

Wavenumbers of the $\Omega = 1$ Sub-bands of Herzberg III ($A' \ ^3\Delta_u - X \ ^3\Sigma_g^-$) System of $^{16}\text{O}_2$ Line positions with C are calculated from the term values. Lines with B are blended, and line positions are not available from the term values.

N	$^S R_{31}(N)$	$^R R_{32}(N)$	$^R Q_{31}(N)$	$^Q Q_{32}(N)$	$^Q P_{31}(N)$	$^P Q_{33}(N)$	$^P P_{32}(N)$	$^O P_{33}(N)$	$^Q R_{33}(N)$
$A'_1(4) - X(0)$ Band									
7	37498.851	37481.480C	37483.492						
9	37485.356C	37464.812C	37466.853	37447.979C	37450.019C	37434.569C	37432.623C		37449.925C
11				37422.979C	37425.040C	37406.397C	37404.475C	37389.564C	37424.901C
13								37353.071C	
$A'_1(5) - X(0)$ Band									
1	38164.644								
3	38165.199	38155.006C	38156.939	38148.392C	38150.341C				38150.476C
5	38160.772	38147.228C	38149.229	38137.370C	38139.355	38131.156	38129.131C	38124.529C	38139.382C
7	38151.377	38134.584C	38136.590	38121.415C	38123.415	38111.818	38109.859C	38101.975C	38123.389C
9	38137.075	38116.968C	38119.006	38100.503C	38102.531	38087.679	38085.727C	38074.504C	38102.449C
11	38117.869	38094.427C	38096.486	38074.609	38076.762	38058.553C	38056.631C	38042.088C	38076.629C
13	38093.696	38066.983C	38069.062	38044.004C	38046.090	38024.519C	38022.619C	38004.799C	38045.904C
15	38064.571	38034.579C	38036.677	38008.350C	38010.452C	37985.596C	37983.716C	37962.617C	38010.230C
17				37967.760C	37969.880C	37941.728C	37939.867C	37915.499C	37969.621C
19								37863.460C	
$A'_1(6) - X(0)$ Band									
1	38777.508C		38772.664B		38769.567B				
3	38777.554C	38767.618C	38769.567C	38761.330C	38763.204				38763.414C
5	38772.452	38759.286C	38761.271	38749.736C	38751.718	38743.755	38741.743C	38737.467C	38751.748C
7	38762.194	38745.811C	38747.836	38733.069C	38735.058	38723.893	38721.917C	38714.341C	38735.043C
9	38746.757		38729.240B	38711.297C	38713.313	38698.891	38696.954C	38686.158C	38713.243C
11	38726.188	38703.501	38705.547	38684.384	38686.451	38668.785B		38652.882C	38686.307C
13	38700.483	38674.563C	38676.645B	38652.315	38654.397	38633.586C	38631.686C	38614.477C	38654.216C
15		38640.521C	38642.623	38615.134C	38617.236C			38570.929C	38617.014C
17	38633.507B	38601.290C	38603.410			38547.670C	38545.809C	38522.283C	
19						38496.989C	38495.148C		

