)_3$	809
467.2		CH2CHF	1730
467.515		$CHCl_2F$	487
467.850		CH_3OH	179
468.2359	±0.00023	CH_2DOH	1467,1478
468.965		$^{13}CD_3OH$	1703
469.	±2.3	CD_2Cl_2	1478
469.0233	±0.00037	CH_3OH	1427,1455,1473
469.2	±0.94	DCOOD	1384,1403
470.		CH_2CHCN	1731
470.		CH_3NO_2	1753
470.		CH_3OH	203
470.00		C_2H_3CN	1731
470.065		$^{13}CD_3F$	1700
470.386		$CHCl_2F$	487
471.0		SiH_2F_2	814
471.2		$C_2H_3F_3$	1743
471.5		CD_2Cl_2	1708

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
472.		CH_3NO_2	1753
472.	±2.3	CD_3OH	1402
472.1	±0.94	HCOOD	1384,1403
472.4		CD_3OH	1719
472.9	±0.95	HCOOD	1384,1403
473.68		CD_3I	1713
474.6		C_2H_3Cl	1728
474.6		CH_2CHCl	1728
475.1		$^{13}CD_3OD$	453
475.1		CH_2CF_2	1725,1726
475.3		C_2H_3Br	1730
476.0		CH2CHF	1730
476.00		CD_3I	1713
476.25		CD_3OH	1718
476.3		CH_2CF_2	1726
476.8		C_2H_3Cl	1728
476.8		CH_2CHCl	1728
477.		CH2CHF	1733
477.1		$C_2H_3F_3$	1743
477.3		CD_3OH	1719
477.3		CH_2CF_2	1725
477.4	±0.95	HCOOD	1384,1403
477.9	±0.096	CH_3I	1378,1409
477.963		$H^{13}COOH$	683
478.072		COF_2	668
478.9	±0.96	DCOOD	1384,1403
479.123		$^{13}CH_2F_2$	1704
479.150		CH_3OH	179
479.9040	±0.00048	DCOOH	1403
480.	±2.4	CD_3OH	1402
480.	±2.4	$H^{13}COOH$	1384
480.0	±0.096	CH_3CN	1365,1378
480.000		$H^{13}COOH$	683
480.3101	±0.00096	CD_3Cl	1401,1388
481.		C_2H_3N	807

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
482.12		$CH_3{}^{18}OH$	1741
482.2		CH_3CHF_2	1747
482.5		CD_3OD	1715
482.7		CD_3OH	1719
482.9		CHD_2OH	663
482.9615	±0.00048	C_2H_3Br	1404
483.	±2.4	CD_3OH	1402
483.	±2.4	CHD_2OH	1478
483.0		CD_3OD	1716
483.16		CD_3I	1713
483.5		CD_2Cl_2	1708
483.5		CD_3OD	1716
483.5	±0.97	N_2H_4	1398
483.8		CH2CHF	1732
484.3		CD_2Cl_2	1708
484.4		CHD_2OH	663
485.27		COF_2	828
485.4		$C_2H_3F_3$	1743
485.6		$C_2H_3F_3$	1743
485.8		$C_2H_3F_3$	1743
486.	±9.7	CH3CH2F	1459
486.1		$C_2H_3F_3$	1743
486.1		CH_2CF_2	1725
486.1	±0.97	CH_3OH	1427,1473,1475
486.5		CD_3OD	1714
487.		CH_2CHCl	1459
487.		CH_3NO_2	1753
487.	±9.7	H_2CCl	1459
487.0		$SiHF_3$	814
487.2260	±0.00097	CD_3I	1401
487.4		CD_3OD	1715
487.5		CH2CHF	1730
487.5		CH_2CHF	1730
487.6		CH_3OD	113
487.7		CH2CHF	1732

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
487.8		C_2H_3Cl	1728
487.8		CH_2CHCl	1728
487.8		CH2CHF	1732
488.0		$SiHF_3$	814
488.11		COF_2	828
488.276		CD_2F_2	1710
488.528		CDF3	1721
489.		CH_2CHCN	1459
489.		CH_3NO_2	1753
489.	±9.8	CH_2CHCN	1459
489.238		CD_2F_2	1710
489.3		CH2CHF	1730
490.		CH2CHF	1733
490.0		CH2CHF	1732
490.0829	±0.00049	C_2H_3Br	1404
490.3909	±0.00098	CD_3I	1401
490.7		CH_2CF_2	1726
491.2		CD_3OD	1715
491.376		$(H_2CO)_3$	809
491.8		$C_2H_3D_2OH$	1742
491.8906	±0.00049	DCOOD	1384,1403
492.040		$CHCl_2F$	487
493.0		CD_2Cl_2	1709
493.1562	±0.00049	HCOOD	1384,1403
493.5		CD_3OD	1716
493.5		CH2CHF	1730
493.541		CH_3OH	834
494.0		SiH_2F_2	814
494.1		CD_3OD	1715
494.6461	±0.00074	CH_3CN	1378,1459,1483
495.	±2.4	CD_3OH	1402
495.	±2.9	CH_3OH	1471,1484
495.	±5.0	CD_3OD	1425
495.963		$CHCl_2F$	487
496.072	±0.0024	CH_3F	1374,1393,1434

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
496.1009	±0.00040	CH_3F	1393,1434
496.3		$^{13}CH_3OH$	1706
496.4		$^{13}CH_3OH$	1706
496.5		CH_3OCH_3	1754
496.660		$^{13}CH_2F_2$	1704
497.		$(H_2CO)_3$	809
497.0		CD_2Cl_2	1709
497.2		CD_3OD	1715
497.3		CD_2Cl_2	1708
497.4		CH_3OCH_3	1754
497.5		C_2H_3Br	1727
497.5		C_2H_3Br	1727
497.677		CD_2F_2	1710
498.	±2.4	CD_3OH	1391
498.0	±1.0	CH_3OD	1397
498.0	±1.0	HCOOD	1384,1403
498.5		$SiHF_3$	814
498.7		CH_2CF_2	1726
500.	±10.	CH_2CHCN	1459
500.0		$(H_2CO)_3$	809
500.577		CD_2F_2	1710
500.577		CD_2F_2	1710
501.164		$(H_2CO)_3$	809
501.6		$C_2H_3F_3$	1743
501.9		CHD_2OH	663
502.2623	±0.00080	CH3CH2F	1459,1483
503.		CH_2CHCN	1459
503.0567	±0.00025	CH_2F_2	1392,1454,1466
504.5		C_2H_3Br	1730
504.752		CDF_3	1721
505.0		CH_3CHF_2	1747
505.0		SO_2	810
505.829		COF_2	668
506.	±1.0	C_2H_3Br	1404
506.3		C_2H_3F	1732

