

Table 1. Parameters used to evaluate the presence of BeH isotopomers.

Molecule	Band	W.No. range(cm^{-1})	M/X	FCF	C-index	I-parameter*
BeH (A - X)	0-0	19611.05 - 20717.62	2.51	0.998	62	73 (158)
	1-1	19654.22 - 20616.32	2.50	0.984	45	54 (114)
	2-2	19679.44 - 20606.37	2.49	0.958	38	43 (96)
BeD (A - X)	0-0	19744.60 - 20618.78	2.51	1.000	71	88 (180)
	1-1	19746.25 - 20604.14	2.50	0.996	70	99 (177)
	2-2	19760.26 - 20513.15	2.46	0.994	54	82 (140)
	3-3	19783.31 - 20479.55	2.45	0.992	48	64 (123)
	4-4	19779.01 - 20437.80	2.46	0.990	37	56 (95)
BeT (A - X)	0-0	19823.91 - 20423.79	2.48	0.999	42	60 (107)
	1-1	19830.84 - 20379.62	2.49	0.993	39	57 (100)
	2-2	19867.06 - 20346.46	2.48	0.979	32	47 (81)

*Total number of lines searched for is given in parentheses.

Table 2. Identified lines of BeH A – X (0,0).

Lines	W.No.	Lines	W.No.
P ₀ 33	19611.05	R _{1/2} 2	20093.37
P ₀ 32	19615.48	Q ₂ 23	20097.07
P ₁ 29	19631.14	Q ₂ 24	20102.21
P ₁ 28	19637.33	Q ₂ 26	20112.71
P ₂ 26	19651.33	Q ₂ 27	20118.08
P ₂ 24	19667.52	Q ₂ 29	20128.92
P ₂ 23	19676.48	Q ₂ 32	20144.96
P ₃ 22	19685.95	Q ₁ 33	20150.32
P ₃ 17	19742.20	R ₂ 5	20158.27
P ₂ 14	19782.77	R ₂ 6	20180.02
P ₃ 12	19812.54	R ₃ 7	20201.65
P ₂ 11	19828.28	R ₃ 7	20201.85
P ₂ 11	19828.38	R ₃ 8	20223.71
P ₂ 10	19844.59	R ₃ 9	20245.93
P ₂ 9	19861.15	R ₃ 10	20267.83
P ₂ 8	19878.32	R ₃ 9	20275.75
P ₁ 6	19913.99	R ₃ 11	20289.93
P ₂ 5	19932.48	R ₃ 11	20290.08
P ₁ 4	19951.93	R ₃ 13	20333.92
P ₁ 3	19971.32	R ₃ 14	20355.79
P ₀ 2	19989.65	R ₃ 15	20377.49
Q ₁ 1	20031.79	R ₃ 16	20399.12
Q ₂ 5	20034.70	R ₃ 17	20420.53
Q ₂ 5	20035.09	R ₃ 17	20420.69
Q ₂ 6	20036.59	R ₃ 18	20441.90
Q ₂ 8	20040.45	R ₃ 19	20462.81
Q ₂ 11	20048.01	R ₃ 19	20462.92
Q ₂ 12	20050.80	R ₃ 20	20483.57
Q ₂ 13	20054.24	R ₃ 20	20483.74
Q ₃ 14	20057.67	R ₃ 21	20504.06
Q ₃ 17	20069.23	R ₃ 21	20504.22
Q ₃ 18	20073.38	R ₂ 23	20544.27
Q ₃ 18	20073.53	R ₂ 25	20582.80
Q ₃ 20	20082.41	R ₂ 27	20619.67
Q ₃ 21	20087.20	R ₂ 28	20637.40
Q ₃ 22	20092.06	R ₂ 30	20671.25
R ₂ 33	20717.62		

Table 3. Identified lines of BeH A – X (1,1).

Lines	W.No.	Lines	W.No.
P ₀ 28	19654.22	Q ₁ 21	20096.12
P ₀ 27	19662.04	Q _{3u} 24	20107.37
P _{1/2} 25	19678.93	R ₀ 2	20111.51
P ₁ 24	19688.15	R ₀ 2	20112.15
P ₁ 21	19718.57	Q ₁ 28	20122.39
P _{2u} 20	19729.73	R _{1/2} 3	20132.15
P _{2u} 20	19729.86	R ₁ 5	20173.95
P ₁ 19	19741.44	R ₁ 6	20194.55
P ₁ 18	19753.62	R ₂ 7	20215.65
P ₁ 17	19766.29	R ₂ 9	20257.40
P _{1u} 16	19779.44	R ₂ 13	20340.64
P ₂ 14	19807.38	R ₂ 15	20381.45
P ₂ 13	19822.03	R ₂ 15	20381.56
P ₂ 12	19837.23	R ₂ 17	20421.49
P ₂ 11	19853.02	R ₂ 17	20421.62
P ₂ 10	19868.97	R ₂ 19	20460.57
P _{1/2} 9	19885.37	R ₂ 21	20498.21
P ₁ 8	19902.34	R ₂ 21	20498.33
P ₁ 8	19902.50	R ₂ 22	20516.45
P _{1u} 7	19919.67	R ₂ 22	20516.57
P ₁ 5	19955.44	R ₂ 23	20534.27
P _{1/2} 3	19992.55	R ₂ 23	20534.36
P ₀ 2	20011.72	R ₁ 24	20551.91
Q ₁ 6	20055.73	R _{1/2} 25	20568.79
Q ₁ 7	20057.24	R ₁ 26	20585.20
Q ₁ 10	20062.94	R ₁ 27	20601.05
Q ₁ 20	20092.52	R ₀ 28	20616.32

Table 4. Identified lines of BeH A - X (2,2).

