

**The Schumann-Runge absorption bands ( $B(v) \ ^3\Sigma_u^- - X(v) \ ^3\Sigma_g^-$ ) of the  $^{18}\text{O}_2$ .  
Lines with B are blended.**

$N$	B(2)-X(0) band		B(3)-X(0) band		B(4)-X(0) band	
	R(N)	P(N)	R(N)	P(N)	R(N)	P(N)
1	50663.42		51271.53		51858.02	
3	50660.47		51268.39	51259.11	51855.60	51846.74B
5	50652.70	50637.41	51260.57	51245.52	51846.74B	51833.46B
7	50640.54	50619.56	51248.02	51227.50	51833.46B	51814.54
9	50623.68	50597.14	51230.61	51204.63	51815.90	51790.99
11	50602.18	50570.09	51208.56	51177.08	51793.38	51762.98
13	50576.03	50538.40	51181.90	51144.76	51766.00	51730.03
15			51150.11	51107.76	51733.61	51691.97
17			51114.14	51066.08	51696.46	51650.05
19			51072.88		51654.86	51602.54

  

$N$	B(5)-X(0) band		B(6)-X(0) band		B(7)-X(0) band	
	R(N)	P(N)	R(N)	P(N)	R(N)	P(N)
1	52422.84		52962.75	52961.04	53476.23	53472.82B
3	52420.84	52411.92B	52959.10	52959.10B	53472.82B	53463.60B
5	52411.92B	52398.26B	52950.31B	52936.34B	53463.60B	53449.37B
7	52398.26B	52379.70B	52936.34B	52917.33B	53449.37B	53429.90B
9	52379.70B	52355.54	52917.33B	52893.34B	53429.90B	53405.36B
11	52356.62	52327.32	52893.34B	52864.08B	53405.36B	53375.48B
13	52328.52	52293.48	52864.08B	52829.88B	53375.48B	53340.56B
15	52295.10	52254.97	52829.88B	52790.68B	53340.56B	53300.76
17	52256.97	52211.42	52790.68B	52746.19B	53299.94	53255.33
19	52214.16	52163.27	52746.19B	52696.69	53254.09	53204.89
21	52165.87	52109.75	52697.08	52642.15	53203.90	53149.35
23	52113.19	52051.62	52642.76	52582.61B	53147.71	53088.34
25	52055.69		52582.61B	52517.91B	53086.06	53022.45
27			52517.91B	52447.82B	53019.64	
29			52447.82B			

$N$	B(8)-X(0) band				B(9)-X(0) band			
	R(N)	$R_s(N)$	P(N)	$P_s(N)$	R(N)	$R_s(N)$	P(N)	$P_s(N)$
1	53961.94				54418.44			
3	53957.85		53949.07		54414.20		54405.60	
5	53948.49		53934.74		54404.18		54391.13	
7	53933.52		53915.03		54388.70		54370.95	
9	53913.19		53889.95		54367.75		54345.26	
11	53887.66		53859.58		54341.25		54314.09	
13	53856.70		53823.81		54309.22		54277.44	
15	53820.41		53782.75		54271.73		54235.22	
17	53778.87		53736.29		54228.62		54187.58	
19	53731.77	53732.37	53684.60		54180.14	54180.62	54134.37	54134.91
21	53679.52	53679.94	53627.38	53628.00	54126.12	54126.65	54075.63	54076.11
23	53621.77	53622.48	53564.82		54066.40	54068.61	54011.43	54012.15
25	53558.60		53496.94		54001.26		53941.62	53942.19
27	53490.11		53423.64				53866.39	53866.97
29	53416.18							
31					53771.86		53698.84	53699.52