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
507.480		CH_3OH	179
507.584		CH_2CHCl	1711
507.5840	±0.00081	H_2CCl	1375,1483
507.591		CH_2CHCl	1711
508.	±1.0	DCOOD	1384,1403
508.	±2.5	CD_3OH	1402
508.33		CH_2CHCN	1731
508.4	±0.10	CH_3I	1378,1409
508.5	±0.10	CH_3Br	1378
508.7911	±0.00051	DCOOD	1384,1403
509.		C_2H_4O	1748
509.16		CH_2CHCN	1731
509.3717	±0.00025	CH_2DOH	1467
509.44		COF_2	828
509.5		CD_3OH	1719
509.7		C_2H_3Br	1727
509.859		ClO_2	1008
509.890		$(H_2CO)_3$	809
510.2	±0.10	CH_3CN	1365,1377,1378
510.4		$C_2H_3F_3$	1743
510.7		$C_2H_3F_3$	1743
511.4451	±0.00026	CH_2F_2	1392,1454,1466
511.9		CH_3OCH_3	1754
511.9	±0.10	CH_3Cl	1378,1385
512.	±2.5	$(H_2CO)_3$	1380
512.8		CHD_2OH	663
513.0022	±0.00077	HCOOH	1379,1384,1439
513.0157	±0.00051	HCOOH	1403,1439
513.4		CH_3CHF_2	1747
513.7572	±0.00051	HCOOD	1384,1403
514.		CH_3NO_2	1753
514.		DFCO	684
514.9507	±0.00051	DCOOD	1384,1403
515.1695	±0.00052	HCOOH	1384,1403,1439
515.8		CH_3OD	113

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
516.		C_3H_2O	681
516.		CH_3OH	203
516.0		SiH_3F	813
516.382		COF_2	668
516.5		CD_3OH	1719
516.77	±0.098	CH_3CCH	1377,1378
517.	±2.5	CD_3OH	1402
517.33	±0.098	CH_3I	1378,1409
517.5		C_2H_3Br	1727
517.8		CHD_2OH	663
518.	±2.5	CHD_2OH	1478
518.4		C_2H_3F	1732
518.8		$C_2H_3F_3$	1743
518.9		CH_3CHF_2	1747
519.		CH_2CHCl	1459
519.075	±0.0013	CH3CH2F	1459,1483
519.2		$C_2H_3F_3$	1743
519.303	±0.0010	CD_3Cl	1401,1388
519.6		C_2H_3F	1735
519.6		CH_2CHF	1730
520.	±10.	CF_2CH_2	1387,1459,1465
520.	±10.	H_2CCl	1459
520.	±2.5	CD_2Cl_2	1478
520.3		CD_3OH	1719
521.11		$^{13}CH_3I$	1675
521.237		CDF_3	1721
521.4		CH_3CHF_2	1747
521.6		$^{13}CD_3OD$	453
522.7		$^{13}CD_3OD$	453
523.0914	±0.00026	CH_2DOH	1467
523.120		CH_3OH	179
523.406	±0.0010	CD_3I	1401
524.		CH_3NO_2	1753
524.6		CD_3OH	1719
524.8		CH_2CHCl	1730

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
524.9		NH_3	827
525.		$C_2H_3O_2D$	1749
525.		ClO_2	1008
525.3		SO_2	810
525.32	±0.10	CH_3I	1378,1409
525.56		CH_2CHCN	1731
526.3		CH_3OCH_3	1754
526.4856	±0.00053	DCOOD	1384,1403
527.2146	±0.00053	DCOOD	1384,1403
527.8730	±0.00090	N_2H_4	1483
527.9		C_2H_5Br	1744
528.4965	±0.00053	C_2H_3Br	1404
529.3		C_2H_5OH	1746
529.3	±0.10	CH_3I	1378,1409
530.		CH_3NO_2	1753
530.	±11.	CD_3Br	1438,1439
530.	±11.	H_2CCl	1459
530.	±16.	CH_3CHF_2	1420
530.533		CH_2CHCl	1711
530.7		CH_3OCH_3	1754
530.854		$CHCl_2F$	487
531.	±1.1	HCOOD	1384,1403
531.1	±0.10	CH_3Br	1378
531.1	±0.10	CH_3CCH	1378,1377
533.0		N_2D_4	735
533.33		CD_3I	1713
533.655	±0.0048	N_2H_4	1398,1483
533.6783	±0.00053	HCOOH	1384,1403,1439
533.7006	±0.00053	HCOOH	1384,1403,1439
534.2		CH_3CHF_2	1747
535.	±1.1	HCOOH	1384,1400,1439
536.096		$H^{13}COOH$	683
537.06		CH_2CHCN	1731
537.410		$^{13}CD_3F$	1700
537.65		CH_2CHCN	1731

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
538.		CH_2CHCl	1459
538.415		COF_2	668
539.10		COF_2	828
540.	±11.	H_2CCl	1459
540.	±2.6	CD_3I	1401
540.736		CDF_3	1721
540.9864	±0.00027	CH_2F_2	1392,1454,1466
542.99	±0.092	CH_3I	1378,1409
543.2		CHFCHF	665
544.1		C_2H_3Br	1730
545.		CH_2CHCN	1731
545.		NH_2OH	682
545.21	±0.093	$CH_3{}^{81}Br$	1378,1450
545.39	±0.093	CH_3Br	1378
545.5		CH_2CHCl	1728
545.56		CD_3I	1713
545.88		CD_3I	1713
546.8		CHFCHF	665
546.80		$CH_3{}^{18}OH$	1741
547.529		$CHCl_2F$	487
548.843		$H^{13}COOH$	683
549.258		$CHCl_2F$	487
549.5		CHFCHF	665
549.686		CH_2CHCN	1711
550.		CH_3NO_2	1753
550.	±1.1	CH_2CHCN	1396
550.	±11.	CD_3Br	1438,1439
550.0		CH_3OD	113
550.1		CD_3OD	1715
550.2		CD_3OH	1719
551.	±2.7	CD_3OH	1402
551.2		CH_2CF_2	1726
552.		CH_3NO_2	1753
552.0		C_2H_5OH	1746
552.0		N_2D_4	735

