**The Schumann-Runge absorption bands ($B(v)$ $^3\Sigma_u^-$ − $X(2)$ $^3\Sigma_g^-$) of the $^{16}O_2$.
Lines with B are blended.**

			B(12)-X(2) band			
N	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	52695.04			52691.53		
3	52688.91					
5	52675.90	52676.91B	52676.91B	52663.66	52664.32B	52664.32B
7	52656.10	52657.09B	52657.09B	52639.44	52640.01B	52640.01B
9	52629.54	52630.65B	52630.65B	52608.71B	52609.31B	52609.31B
11	52596.15B	52597.29B		52570.53	52571.56B	52571.56B
13	52555.86	52557.21	52557.58	52525.83		52527.30
15	52508.82	52510.27	52510.70	52474.45	52475.75	52476.18
17	52454.84	52456.32		52416.17	52417.51	52418.04
19	52394.03	52395.65	52396.07B	52350.89	52352.67	
21	52326.13	52327.95	52328.86	52278.98	52280.75	52281.41
23	52251.34	52253.20	52254.48		52201.81	52202.89
25	52169.49			52114.08	52116.03	52117.29
27				52021.33B		

			B(13)-X(2) band			
N	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	52995.22B	52996.48		52991.86		
3	52988.50	52989.75	52990.02	52980.82B	52982.39	52982.97
5	52974.65	52976.00	52976.19B	52963.25	52964.49	52964.61
7	52953.68	52955.09	52955.39	52938.14	52939.48B	52939.48B
9	52925.58	52927.14	52927.59	52905.90	52907.32	52907.57
11	52890.33	52892.01	52892.63	52866.57	52868.09	52868.51
13	52847.93	52849.75	52850.54	52820.11	52821.79	52822.36
15	52798.36B	52800.33	52801.31	52766.54	52768.35	52769.12
17	52741.55	52743.77	52744.90	52705.75	52707.77	52708.68
19	52677.45	52679.90	52681.25	52637.78	52640.01	52640.92
21	52606.11	52608.71B	52610.20B	52562.52	52564.84	52566.20
23	52527.30B	52530.19	52531.92	52480.02	52482.65B	52483.91
25	52441.15	52444.18	52446.50	52390.10	52392.94	52394.75
27	52347.53	52350.89B		52292.67B	52295.94B	52297.66
29				52187.88	52191.37	52193.41B

B(14)-X(2) band

N	R₁(N)	R₂(N)	R₃(N)	P₁(N)	P₂(N)	P₃(N)
1	53249.33	53251.13		53246.13		
3	53241.99	53243.80	53244.04	53235.32	53237.04B	
5	53227.22	53229.40B	53229.40B	53216.68B	53218.64B	53218.64B
7	53204.92	53207.06	53207.39	53190.68	53192.64B	53192.64B
9	53175.15	53177.42B	53178.02	53157.16	53159.27	53159.55
11	53137.90	53140.44	53141.21B	53116.16	53118.47	53118.97
13	53093.13	53095.90	53096.88	53067.69	53070.11B	53071.05B
15	53040.79	53043.83	53045.06B	53011.72B	53014.44	53015.44
17	52980.82B	52984.52B	52985.54B	52948.20B	52951.20	52952.40
19	52913.24	52916.87	52918.59	52877.06	52880.36	52881.83
21	52837.85	52841.81	52843.85	52798.36B	52801.85	52803.64
23	52754.71	52759.03	52761.35	52711.81	52715.73	52717.75
25	52663.66B	52668.34	52670.87B	52617.50	52621.80	52624.09
27	52564.67B	52569.69B	52574.08B	52515.33	52520.07B	52522.63
29	52457.36B	52462.90B	52466.39	52405.16	52410.30	52413.32
31				52286.90	52292.67B	52295.94B

B(15)-X(2) band

N	R₁(N)	R₂(N)	R₃(N)	P₁(N)	P₂(N)	P₃(N)
1	53458.12B	53459.96		53455.71B		
3	53450.36B	53453.38B	53453.38B	53444.23	53446.93	53447.67
5	53435.38B	53437.35B	53437.35B	53425.07	53427.87B	53427.87B
7	53411.57B	53414.01	53414.38	53397.96B	53401.02B	53401.02B
9	53379.24	53382.74	53383.46	53363.00	53366.60B	53366.60B
11	53339.78	53343.63	53344.64B	53320.32	53323.77B	
13	53292.42	53296.62	53298.12B	53269.59	53273.34	53274.35
15	53237.04B	53241.81B	53243.36	53211.00	53215.58	53216.68B
17	53173.74	53178.75	53180.81	53144.49	53149.07	53150.73
19	53102.30	53107.77	53110.21	53070.11B	53074.94	53076.99
21	53022.63	53028.64	53031.50	52987.34	52992.82	52995.22B
23	52934.72	52941.25	52944.41B	52896.56	52902.43	52905.42
25	52838.31	52845.43	52849.36B	52797.49	52803.92	52807.80B
27	52733.46	52741.24B	52745.65	52690.02	52697.12	52700.99
29	52619.81	52628.13	52633.17	52574.08B	52581.78	52586.23B
31	52497.38	52506.49	52512.51	52449.35	52457.36B	52462.90B