$N$	B(10)-X(0) band		B(11)-X(0) band					
	R(N)	P(N)	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	54842.28		55232.38					
3	54838.05	54829.83	55227.65			55219.76		
5	54827.64	54814.96	55216.46	55216.84		55204.51	55204.79	
7	54811.51	54794.36	55199.60	55199.94		55183.28	55183.49	
9	54789.76	54768.07	55177.10	55177.28		55156.33	55156.51	
11	54762.36	54736.09	55148.46	55148.68		55123.40	55123.58	
13	54729.19	54698.47	55113.91	55114.26		55084.48	55084.84	
15	54690.38	54655.18	55073.49	55073.98		55039.78	55040.16	55040.38
17	54645.87	54606.23	55027.16	55027.74	55028.02	54989.24	54989.79	
19	54595.68	54551.57	54974.95	54975.68	54976.05	54932.88	54933.47	
21	54539.55	54491.18	54916.83	54917.71		54871.01		
23	54478.03	54425.04	54852.83	54854.03		54802.50	54803.19	
25		54353.71	54782.77	54784.11				
27	54337.24		54706.91	54707.82				
29	54258.79	54192.21	54625.74	54627.15		54561.92	54563.25	

B(12)-X(0) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	55586.05	55586.87		55582.69		
3	55580.66	55581.46		55573.36	55574.06	55574.61
5	55569.12	55569.93		55557.72	55558.49	
7	55551.48	55552.33		55535.94	55536.69	
9	55527.74	55528.63		55508.07	55508.88	
11	55497.91	55498.91		55474.11	55475.02	
13	55461.98	55462.99	55463.30	55434.08	55435.10	
15	55419.92	55420.98	55421.40	55387.97	55388.97	55389.29
17	55371.73	55372.86	55373.39	55335.72	55336.76	55337.16
19	55317.38	55318.57	55319.19	55277.40	55278.46	55278.94
21	55256.86	55258.17	55258.87	55212.82	55214.13	55214.60
23	55190.07	55191.43	55192.30	55142.15	55143.44	55144.14
25	55117.10	55118.66	55119.60	55065.34	55066.72	55067.56
27	55037.91			54982.31	54983.79	54984.74
29	54952.41	54954.19	54955.34	54893.00	54894.60	54895.67

B(13)-X(0) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	55900.78			55897.61		
3	55895.07	55896.12		55888.14	55889.06	
5	55882.83	55883.86		55872.11	55873.05	
7	55864.28	55865.48		55849.65	55850.68	
9	55839.41	55840.69		55820.89	55821.99	
11	55808.22	55809.65		55785.83	55787.06	
13	55770.64	55772.20	55772.48	55744.40	55745.79	
15	55726.72	55728.28	55728.64	55696.64	55698.20	
17	55676.40	55678.03	55678.57	55642.52	55644.03	55644.44
19	55619.63	55621.40	55622.09			
21	55556.45			55515.15	55516.88	55517.62
23	55486.75	55488.75	55489.77	55441.79	55443.66	55444.56
25	55410.57	55412.73	55413.95	55362.02	55363.96	55365.12
27	55327.77	55329.98	55331.31	55275.68		
29	55234.67	55238.26	55240.67			55186.15
31				55079.15	55082.26	55084.84

B(14)-X(0) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	56175.04	56176.35		56171.95		
3	56168.77	56170.13		56162.40	56163.37	
5	56155.83	56157.28		56145.83	56147.15	
7	56136.27	56137.89		56122.66	56124.04	
9	56110.15	56111.93		56092.87	56094.44	
11	56077.39	56079.25	56079.48	56056.53	56058.25	
13	56038.01	56040.21		56013.57	56015.43	56015.60
15	55992.01	55994.10	55994.64	55963.98	55965.99	55966.30
17	55939.28	55941.56	55942.37	55907.79	55909.88	55910.35
19	55879.82	55882.83	55883.86	55844.87	55847.18	55847.93
21	55813.62	55816.26	55817.52	55775.31	55777.73	55775.31
23	55740.64			55698.20	55701.60	55702.83
25	55660.77	55663.79	55665.48	55615.81	55618.62	
27	55574.06	55577.30	55579.66	55525.99	55528.63	55530.54
29	55480.16	55483.72	55485.99	55429.01	55432.26	55435.00