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
552.4		CD_3OD	1715
552.6		CH_3OH	830
552.94		COF_2	828
553.	±2.7	CD_3OH	1402
553.0		CD_3OH	1719
553.6962	±0.00055	C_2H_3Br	1404
554.	±2.7	CD_3OH	1402
554.0		CD_3OH	1719
554.365	±0.0021	CF_2CH_2	1483
554.56		CH_2CHCN	1731
554.7		$^{13}CD_3I$	1701
555.1		C_2H_3Br	1727
555.75		$CH_3{}^{18}OH$	1741
556.47		CH_2CHCN	1731
556.8		CH_2CHCl	1728
556.8		CH_2CHCl	1728
556.876	±0.0011	CD_3I	1401
557.0		CHFCHF	665
558.5		CD_3OD	1715
558.577		$(H_2CO)_3$	809
558.8		$C_2H_3F_3$	1743
558.82		$^{13}CH_3I$	1675
560.	±11.	CD_3Br	1438,1439
560.0		CH_3OD	113
560.703		CDF_3	1721
560.803		CDF_3	1721
561.028		$CHCl_2F$	487
561.2939	±0.00056	DCOOD	1384,1403
561.4	±0.095	CH_3CN	1365,1377,1378
563.		C_2H_3F	1733
563.		CH_2CHF	1733
563.44		CH_2CHCN	1731
564.		CH_3NO_2	1753
564.		CH_3OH	203
564.7		CH_3OCH_3	1754

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
564.7	±0.096	$CH_3{}^{81}Br$	1378,1450
564.70		CH_2CHCN	1731
565.		C_2H_3F	1734
565.		CH_2CHF	1729
566.1		C_2H_5OH	1746
566.4	±0.096	CH_3CCH	1377,1378
566.750		CH_3OH	179
567.1065	±0.00057	HCOOD	1384,1403
567.5316	±0.00028	CH_2F_2	1392,1454,1466
567.8		CD_3OD	1715
567.8683	±0.00057	DCOOD	1384,1403
567.946	±0.0010	H_2CCl	1459,1483
568.8	±0.097	CH_3Cl	1378,1385
569.		DFCO	684
569.4		CH_3CHF_2	1747
569.477	±0.0011	CD_3I	1401
569.7		CH_3OH	830
570.	±17.	CF_2CH_2	1388,1420,1465
570.3		SO_2	810
570.5687	±0.00055	CH_3OH	1375,1427,1455
572.330		$H^{13}COOH$	683
572.51		COF_2	828
572.692		CH_2CHCN	1711
573.		CH_2CHF	1729
573.75		$^{13}CH_3I$	1675
574.		CH_2CHCl	1459
574.	±1.1	CH_2CHCN	1396
574.027		CH_2CHCN	1711
574.38		CH_2CHCN	1731
574.6		$^{13}CD_3I$	1701
575.3		C_2H_5OH	1746
576.17	±0.098	CH_3I	1378,1409
577.8		CD_3OD	1715
578.		CH_2CHCN	1459
578.90	±0.098	CH_3I	1378,1409

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (µm)	Uncertainty	Molecule	Reference
579.		C_2H_3F	1734
579.		CH_2CHF	1729
579.761		CH_2CHCl	1711
580.	±12.	CH_2CHCN	1459
580.3872	±0.00058	HCOOH	1381,1384,1439
580.6		$C_2H_3F_3$	1743
580.8		$C_2H_3F_3$	1743
580.8		CH_2CHCl	1728
580.8010	±0.00058	HCOOH	1384,1403,1439
580.869		$CHCl_2F$	487
581.3		CH_2CHCl	1728
581.6		$C_2H_3D_2OH$	1742
581.984		CDF_3	1721
582.1		CDF_3	1668
582.5		CH_2CHF	1732
582.5		CH_3CHF_2	1747
582.5536	±0.00058	HCOOD	1384,1403
583.	±2.9	CD_3OH	1402
583.1		C_2H_3F	1735
583.1		CH_2CHF	1730
583.3		CD_3OH	1719
583.3		CH_3CHF_2	1747
583.7		CHFCHF	665
583.77	±0.099	CH_3CCH	1377,1378
583.87	±0.099	CH_3I	1378,1409
583.872		CH_2CHCN	1711
584.	±1.2	CH_2CHCN	1396
584.0		CH_2CHCl	1730
585.5		CD_3OD	1715
585.72	±0.10	$CH_3{}^{81}Br$	1378,1450
585.8		C_2H_3F	1732
586.		C_2H_3F	1734
586.		CH_2CHF	1729
586.382		CH_2CHCN	1711
586.72		CH_2CHCN	1731

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
586.8		CH_2CHCN	1731
587.	±1.2	CH_2CHCN	1396
587.5		N_2D_4	735
588.0276	±0.00029	CH_2F_2	1392,1454,1466
588.44		CH_2CHCN	1731
590.		C_2HF	681
590.		HCCF	681
590.	±1.2	HCOOD	1384,1403
590.0		C_2H_3Br	1727
590.369		CH_2CHCl	1711
591.1		$^{13}CD_3OD$	453
591.6157	±0.00059	DCOOD	1384,1403
593.		$(H_2CO)_3$	809
593.	±1.2	DCOOD	1384,1403
593.1		CD_3OH	1719
593.279		CD_2F_2	1710
593.506	±0.0012	CH3CH2F	1459,1483
593.9		CH_2CHCl	1730
594.		CH_3NO_2	1753
594.	±1.2	HCOOD	1384,1403
594.7286	±0.00059	C_2H_3Br	1404
597.00		CH_2CHCN	1731
597.00		CH_2CHCN	1731
597.33		CH_2CHCN	1731
598.		CH_3NO_2	1753
598.3		CH_2CHCl	1730
598.3		CHD_2OH	663
598.4		CD_3OD	1715
598.4		CD_3OD	1715
598.6		CD_3OH	1719
599.	±2.9	CD_3OH	1402
599.0		CH_2CHCN	1731
599.550	±0.0012	CD_3I	1401
600.		CH_3NH_2	1752
601.67		COF_2	828

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
601.897	±0.0012	H_2CCl	1459,1483
602.4870	±0.00030	CH_3OH	1397,1427,1481
602.50		CD_3I	1713
605.4		CH_3CHF_2	1747
605.6		CDF_3	1668
605.7		C_2H_3Br	1730
606.		CH_2CHCl	1728
606.6		C_2H_3F	1735
606.6		CH_2CHF	1730
606.7		C_2H_3Br	1727
606.7		CH_2CHCl	1728
606.7		CHD_2OH	663
606.8		$C_2H_3F_3$	1743
607.3		CHD_2OH	663
607.714		$(H_2CO)_3$	809
608.		DFCO	684
610.3		CD_3OH	1719
613.0		SiH_2F_2	814
613.5		CH_3OD	113
614.110	±0.0012	CD_3I	1401
614.2851	±0.00031	CH_3OH	1427,1481
614.3	±0.74	CF_2Cl_2	1442
616.3351	±0.00031	CH_2DOH	1467,1478
617.0		C_2H_3F	1732
617.7		C_2H_3Br	1727
617.7		CH_2CF_2	1726
618.4462	±0.00062	C_2H_3Br	1404
619.	±3.0	$(H_2CO)_3$	1380
620.		CH_2CHCl	1728
620.		CH_3NO_2	1753
620.	±12.	CH_2CHCN	1459
620.3		C_2H_5OH	1746
620.34		CH_2CHCN	1731
620.40	±0.099	CH3CH2F	1459,1474
621.		CH_2CHCl	1728