Lines	W.No.	Lines	W.No.
P ₀ 26	19679.44	R _{1/2} 6	20200.73
P ₀ 25	19689.10	R _{1/2} 7	20220.55
P _{1/2} 22	19720.47	R ₁ 9	20260.10
P _{1/2} 21	19731.81	R _{1/2} 10	20279.94
P ₀ 20	19743.55	R _{2u} 14	20357.16
P _{1u} 18	19768.40	R ₁ 15	20375.95
P ₁ 15	19808.73	R ₁ 15	20376.05
P ₁ 13	19837.86	R ₂ 16	20394.49
P _{2u} 12	19853.02	R ₂ 16	20394.60
P _{2u} 11	19868.97	R _{1/2} 17	20412.73
P ₀ 4	19988.56	R _{1/2} 17	20412.83
Q _{1/2} 17	20086.04	R ₂ 18	20430.69
Q _{1/2} 18	20088.29	R ₂ 18	20430.79
Q ₁ 19	20090.62	R ₁ 21	20481.94
Q _{1/2} 23	20100.13	R _{2u} 22	20498.21
Q ₀ 25	20104.68	R _{1/2} 23	20513.99
Q ₀ 26	20106.92	R ₀ 24	20529.09
R ₀ 2	20121.19	R ₀ 24	20529.23
R _{1/2} 3	20141.37	R _{1/2} 26	20557.76
R _{1/2} 5	20180.61	R ₀ 28	20583.58
R _{1/2} 5	20180.88	R ₀ 29	20595.44
R _{1/2} 6	20200.51		

Table 5. (continued).

Lines	W.No.	Lines	W.No.
P _e 9	19942.65	R 17	20257.42
P _e 8	19952.51	R 18	20270.05
P _f 6	19972.46	R 19	20282.70
P _e 6	19972.80	R 20	20295.32
P _f 5	19982.81	R 21	20307.91
P _f 3	20003.94	R 23	20332.97
P _f 2	20014.30	R 25	20357.82
Q _f 2	20037.62	R 27	20382.39
Q _e 4	20039.26	R 28	20394.54
Q _f 5	20039.56	R 29	20406.60
Q _f 6	20040.41	R 30	20418.55
Q _e 6	20040.72	R 31	20430.38
Q _e 7	20041.65	R 32	20442.09
Q _f 9	20043.74	R 33	20453.67
Q 11	20046.70	R 35	20476.37
Q 18	20060.67	R 36	20487.48
Q 20	20065.77	R 37	20498.39
R _e 2	20072.50	R 41	20540.18
Q 24	20077.26	R 44	20568.95
Q 27	20086.96	R 45	20578.07
Q 28	20090.34	R 46	20586.88
R _e 4	20096.12	R 48	20603.48
Q 30	20097.40	R 49	20611.33
Q 32	20104.71	R 50	20618.78

Table 5. Identified lines of BeD A - X (0,0).

Lines	W.No.	Lines	W.No.
P 50	19744.60	Q 33	20108.51
P 48	19746.05	Q 34	20112.34
P 46	19747.96	Q 35	20116.19
P 45	19749.10	Q 36	20120.13
P 42	19753.59	R _e 6	20120.18
P 38	19762.33	Q 37	20124.05
P 37	19765.06	R _f 7	20132.14
P 34	19774.62	Q 42	20143.97
P 32	19782.21	Q 45	20155.74
P 31	19786.38	R 9	20156.93
P 28	19800.44	Q 46	20159.61
P 27	19805.62	Q 47	20163.33
P 26	19811.08	Q 48	20167.04
P 20	19849.33	Q 50	20174.09
P 19	19856.60	R 11	20181.82
P 18	19864.12	Q 54	20186.37
P 16	19879.92	Q 55	20188.99
P 15	19888.18	Q 56	20191.42
P 14	19896.68	R 13	20206.92
P 11	19923.53	R 15	20232.14

Table 6. Identified lines of BeD A - X (1,1).