			B(16)-X(2) band			
N	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	53625.78Q					
3	53616.74B	53621.19B	53621.19B	53611.25		53616.74B
5	53599.80	53604.58B	53604.58B	53591.48	53596.07B	53596.07B
7	53574.68	53579.17	53580.13	53563.33	53567.89	53568.17
9	53541.19B	53546.66	53547.37	53526.82	53531.43	53532.22
11	53499.40B	53505.41	53506.60	53482.18	53487.87B	53488.47
13	53449.35	53455.71B	53457.55	53429.23	53435.38B	
15	53390.86	53397.96B	53400.13	53367.85	53374.39	53376.01
17	53323.77B	53331.51	53334.24	53298.12B	53305.27	53307.51
19	53248.37	53256.57	53260.11	53220.10	53227.66	53230.40B
21	53164.20	53172.95	53177.42B	53133.44	53141.52B	53145.09
23	53071.05B	53080.30	53085.51	53038.10	53046.84	53050.85B
25	52969.29	52978.29	52984.52B	52934.01	52943.82B	52948.20B
27	52858.22	52870.21	52873.17	52820.97	52830.00	52836.00B
29	52737.91B	52748.17B	52757.84	52698.903	52711.65B	52713.78
31	52608.71B	52619.57B		52567.53	52577.58	52587.33

			B(17)-X(2) band			
N	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
1	53755.78			53753.25B		
3	53746.50	53753.25B		53741.73	53748.34B	53749.06B
5	53728.31B	53735.37	53735.78	53721.34	53727.61Q	53728.31B
7	53702.28B	53709.03	53709.73	53692.02B	53698.96B	53698.96B
9	53665.63B	53674.11	53675.54	53654.00	53661.20	53661.97
11	53622.23	53630.54	53632.40	53607.33	53615.16	53616.40
13	53569.35	53578.14	53580.77	53552.02	53560.30	53562.18
15	53507.65	53516.95	53520.41	53487.87B	53496.81	53499.40B
17	53437.03	53446.43	53451.89B	53415.08	53424.38	53427.87B
19	53357.45	53366.60B	53371.23	53333.32B	53342.55	53347.39
21	53268.62	53282.27	53287.03	53242.37	53250.84	53256.20
23	53170.63	53184.65	53189.76	53142.48	53156.16	53160.90
25	53063.16	53077.71	53080.30B	53032.97B	53047.41	53052.51B
27				52914.90	52929.31	

			B(18)-X(2) band			
N	$R_1(N)$	$R_2(N)$	$R_3(N)$	$P_1(N)$	$P_2(N)$	$P_3(N)$
3		53854.23B	53857.63	53840.28	53851.73B	53851.73B
5	53826.04	53835.10	53836.02	53819.69B	53828.14B	53828.14B
7		53806.98B	53808.51	53798.57	53799.42	
9	53760.03B	53768.95B	53772.15	53748.34B	53760.03B	53760.66B
11	53712.99B			53700.84	53710.43B	
13					53642.76	

References:

Atlas of the Schumann-Runge Absorption Bands of O_2 in the Wavelength Region 175-205 nm, K. Yoshino, D.E. Freeman and W.H. Parkinson, J. Phys. Chem. Ref. Data, **13**, 207-227 (1984).

The Schumann-Runge Absorption Bands of O_2 at 670 K and the Spectroscopic Constants of the Ground State, $X \, ^3\Sigma_g^-$, A.S-C. Cheung, K. Yoshino, J.R. Esmond, and W.H. Parkinson, J. Molec. Spectrosc. **178**, 66-77 (1996).

High resolution absorption cross section measurements of the Schumann-Runge bands of O_2 by VUV Fourier transform spectroscopy, T. Matsui, A.S.-C. Cheung, K. W-S. Leung, K. Yoshino, W. H. Parkinson, A. P. Thorne, J. E. Murray, K. Ito, and T. Imajo, J. Molec. Spectrosc. **219**, 45-57 (2003).