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
622.		CH_3OH	203
622.0		SiH_3F	813
622.3		CH_2CHCl	1728
623.		C_3H_3F	682
623.		CH_2CHCN	1459
624.0958	±0.00062	C_2H_3Br	1404
624.4301	±0.00031	CH_3OH	1427,1481
625.7		C_2H_3Br	1727
628.		$C_2H_3O_2D$	1749
628.00		CD_3I	1713
629.00		CD_3I	1713
629.3		$C_2H_3F_3$	1743
629.8442	±0.00031	$13CH_3OH$	1415,1417,1481
630.	±13.	CH_2CHCN	1459
630.1661	±0.00063	HCOOD	1384,1403
630.7		C_2H_3Br	1730
631.		CH_2CHCN	1459
631.		CH_3NO_2	1753
631.	±3.1	CD_2Cl_2	1478
631.9	±0.10	CH_3Br	1378
632.0	±0.10	CH_3Br	1378
632.00		CD_3I	1713
632.9		CH_3CHF_2	1747
633.4		$C_2H_3F_3$	1743
634.		CH_3NO_2	1753
634.0		$C_2H_3F_3$	1743
634.471		CH_2CHCl	1711
634.471	±0.0013	H_2CCl	1375,1483
634.7		$C_2H_3F_3$	1743
635.3548	±0.00064	C_2H_3Br	1404
636.3		CH_2CHCl	1728
637.1		CH_2CHCl	1730
637.5		CH_3CHF_2	1747
638.		CH_2CHCl	1459
638.4	±0.57	CF_2Cl_2	1442

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
639.1282	±0.00064	DCOOH	1403
639.7	±0.10	CH_3I	1378,1409
640.	±13.	H_2CCl	1459
640.	±3.1	CD_3I	1401
640.35		COF_2	828
640.7		C_2H_3Br	1727
641.0		N_2D_4	735
641.43		CH_2CHCN	1731
642.28		CH_2CHCN	1731
642.5999	±0.00032	CH_2F_2	1392,1454,1466
643.516		CD_2F_2	1710
643.86		CH_2CHCN	1731
644.	±3.2	CD_3I	1401
644.5		CH_3CHF_2	1747
644.64		CH_2CHCN	1731
644.64		CH_2CHCN	1731
645.		CH_2CHCN	1731
645.	±1.3	DCOOD	1384,1403
645.289		CH_2CHCl	1711
645.5		CH_3OCH_3	1754
646.		CH_3NO_2	1753
646.	±1.3	C_2H_3Br	1404
646.	±3.2	CD_3OH	1402
646.477		CD_3OH	826
646.5		CH_3CHF_2	1747
647.3485	±0.00065	DCOOH	1403
647.89	±0.049	CH_3CCH	1377
648.	±3.2	CD_3OH	1402
648.6		C_2H_3Br	1730
649.4255	±0.00065	C_2H_3Br	1404
650.70		COF_2	828
651.79		CH_2CHCN	1731
651.9		CD_3OD	1715
652.68	±0.098	CH_3CN	1365,1378,1459
654.		CHFO	821

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
654.920		CH_3OH	179
655.0		C_2H_3F	1735
655.0		CH_2CHF	1730
655.4		CH_2CHCl	1728
655.9		CH_2CHCN	1731
656.		$(H_2CO)_3$	809
656.		CH_3NO_2	1753
657.	±1.3	HCOOD	1384,1403
657.2391	±0.00033	CH_2F_2	1392,1454,1466
657.59		CH_2CHCN	1731
657.938		CDF_3	1721
657.989		CDF_3	1721
658.152		CDF_3	1721
658.26		CH_2CHCN	1731
658.5		N_2D_4	735
658.53	±0.099	$CH_3{}^{81}Br$	1378,1450
658.57		CD_3I	1713
658.57		CD_3I	1713
659.		NH_2OH	682
659.69		CH_2CHCN	1731
660.	±1.3	HCOOD	1384,1403
660.	±13.	CH3CH2F	1483
660.2		C_2H_3F	1735
660.2		CH_2CHF	1730
660.34		CH_2CHCN	1731
660.582	±0.0013	CD_3I	1401
660.70	±0.099	CH_3Br	1378
661.		$(H_2CO)_3$	809
661.153		$CHCl_2F$	487
662.0		CH_2CF_2	1726
662.816	±0.0015	CF_2CH_2	1483
663.0		CD_3OD	1715
663.08		$^{13}CH_3I$	1675
663.670		CH_3OH	179
664.		DFCO	684

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
665.70		COF_2	828
666.	±1.3	DCOOD	1384,1403
666.604		CH_2CHCl	1711
667.232	±0.0013	CD_3I	1401
668.	±1.3	HCOOD	1384,1403
668.1		CH_2CHCl	1728
669.531	±0.0010	HCOOH	1379,1403,1439
670.094	±0.0013	CD_3I	1401
670.114	±0.0013	CD_3I	1401
670.4		CD_3OD	1715
670.4		CD_3OD	1715
670.7		$^{13}CD_3OD$	453
670.79		CH_2CHCN	1731
671.0		C_2H_3F	1732
671.0	±0.10	CH_3I	1378,1409
671.15		CH_2CHCN	1731
671.43		CH_2CHCN	1731
673.		CH_3NO_2	1753
674.8		CH_3OH	829
675.		$C_2H_3O_2D$	1749
675.		CH_3NO_2	1753
675.3	±0.10	CH_3CCH	1377,1378
676.		$C_2H_3O_2D$	1749
676.7		$C_2H_3F_3$	1743
678.57		CD_3I	1713
679.766		$(H_2CO)_3$	809
680.	±3.3	$(H_2CO)_3$	1380
680.	±3.3	CD_3OH	1402
680.0		CH_3CHF_2	1747
680.00		CD_3I	1713
680.5414	±0.00068	C_2H_3Br	1404
681.4		C_2H_3Br	1727
681.5		CH_2CHCl	1728
682.6	±0.10	CH_2DOH	1467
683.6		C_2H_3Br	1727