B(15)-X(0) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	56408.36	56410.19	56412.74	56405.34		
3	56401.53	56403.53B	56403.53B	56395.55	56397.50	56397.97
5	56387.82	56389.91B	56389.91B	56378.59	56380.57B	56380.57B
7	56367.17	56369.45B	56369.45B	56354.63	56356.70B	56356.70B
9	56339.61	56342.08	56342.24	56323.77	56326.04B	56326.04B
11	56305.16	56307.71	56308.12	56285.96	56288.36	56288.58
13	56263.78	56266.50	56267.22	56241.33	56243.91	56244.29
15	56215.41	56218.38	56219.36	56189.76	56192.45	56193.17
17	56160.04	56163.37B	56164.30	56131.20	56134.16	56135.25
19	56097.67	56101.12	56102.62	56065.70	56068.93	56070.10
21	56028.16	56032.00	56033.69	55993.19	55996.43	55998.04
23	55951.49	55955.55	55957.58	55913.42	55917.21	55918.98
25	55867.62	55872.11B		55826.69	55830.77	55832.78
27		55781.20		55732.70	55737.17	55739.46
29		55683.06	55685.87	55631.39	55636.32	55638.79

B(16)-X(0) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	56601.86	56604.80		56599.21		
3	56594.59	56597.71		56589.18	56592.01	56592.71
5	56579.96	56583.21		56571.64	56574.59	
7	56558.16	56561.43	56561.65	56546.80	56549.94	56550.19
9	56529.19	56532.48	56533.04	56514.74	56517.97	56518.19
11	56492.77	56496.46	56497.36	56475.47	56478.83	56479.37
13	56449.25	56453.24	56454.32	56428.98	56432.63	56433.44
15	56398.29	56402.79	56403.91	56375.22	56379.12	56380.38
17		56344.85	56346.60	56314.18	56318.47	56319.79
19	56274.57	56279.69	56281.74	56245.80	56250.50	56252.18
21	56201.50	56207.05	56209.48	56170.12	56175.04	56177.06
23	56120.89	56127.02	56129.71	56086.81	56092.87	56094.44
25				55996.43	56002.06	56004.87

B(17)-X(0) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	56758.45	56762.93				
3	56750.68	56754.85	56755.58	56745.78	56750.13	
5	56735.17	56739.93		56727.69	56732.22	
7	56712.11	56716.97	56717.28	56701.97	56706.46	56706.65
9	56681.42	56686.66	56687.30	56668.65	56673.47	56673.88
11	56643.20	56648.83	56649.85	56627.83	56632.96	56633.62
13	56597.38	56603.49	56604.80	56579.37	56584.95	56586.01
15	56543.85	56550.19	56552.27	56523.35	56529.19	56530.86
17	56482.66	56489.68	56492.08	56459.67	56466.18	56468.04
19	56413.66	56421.20	56424.08	56388.10	56395.52	56397.59
21	56336.76	56344.85	56348.30	56309.03	56316.67	56319.79
23		56260.01		56222.12	56230.11	56233.58

B(18)-X(0) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	56882.01	56888.99				
3	56873.90	56880.49	56880.97	56869.56	56876.21	56877.26
5	56857.47	56864.29	56864.63	56850.80	56857.47	56857.84
7	56833.11	56840.30	56840.82	56824.18	56831.08	56831.39
9	56800.82	56808.38	56809.37	56789.61	56796.86	56797.37
11	56760.62	56768.62	56770.09	56747.19	56754.85	56755.58
13	56712.27	56720.89	56722.93	56696.74	56704.81	56706.46
15	56656.23	56664.85	56666.94	56638.43	56646.85	56648.83
17				56571.89	56580.50	56583.21

$N$	B(19)-X(0) band					
	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	56977.10	56987.38	56989.42			
3	56968.64	56977.91	56979.00	56964.55	56974.54	56975.74
5	56951.25	56961.69	56962.41	56945.49	56954.94	56955.98
7	56925.88	56936.56	56937.15	56918.08	56928.45	56929.19
9	56892.75	56903.33	56903.73	56882.39	56892.96	56893.75
11	56849.06	56861.81	56862.24	56839.11	56849.62	56850.16
13	56799.19	56811.68	56812.52	56785.29	56797.85	56798.48
15				56725.15	56737.55	56738.52