N	${}^S R_{31}(N)$	${}^R R_{32}(N)$	${}^R Q_{31}(N)$	${}^Q Q_{32}(N)$	${}^Q P_{31}(N)$	${}^P Q_{33}(N)$	${}^P P_{32}(N)$	${}^O P_{33}(N)$	${}^Q R_{33}(N)$
$A'_1(7) - X(0)$ Band									
1	39343.829	39337.315C	39339.191						
3	39343.283	39333.676C	39335.630	39327.578C	39329.528	39325.023C	39322.939C		39329.662C
5	39337.395	39324.688C	39326.668	39315.476C	39317.480	39309.807	39307.801C	39303.715C	39317.488C
7	39326.110	39310.312C	39312.321	39298.032C	39300.042	39289.301	39287.319C	39280.081C	39300.006C
9	39309.429	39290.549C	39292.584	39275.206	39277.259	39263.407	39261.455C	39251.121C	39277.167C
11	39287.336	39265.387C	39267.470	39247.058	39249.110	39232.137	39230.212C	39216.806C	39248.975C
13	39259.859		39236.987B	39213.461C	39215.536	39195.456	39193.579C	39177.145C	39215.361C
15	39226.920	39198.925B	39201.027B	39174.506	39176.587	39153.518B		39132.074C	39176.381C
17	39188.550			39130.107C	39132.227C	39106.074B		39081.650C	39131.968C
19				39080.288C	39082.427C				39082.129C
$A'_1(8) - X(0)$ Band									
1	39857.402C	39851.056C	39852.932			39850.078B			
3	39856.227	39846.939C	39848.897	39841.149C	39843.098	39838.764C	39836.680C		39843.233C
5	39849.414	39837.182C	39839.157	39828.402C	39830.388	39823.066	39821.064C	39817.286C	39830.414C
7	39836.901	39821.711C	39823.766	39810.043C	39812.044	39801.799	39799.813C	39793.007C	39812.017C
9	39818.744	39800.651	39802.677	39786.024C	39788.060	39774.839C	39772.893C	39763.132C	39787.970C
11	39794.864	39773.867C	39775.928	39756.356	39758.397	39742.229C	39740.307C	39727.609C	39758.275C
13	39765.227B	39741.382C	39743.464	39720.974C	39723.035	39703.959C	39702.059C	39686.445C	39722.874C
15	39729.931	39703.169C	39705.270			39681.931B	39659.995C	39658.115C	39639.587C
17	39688.789B	39659.261C	39661.381	39633.118C	39635.238C	39610.318C	39608.457C		39634.979C
19	39641.944C	39609.482C	39611.620			39582.749B	39554.961C	39553.119C	39528.818C
21		39554.027C	39556.184	39522.249C	39524.406	39493.750C	39491.926C		39524.073C
23						39426.884C	39425.078C	39641.646C	
$A'_1(9) - X(0)$ Band									
1	40310.321		40306.161B						
3	40308.378	40299.601C	40301.555C	40294.077C	40296.058				40296.161C
5	40300.481	40288.873C	40290.859C	40280.591C	40282.584	40275.743	40273.726C	40270.214C	40282.603C
7	40286.499C	40272.129C	40274.138	40261.113C	40263.133	40253.476	40251.504C	40245.231	40263.087C
9	40266.564	40249.392C	40251.455	40235.626C	40237.670	40225.217	40223.272C	40214.186	40237.572C
11	40240.570	40220.631C	40222.697	40204.166C	40206.212	40190.965	40189.055C	40177.211C	40206.088C
13	40208.403	40185.800C	40187.886	40166.662C	40168.731	40150.723C	40148.823C	40134.258C	40168.562C
15	40170.134			40123.040C	40125.117	40104.413C	40102.533C	40085.275C	40124.923C
17		40097.848C	40099.997	40073.344C	40075.464C			40030.192C	40075.205C
19						39993.547C	39991.706C	39969.044C	

N	$^S R_{31}(N)$	$^R R_{32}(N)$	$^R Q_{31}(N)$	$^Q Q_{32}(N)$	$^Q P_{31}(N)$	$^P Q_{33}(N)$	$^P P_{32}(N)$	$^O P_{33}(N)$	$^Q R_{33}(N)$
$A'_1(10) - X(0)$ Band									
3	40681.585C	40681.585C	40683.534						
5		40669.776C	40671.764	40662.106C	40664.094	40657.722C	40655.710C		40664.118C
7	40664.846	40651.428C	40653.444			40634.381C	40632.407C	40626.711C	
9	40642.588		40628.740B	40613.838	40615.954	40604.517C	40602.571C		40615.854C
11	40613.793C	40595.362C	40597.423	40580.209C	40582.267			40555.493C	40582.131C
13		40557.550C	40559.631	40539.924	40542.006C	40525.454C	40523.554C	40510.301C	40541.824C
15						40476.163C	40474.283C	40458.537C	
$A'_1(11) - X(0)$ Band									
7		40947.883C	40949.899						
9		40920.482C	40922.522			40900.972C	40899.026C		
11		40885.841C	40887.902			40862.067C	40860.145C		
13						40815.933C	40814.033C		

References:

1. *Fourier Transform Spectroscopy and Cross Section Measurements of the Herzberg III Bands of O₂ at 295 K*, K. Yoshino, J. R. Esmond, W. H. Parkinson, A. P. Thorne, R. C. M. Learner, G. Cox, and A. S. -C. Cheung, *J. Chem. Phys.* **112**, 9791-9801 (2000).