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
683.738		CH_2CHCl	1711
684.3		CD_3OD	1715
684.5		CD_3OH	1719
684.6		C_2H_3Br	1730
684.7		CD_3OD	1715
684.7	±0.48	CF_2Cl_2	1442
684.7	±0.75	CF_2Cl_2	1442
685.	±3.4	CD_3OH	1402
685.19		CH_2CHCN	1731
687.2		CHFCHF	665
687.837		CDF_3	1721
688.3		CH_2CF_2	1726
689.0		SiH_3F	813
689.9981	±0.00069	HCOOD	1384,1403
690.	±3.4	$^{13}CD_3I$	1388
690.0		CD_3OH	1719
690.4		CH_3CHF_2	1747
691.119	±0.0014	CD_3I	1401
692.	±1.4	HCOOD	1384,1403
693.0		C_2H_3Br	1727
693.1396	±0.00069	C_2H_3Br	1404
694.		NH_3	816
694.	±2.8	CH_3OH	1427,1471
694.1893	±0.00035	CH_3OH	1427,1481
694.428		$(H_2CO)_3$	809
695.		$(H_2CO)_3$	809
695.		NH_3	816
695.	±3.4	CD_3OH	1402
695.202		CH_2CHCl	1711
695.3499	±0.00035	CH_3OH	1427,1481
695.6720	±0.00070	HCOOD	1384,1403
696.	±3.4	$(H_2CO)_3$	1380
697.		CH_3NO_2	1753
697.		CH_3OH	203
697.4552	±0.00070	DCOOH	1403

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
698.		C_2H_5Cl	1745
698.555	±0.0014	CD_3Cl	1401,1388
698.6		CH_3CHF_2	1747
699.		CH_2CHCl	1459
699.0		CD_3OH	1719
699.0		N_2D_4	735
699.4226	±0.00084	CH_3OH	1375,1427,1455
700.	±14.	H_2CCl	1459
700.4		CH_2CHCl	1728
701.		$C_2H_3O_2D$	1749
701.1		C_2H_3Br	1727
701.5		CD_3OH	1719
702.	±3.4	CD_3OH	1402
703.	±3.4	CD_3OH	1402
704.53	±0.099	CH_3CN	1364,1365,1378
704.925.		CH_2CHCl	1711
705.	±1.4	HCOOH	1384,1403,1439
705.0		CHFCHF	665
705.3		C_2H_3Br	1727
706.6		CD_3OH	1719
707.1		C_2H_3Br	1730
707.2210	±0.00071	C_2H_3Br	1404
707.8		C_2H_5Br	1744
709.2		$C_2H_3F_3$	1743
709.5		$C_2H_3F_3$	1743
709.8		$C_2H_3F_3$	1743
710.	±1.4	DCOOH	1403
710.	±14.	H_2CCl	1459
710.0		$(H_2CO)_3$	809
711.	±3.5	CD_3OH	1402
711.752		$(H_2CO)_3$	809
712.	±1.4	C_2H_3Br	1404
712.	±3.5	$(H_2CO)_3$	1380
712.76		CH_2CHCN	1731
713.1056	±0.00071	DCOOH	1403

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
713.72	±0.050	CH_3CN	1364,1365,1377
715.3		CH_3OD	113
715.4		CH_2CF_2	1726
715.4	±0.10	$CH_3{}^{79}Br$	1378,1450
717.		CH_3NO_2	1753
718.0		CH_3CHF_2	1747
719.3	±0.10	CH_3I	1378,1409
720.	±14.	CH_2CHCN	1459
721.	±1.4	N_2H_4	1398
722.	±3.5	CD_3OH	1402
722.		CH_2CHCN	1459
724.0		N_2D_4	735
724.1399	±0.00072	C_2H_3Br	1404
724.9203	±0.00036	CH_2F_2	1392,1454,1466
726.9203	±0.00073	DCOOD	1384,1403
727.		$(H_2CO)_3$	809
727.570		CH_2CHCN	1711
727.9491	±0.00073	HCOOD	1384,1403
730.323	±0.0015	CD_3I	1401
733.		$(H_2CO)_3$	809
733.	±1.5	HCOOD	1384,1403
733.5740	±0.00073	D_2CO	1380,1382
734.1616	±0.00088	N_2H_4	1483
734.262	±0.0015	CD_3I	1401
734.6		CH_3OD	113
734.8		C_2H_3Br	1727
735.		CH_3NO_2	1753
735.130	±0.0015	CD_3Cl	1388,1401
737.	±1.5	DCOOD	1384,1403
738.		CH_2CHCN	1459
740.	±15.	CH_2CHCN	1459
741.1149	±0.00074	C_2H_3Br	1404
741.62	±0.089	CH_3CN	1364,1365,1378
742.572	±0.0015	HCOOH	1379,1384,1439

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
744.050	±0.0015	HCOOH	1379,1384,1439
745.	±3.7	CD_3I	1401
745.	±3.7	CD_3OH	1402
745.5		$^{13}CD_3I$	1701
746.4		CH_3CHF_2	1747
749.29	±0.090	$CH_3{}^{79}Br$	1378,1450
749.36	±0.090	$CH_3{}^{79}Br$	1378,1450
749.372		$(H_2CO)_3$	809
750.		$(H_2CO)_3$	1380
750.		DFCO	684
750.	±15.	CH_3CN	1364,1365,1483
750.	±3.7	$(H_2CO)_3$	1380
750.38		CH_2CHCN	1731
750.606		$(H_2CO)_3$	809
751.4	±0.60	CF_2Cl_2	1442
751.831		CH_2CHCN	1711
752.6808	±0.00075	D_2CO	1380,1382
752.7485	±0.00075	DCOOH	1403
754.		CH_2CHCN	1731
756.		$C_2H_3O_2D$	1749
758.2		CH_2CHCl	1728
758.46		CH_2CHCN	1731
759.6		CH_3OD	113
760.	±15	HCOOH	1366,1439,1459
760.	±3.7	CD_3OH	1402
761.2		CH_3CHF_2	1747
761.67		CH_2CHCN	1731
761.7617	±0.00076	DCOOD	1384,1403
762.50	±0.092	CH_2DOH	1467
764.	±3.7	CF_2CH_2	1367,1388,1465
764.2		C_2H_3F	1732
765.2	±0.54	CF_2Cl_2	1442
765.42		COF_2	828
766.6		$C_2H_3F_3$	1743
767.8		$C_2H_3F_3$	1743

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
768.8		CH_2CHCl	1730
769.053		CH_2CHCN	1711
769.1		C_2H_3Br	1730
769.8		C_2H_5Br	1744
770.	±15.	CF_2CH_2	1387,1388,1465
770.00		CH_2CHCN	1731
770.4		CH_2CHCl	1728
771.038		$(H_2CO)_3$	809
771.2		CH_2CHCl	1728
771.3		CH_2CHCl	1728
774.	±3.8	CD_3OH	1402
775.		CH_2CHCN	1459
775.		ClO_2	1008
777.92		CH_2CHCN	1731
778.		CH_3NO_2	1753
779.8744	±0.00078	DCOOD	1384,1403
780.		CH_3NO_2	1753
780.	±16.	CH_2CHCN	1459
780.1330	±0.00078	C_2H_3Br	1404
780.83		CH_2CHCN	1731
781.		CH_3OH	203
781.000		CH_3OH	179
782.		$(H_2CO)_3$	809
782.7		$C_2H_3F_3$	1743
783.2		$C_2H_3F_3$	1743
783.3		$^{13}CD_3OD$	453
783.7		C_2H_3Br	1730
784.2681	±0.00078	C_2H_3Br	1404
784.4		CH_3OD	113
784.5		$C_2H_3F_3$	1743
784.6		C_2H_3Br	1730
786.1617	±0.00079	HCOOH	1381,1384,1439
786.9419	±0.00079	HCOOH	1384,1403,1439
787.50		CH_2CHCN	1731
788.		DFCO	684