$N$	B(8)-X(1) band		B(9)-X(1) band				B(10)-X(1) band	
	$R(N)$	$P(N)$	$R(N)$	$R_s(N)$	$P(N)$	$P_s(N)$	$R(N)$	$P(N)$
1	52493.69						53476.23	53472.82
3	52489.88	52480.77B	52946.41					53361.77
5	52480.77B	52466.56B			52923.30		53359.64	
7	52466.56B	52447.82B	52921.27		52903.57			53326.89
9	52446.26		52900.73		52878.33		53322.76	
11		52393.23	52874.85		52847.64			53269.53
13	52390.97		52843.55		52811.68		53263.28	53232.54
15		52317.52	52806.69	52807.05	52770.32		53225.27	53189.95
17	52314.69	52271.88	52764.57		52723.54	52723.98	53181.66	53142.12
19		52220.84	52717.01		52671.26		53132.49	53088.34B
21			52664.02		52613.44		53077.65	
23			52605.40					

$N$	B(11)-X(1) band		B(12)-X(1) band					
	$R(N)$	$P(N)$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	53764.11		54117.88	54118.84				
3	53759.41	53751.93	54112.56	54113.45		54068.61B		
5	53748.66		54101.28	54105.30		54089.88	54090.60	
7		53715.79	54083.98	54084.79		54075.63	54076.11	
9	53709.88	53689.15	54060.69	54061.58		54041.02	54041.82	
11	53682.41	53656.88	54031.41	54032.34		54007.64	54008.49	
13	53648.29	53618.95	53996.14	53997.12	53997.46	53968.25	53969.21	53969.56
15	53608.45	53574.85	53954.79			53922.84	53923.80	
17		53512.26	53907.48	53909.12		53871.45	53872.45	
19	53525.26		53854.10			53814.07	53815.22	53815.77
21			53794.66	53795.93		53750.66		

B(13)-X(1) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1				54429.56		
3						
5						
7	54396.85	54397.98		54382.20	54383.20	
9				54353.71B		
11	54341.25B			54319.38	54320.66	
13	54304.96	54306.75				
15	54261.75	54263.59				
17	54212.25	54213.80	54214.23			
19	54156.52	54158.22	54159.02			

B(14)-X(1) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
5				54677.85	54679.24	
7	54668.67	54670.22		54655.18B		
9	54625.74B	54627.15B				
11	54610.84	54612.64		54590.02	54591.80	
13	54572.17	54574.29		54547.77		
15	54526.96	54528.79	54529.89	54498.95		54501.28
17	54475.07			54443.67	54445.85B	

B(15)-X(1) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
3				54927.47	54929.62	
5		54921.77		54910.53	54912.53	
7	54899.50	54901.75		54886.91	54888.95	
9	54871.01B	54874.67			54858.81	
11		54841.48			54821.98	
13				54775.35	54777.93	
15	54750.20			54724.76		
17			54667.03			

B(16)-X(1) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1		55133.45				
3		55129.21				
5				55103.60	55106.61	55108.12
7	55090.50	55093.69	55094.02	55079.15B	55082.26B	
9	55061.92			55047.53	55050.78	
11				55008.87	55012.30	55012.72
13	54983.79B			54963.04	54966.73	54967.53
15				54910.20	54914.02	
17			54882.45			

B(17)-X(1) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	55290.04					
3	55282.37	55287.03	55288.03		55281.74	
5	55267.12	55271.71	55273.02		55264.04	
7	55244.35	55249.17	55249.56	55234.67B	55238.26B	55238.73B
9			55219.93			
11				55161.12	55166.44	55167.14
13	55131.31	55137.37	55139.37			
15	55078.72			55058.12	55064.24	
17	55018.37			54995.22	55001.82	55003.72

B(18)-X(1) band						
$N$	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
3	55405.43			55401.14B		
5		55396.61B		55382.87B		
7				55356.47		
9	55333.50	55341.17	55342.07	55322.33		
11	55293.82		55303.30			
13	55246.40	55254.77			55238.73B	55240.70B

B: Blended lines.

References:

*Wavelength Measurements and Analysis of the Schumann-Runge Bands of  $^{18}\text{O}_2$  in the Region 175-205 nm*, A.S-C. Cheung, K. Yoshino, D.E. Freeman and W.H. Parkinson, *J. Mol. Spectrosc.* **131**, 96-112 (1988).