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
788.33		CH_2CHCN	1731
788.482	±0.0016	CD_3I	1401
788.9192	±0.00079	$H^{13}COOH$	1384
789.		$(H_2CO)_3$	809
789.4203	±0.00079	DCOOD	1384,1403
789.8396	±0.00079	HCOOH	1384,1403,1439
790.	±16.	CH_2CHCN	1459
790.8		CH_3CHF_2	1747
792.	±3.9	CD_3Cl	1388,1401
793.		CH_2CHCN	1459
793.2		CH_2CF_2	1726
795.	±1.6	DCOOD	1384,1403
795.	±1.6	N_2H_4	1398
796.3		C_2H_3F	1735
796.3		CH_2CHF	1730
796.5		C_2H_3F	1732
796.7		C_2H_3Br	1727
797.5		CH_3OD	113
799.17		COF_2	828
802.	±1.6	N_2H_4	1398
802.5		C_2H_3Br	1730
805.8		$C_2H_3F_3$	1743
806.	±3.9	$^{13}CD_3I$	1388
809.		CH_3NO_2	1753
812.	±1.6	DCOOD	1384,1403
812.6		CD_3OH	1719
813.		$(H_2CO)_3$	809
813.654		$(H_2CO)_3$	809
815.	±4.0	$(H_2CO)_3$	1380
815.123		CH_2CHCl	1711
816.195		CH_2CHCN	1711
817.50		COF_2	828
819.	±1.6	HCOOD	1384,1403
820.0		CH_3OD	113
820.00		$^{13}CH_3I$	1675

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
822.3		CH_3CHF_2	1747
823.		C_2H_3N	1750
823.5		CF_3Br	1456
824.	±1.4	CF_3Br	1444,1456
825.0		CH_3OD	113
826.	±1.7	HCOOD	1384,1403
826.9443	±0.00083	C_2H_3Br	1404
828.		CH_2CHCl	1459
828.		CH_2CHCN	1459
829.	±4.1	CD_2Cl_2	1478
829.54		CH_2CHCN	1731
830.	±17.	CH_2CHCN	1459
830.	±17.	H_2CCl	1459
830.45		CH_2CHCN	1731
831.13	±0.10	$CH_3{}^{81}Br$	1378,1450
832.7		C_2H_3Br	1727
832.757		$CHCl_2F$	487
832.77		CH_2CHCN	1731
833.2		CH_2CHCl	1730
833.3		$C_2H_3F_3$	1743
835.	±1.7	DCOOD	1384,1403
836.8		C_2H_3Br	1730
837.27		COF_2	828
837.73		CH_2CHCN	1731
838.3		C_2H_5Br	1744
838.369		$H^{13}COOH$	683
839.40		COF_2	828
841.		CH_3NO_2	1753
843.2369	±0.00084	DCOOD	1384,1403
845.		CH_3NO_2	1753
848.00		$^{13}CH_3I$	1675
851.0		$C_2H_3F_3$	1743
851.9	±0.10	CH3CH2F	1459,1474
852.5		$C_2H_3F_3$	1743
853.3		$C_2H_3F_3$	1743

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
853.4380	±0.00085	C_2H_3Br	1404
854.4	±0.10	CH_3CN	1364,1365,1378
858.254		CD_3OH	826
858.7	±0.52	CF_2Cl_2	1442
859.5		C_2H_3Br	1727
862.0		CD_3OH	1719
863.1		CH_2CHCl	1728
865.5		CH_3CHF_2	1747
866.4		CH_2CF_2	1726
869.		CH_3NO_2	1753
869.	±4.3	CD_3OD	1388,1425
870.80	±0.096	CH_3Cl	1378,1385
871.36		CH_2CHCN	1731
871.5850	±0.00044	CD_3OH	1402,1481
872.27		CH_2CHCN	1731
875.		C_2H_3F	1734
875.		CH_2CHF	1729
875.0		CH_2CHCN	1731
876.8		CH_2CHCl	1730
877.2		CH_3CHF_2	1747
877.3		C_2H_3Br	1730
877.5481	±0.00088	DCOOD	1384,1403
878.1		$C_2H_3F_3$	1743
878.5		$C_2H_3F_3$	1743
880.	±26.	CF_2CH_2	1388,1420,1465
880.41		CH_2CHCN	1731
883.		CF_3Br	1456
883.	±2.4	CF_3Br	1444,1456
883.598	±0.0018	CD_3Cl	1388,1401
889.466		$(H_2CO)_3$	809
889.716		$(H_2CO)_3$	809
890.	±1.8	CF_2CH_2	1388,1396,1465
890.	±4.4	$(H_2CO)_3$	1380
890.2		CH_2CF_2	1387–88,1396,1465
891.	±4.4	$(H_2CO)_3$	1380

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
891.087		$H^{13}COOH$	683
892.0		CH_3CHF_2	1747
894.0		C_2H_3F	1732
895.	±4.4	CD_3I	1401
899.		CH_2CHCN	1731
900.	±9.0	C_2H_5Cl	1430
900.1338	±0.00090	C_2H_3Br	1404
901.191		CH_2CHCN	1711
901.3		$^{13}CD_3I$	1701
902.5		CH_2CHCl	1728
903.00		CH_2CHCN	1731
905.428		$CHCl_2F$	487
906.		DFCO	684
906.5		C_2H_3Br	1730
910.		CH_2CHCN	1459
910.	±18.	CH_2CHCN	1459
912.5		C_2H_3Br	1730
914.721		ClO_2	1008
914.735		ClO_2	1008
914.755		ClO_2	1008
914.780		ClO_2	1008
918.610	±0.0018	CD_3I	1401
919.9355	±0.00092	HCOOD	1384,1403
921.5		CH_2CHCl	1730
925.5	±0.10	$CH_3{}^{79}Br$	1378,1450
926.2087	±0.00093	HCOOD	1384,1403
926.66		CD_3I	1713
927.		CH_2CHCN	1731
927.9814	±0.00093	DCOOD	1384,1403
929.		CH_2CHCN	1731
929.8		$^{13}CD_3I$	1701
930.	±19	HCOOH	1381,1483
934.0		CH_2CHCl	1730
934.2		CH_3OCH_3	1754
934.2230	±0.00093	C_2H_3Br	1404

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
935.		CH_2CHCl	1459
935.0095	±0.00094	DCOOD	1384,1403
936.1590	±0.00094	C_2H_3Br	1404
936.6023	±0.00094	DCOOD	1384,1403
937.9		CH_3CHF_2	1747
938.		C_2H_3N	1750
939.0		C_2H_3F	1735
939.0		CH_2CHF	1730
939.5		CH_3CHF_2	1747
939.50		CH_2CHCN	1731
939.50		CH_2CHCN	1731
940.		CH_2CHCN	1459
940.	±19.	CH_2CHCN	1459
940.	±19.	H_2CCl	1459
944.0	±0.10	CH_3Cl	1378,1385,1430
945.0		CH_2CHCl	1730
948.250		$(H_2CO)_3$	809
948.9247	±0.00095	$(H_2CO)_3$	1380
948.925		$(H_2CO)_3$	1380
949.0		C_2H_3F	1735
949.0		CH_2CHF	1730
949.685		ClO_2	1008
952.		$(H_2CO)_3$	809
953.880	±0.0019	CD_3I	1401
957.		CH_2CHCN	1731
958.25	±0.096	CH_3Cl	1378,1385
959.0		CH_2CHCN	1731
961.		CH_2CHF	1729
961.0		C_2H_3F	1735
963.4873	±0.00096	C_2H_3Br	1404
964.	±4.7	CH_3I	1401,1409
967.5		C_2H_3Br	1727
967.8		C_2H_3Br	1730
967.9		$C_2H_3F_3$	1743
968.	±4.7	CD_3OH	1402

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
968.9		$C_2H_3F_3$	1743
969.0		$C_2H_3F_3$	1743
971.		C_2H_3F	1734
971.		CH_2CHF	1729
971.8064	±0.00097	DCOOH	1403
972.		NH_3	816
972.0		CD_3OD	1715
972.0		CD_3OD	1715
973.		CH_3NO_2	1753
973.		CH_3OH	203
973.0		$C_2H_3F_3$	1743
973.0		CH_3OH	830
976.8		CH_2CHCl	1728
980.	±9.8	CF_2Cl_2	1442
981.1		C_2H_3F	1735
981.1		CH_2CHF	1730
981.709	±0.0020	CD_3I	1401
985.8588	±0.00099	C_2H_3Br	1404
986.3125	±0.00099	HCOOD	1384,1403
986.349		CH_2CHCN	1711
988.		FCN	682
988.1		CD_3OH	1719
988.259		CH_2CHCl	1711
988.695		CH_2CHCl	1711
989.1904	±0.00099	C_2H_3Br	1404
990.	±2.0	CF_2CH_2	1388,1396,1465
990.5		CH_2CHCN	1731
990.51	±0.099	CH_3Br	1378
990.6303	±0.00099	C_2H_3Br	1404
992.	±4.9	CH_3F	1374,1377,1393
995.		CH_2CHCl	1459
998.5140	±0.0010	DCOOD	1384,1403
1000.	±20.	H_2CCl	1459
1001.		CH_3NO_2	1753
1005.		CH_2CHCl	1728

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
1005.		DFCO	684
1005.230	±0.0016	CH3CH2F	1459,1483
1005.348	±0.0020	CD_3I	1401
1005.8		CH_3CHF_2	1747
1006.		C_3H_3F	682
1007.	±2.0	N_2H_4	1398
1008.558		CDF_3	1721
1009.409	±0.0010	DCOOD	1384,1403
1014.		SiH_3F	813
1014.9	±0.10	CH_3CN	1365,1377,1378
1016.009		CH_2CHCN	1711
1016.3	±0.10	CH_3CN	1365,1377,1378
1016.7		C_2H_3Br	1727
1017.8		CH_2CHCN	1731
1018.4		C_2H_3Br	1730
1020.	±31.	CF_2CH_2	1388,1420,1465
1025.	±1.0	CF_2Cl_2	1442
1026.680		CH_2CHCl	1711
1026.709		CH_2CHCl	1711
1028.		C_2HF	681
1028.		HCCF	681
1028.3		C_2H_3Br	1730
1030.378	±0.0010	$H^{13}COOH$	1384
1035.6		$C_2H_3F_3$	1743
1039.855		CH_2CHCl	1711
1040.	±11.	CF_3Br	1443,1444,1456
1040.	±21.	H_2CCl	1459
1041.		CH_2CHCl	1459
1042.2		CH_3CHF_2	1747
1043.		CF_3Br	1444
1044.8		CH_3CHF_2	1747
1047.00		CD_3I	1713
1047.2		CH_2CHCl	1730
1047.579	±0.0010	DCOOH	1403
1053.0		SiH_2F_2	814

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
1053.477		$(H_2CO)_3$	809
1055.		$(H_2CO)_3$	809
1056.		SiH_3F	813
1058.		SiH_3F	813
1059.0896.5		C_2H_5Br	1744
1062.0		CH_2CF_2	1387–88,1396,1465
1063.29	±0.095	CH_3I	1378,1409
1065.0		CH_3CHF_2	1747
1070.		CH_3NO_2	1753
1070.	±21.	CH3CH2F	1459
1070.231	±0.0011	DCOOD	1384,1403
1071.3		CH_2CHCl	1730
1080.537		CDF_3	1721
1083.		CF_3Br	1444
1083.	±4.3	CF_3Br	1443,1444,1456
1086.89	±0.097	CH_3CN	1365,1377,1378
1092.8		CD_3OH	1719
1093.1		CH_2CHCl	1730
1094.		CH_2CF_2	1726
1097.11	±0.098	CH_3CCH	1377,1378
1099.544	±0.0022	CD_3I	1401
1100.		CH_2CF_2	1726
1100.	±5.4	CD_3OH	1402
1116.483		$H^{13}COOH$	683
1127.752		CH_2CHCN	1711
1133.8		CH_3CHF_2	1747
1134.0		CH_3OD	113
1134.113		ClO_2	1008
1135.070		COF_2	668
1137.50		CD_3I	1713
1146.	±5.6	CD_3OH	1402
1151.		CF_3Br	1444
1151.	±4.6	CF_3Br	1443,1444,1456
1155.5		CD_3OH	1718
1156.		CH_2CHCN	1459

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
1157.318	±0.0012	HCOOD	1384,1403
1158.	±2.3	DCOOD	1384,1403
1160.	±23.	CH_2CHCN	1459
1161.676	±0.0012	HCOOD	1384,1403
1162.2		CD_3OD	1715
1162.2		CD_3OD	1715
1164.	±2.3	CF_2Cl_2	1442
1164.8		CH_2CHCl	1728
1164.8	±0.10	CH_3CN	1365,1377,1378
1170.7		C_2H_3F	1735
1170.7		CH_2CHF	1730
1173.7		CH_2CHCN	1731
1173.9		C_2H_3Br	1727
1174.87	±0.049	CH_3CCH	1377
1180.	±24.	CH_2CHCN	1459
1182.2		$^{13}CD_3I$	1701
1184.		CH_2CHCN	1459
1184.38		COF_2	828
1185.079		$(H_2CO)_3$	809
1194.0		$^{13}CD_3OD$	453
1194.3		CH_2CHCl	1730
1197.1		CH_2CHCN	1731
1198.6		C_2H_3Br	1730
1201.4		CH_3CHF_2	1747
1202.20		CH_2CHCN	1731
1204.3		C_2H_3Br	1730
1205.	±2.4	CF_2Cl_2	1442
1210.7		CH_3CHF_2	1747
1213.362	±0.0012	HCOOH	1384,1403,1439
1218.6		CH_2CHCN	1731
1218.6		CH_2CHCN	1731
1221.79	±0.048	$^{13}CH_3F$	1377,1461
1223.858	±0.0024	CH_3OH	1427,1470,1483
1234.3		C_2H_3F	1735
1234.3		CH_2CHF	1730

Table 4.2.1—*continued*
Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
1237.1		CH_3CHF_2	1747
1237.966	±0.0012	DCOOH	1403
1239.480	±0.0025	CD_3Cl	1388,1401
1245.71		$^{13}CH_3I$	1675
1247.594	±0.0012	C_2H_3Br	1404
1253.738	±0.0025	CH_3I	1378,1401,1409
1257.1		CH_2CHCN	1731
1260.561		CDF_3	1721
1264.3		C_2H_3F	1735
1264.3		$C_2H_3F_3$	1743
1264.3		CH_2CHF	1730
1267.1		CH_2CHCN	1731
1278.6		C_2H_3Br	1730
1281.649	±0.0013	DCOOD	1384,1403
1286.		SiH_3F	813
1290.	±6.3	CD_3OH	1402
1292.1		CH_3CHF_2	1747
1292.2		CH_2CHCl	1730
1292.743		$(H_2CO)_3$	809
1306.		C_2H_5Cl	1745
1310.4	±0.10	$CH_3{}^{79}Br$	1378,1450
1310.748		ClO_2	1008
1315.		CH_2CHCN	1731
1324.3		$C_2H_3F_3$	1743
1325.0		C_2H_3Br	1730
1325.0		CH_3OD	113
1350.	±14.	C_2H_5Cl	1430
1351.8	±0.11	CH_3CN	1365,1377,1378
1372.		CH_2CF_2	1726
1374.2		CH_2CHCN	1731
1377.		CDF_3	1668
1383.882	±0.0014	C_2H_3Br	1404
1388.30		CH_2CHCN	1731
1394.063	±0.0014	C_2H_3Br	1404
1400.	±14.	C_2H_5Cl	1430

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
1405.0		CH_3CHF_2	1747
1406.		CH_2CHCl	1728
1427.50		CH_2CHCN	1731
1432.5		CH_2CHCN	1731
1434.		CH_2CF_2	1726
1440.	±29.	CH3CH2F	1483
1448.0958	±0.00072	CH_2F_2	1392,1454,1466
1450.	±19	CD_3F	1472,1485
1480.0		CD_3I	1713
1490.	±10	CD_3F	1472,1485
1491.846		$H^{13}COOH$	683
1492.5		C_2H_3Br	1727
1503.4		CH_3CHF_2	1747
1504.0		C_2H_3Br	1730
1521.376	±0.0037	CH3CH2F	1459,1483
1523.		C_2H_3F	1732
1523.		CH_2CHF	1732
1526.		CF_3Br	1444
1530.	±11.	CF_3Br	1443,1444,1456
1541.750	±0.0015	HCOOD	1384,1403
1543.00		CD_3I	1713
1547.		C_3H_3F	682
1549.505	±0.0031	CD_3I	1401
1550.	±4.5	CF_3Br	1443,1444,1456
1555.		CH_2CHCN	1731
1556.		CF_3Br	1444
1570.2		SO_2	810
1572.64	±0.093	$CH_3{}^{79}Br$	1378,1450
1577.		CH_2CHCN	1731
1579.		CH_2CHCN	1731
1579.903		$(H_2CO)_3$	809
1581.705		$(H_2CO)_3$	809
1600.		CH_2CF_2	1726
1612.		C_2H_3F	1734
1612.		CH_2CHF	1729

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
1613.0		$C_2H_3F_3$	1743
1614.888	±0.0016	C_2H_3Br	1404
1624.00		$^{13}CH_3I$	1675
1650.312		COF_2	668
1669.		C_2H_5Cl	1745
1671.0		CH_3OD	113
1676.		CD_3OH	1719
1676.		CD_3OH	1719
1678.		CH_2CHF	1732
1687.		CF_3Br	1444
1692.	±4.9	CF_3Br	1443,1456,1444
1714.13		CD_2F_2	1710
1714.130		CD_2F_2	1710
1720.	±17.	C_2H_5Cl	1430
1730.833	±0.0017	HCOOD	1384,1403
1733.		C_2H_3F	1734
1733.		CH_2CHF	1729
1814.37	±0.049	CH_3CN	1364,1365,1377
1827.424		ClO_2	1008
1880.0		CH_2CHCl	1728
1886.87	±0.092	CH_3Cl	1378,1385
1890.	±9.3	CF_3Br	1443,1444,1456
1891.062		COF_2	668
1895.		CF_3Br	1444
1899.889	±0.0019	C_2H_3Br	1404
1900.		COF_2	1659
1930.		CD_3OH	1719
1930.		CD_3OH	1719
1965.34	±0.096	$CH_3{}^{79}Br$	1378,1450
1990.757	±0.0040	CD_3Cl	1388,1401
2031.281		$(H_2CO)_3$	809
2042.5		CH_3CHF_2	1747
2085.0		CD_3I	1713
2140.		C_2H_3N	1750
2140.		CF_3Br	1444

Table 4.2.1—*continued*

Optically Pumped Far Infrared and Millimeter Wave Lasers Arranged in Order of Increasing Wavelength

Wavelength (μm)	Uncertainty	Molecule	Reference
2140.	±19.	CF_3Br	1443,1444,1456
2206.		CH_2CHCl	1728
2216.		DFCO	684
2347.5		C_2H_3Br	1727
2356.4		C_2H_3Br	1727
2388.8		CH_3CHF_2	1747
2453.		C_2H_3F	1732
2453.		CH_2CHF	1732
2650.	±13.	$CH_3{}^{81}Br$	1450
2906.		N_2D_4	735
2923.		CD_3OD	1715
2923.0		CD_3OD	1715
3030.		CD_3OH	1719
3898.3		CHFCHF	665

Section 4.3

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