Lines	W.No.	Lines	W.No.
P 49	19746.25	R _e 3	20099.49
P 44	19756.57	R _f 4	20110.66
P 43	19758.93	Q 32	20110.66
P 42	19761.48	Q 33	20113.66
P 41	19764.20	Q 34	20116.72
P 40	19767.08	R _f 5	20122.35
P 39	19770.03	R _e 5	20122.65
P 38	19773.24	Q 36	20122.84
P 37	19776.61	Q 30	20124.71
P 36	19780.18	Q 37	20125.94
P 33	19792.12	Q 38	20128.93
P 30	19806.00	Q 39	20132.03
P 29	19811.08	Q 41	20137.89
P 24	19839.91	R _f 7	20145.93
P 23	19846.37	Q 46	20151.61
P 22	19853.07	Q 47	20154.07
P 20	19867.18	R 10	20181.82
P 19	19874.58	R 13	20217.90
P 18	19882.21	R 14	20229.97
P 17	19890.06	R 17	20266.17
P 15	19906.43	R 18	20278.21
P 13	19923.63	R 19	20290.20
P 12	19932.61	R 20	20302.16
P _e 10	19951.19	R 21	20314.06
P _f 7	19980.08	R 22	20325.91
P _e 7	19980.36	R 24	20349.39
P _f 6	19990.13	R 26	20372.51
P _f 5	20000.32	R 28	20395.20
P _f 3	20021.04	R 29	20406.37
P _e 3	20021.84	R 30	20417.40
Q _f 1	20053.19	R 31	20428.27
Q _f 3	20054.54	R 32	20438.99
Q _e 1	20054.70	R 33	20449.55
Q _e 2	20054.78	R 35	20470.09
Q _e 4	20055.50	R 37	20489.83
Q _f 5	20055.70	R 38	20499.34
Q _f 6	20056.47	R 39	20508.61
Q _e 6	20056.75	R 40	20517.69
Q _e 7	20057.56	R 41	20526.44
Q 10	20060.67	R 42	20534.97
R _e 0	20065.76	R 43	20543.15
Q 14	20066.46	R 44	20551.02
Q 15	20068.18	R 45	20558.45
R _e 1	20076.82	R 47	20572.4
Q 20	20078.28	R 48	20578.72
R _e 2	20088.03	R 49	20584.79
Q 24	20088.04	R 50	20590.36
Q 25	20090.64	R 51	20595.51
Q 26	20093.32	R 52	20600.05
R _f 3	20099.07		

Table 7. Identified lines of BeD A - X (2,2).

Lines	W.No.	Lines	W.No.
P 42	19763.62	Q 29	20104.40
P 41	19767.08	Q 30	20106.58
P 40	19770.78	Q 31	20108.80
P 39	19774.62	R _e 3	20110.08
P 37	19782.66	Q 37	20121.96
P 36	19786.87	Q 38	20124.05
P 35	19791.28	Q 39	20126.04
P 33	19800.54	Q 40	20128.02
P 31	19810.65	Q 41	20129.85
P 30	19815.96	Q 42	20131.53
P 26	19839.16	R _f 5	20132.24
P 25	19845.52	R _e 6	20143.87
P 23	19858.74	R _f 7	20155.01
P 21	19872.82	R 11	20201.04
P 20	19880.17	R 12	20212.55
P 19	19887.72	R 13	20224.07
P 16	19911.60	R 14	20235.59
P 11	19955.28	R 15	20247.08
P _f 10	19964.45	R 16	20258.54
P _e 9	19974.09	R 17	20270.05
P _e 7	19993.56	R 19	20292.67
P _e 6	20003.53	R 21	20315.11
P _f 5	20013.23	R 23	20337.20
P _e 5	20013.64	R 24	20348.10
P _e 4	20023.93	R 26	20369.53
P _e 3	20034.44	R 27	20380.02
Q _f 4	20066.77	R 28	20390.41
Q _e 4	20067.20	R 29	20400.61
Q _f 5	20067.20	R 30	20410.64
Q _f 7	20068.59	R 31	20420.54
Q _f 8	20069.42	R 32	20430.14
Q _e 9	20070.46	R 33	20439.59
Q 11	20072.50	R 34	20448.85
Q 12	20073.62	R 35	20457.84
Q 13	20074.88	R 36	20466.58
Q 15	20077.66	R 37	20475.08
Q 18	20082.37	R 38	20483.31
Q 19	20084.19	R 39	20491.23
Q 20	20085.84	R 40	20498.87
Q 27	20100.02	R 41	20506.19
Q 28	20102.18	R 42	20513.15

Table 8. Identified lines of BeD A - X (3,3).

Lines	W.No.	Lines	W.No.
P 37	19783.31	Q 24	20094.15
P 36	19788.19	Q 28	20100.02
P 34	19798.45	R _f 2	20104.71
P 32	19809.26	R _e 2	20105.19
P 29	19826.70	Q 32	20105.95
P 27	19839.16	Q 34	20108.65
P 26	19845.52	R _e 3	20115.94
P 23	19866.04	R _e 4	20126.76
P 22	19873.26	R _f 6	20148.26
P 20	19888.18	R 9	20181.32
P 17	19911.91	R 10	20192.34
P 16	19920.17	R 11	20203.33
P 12	19954.89	R 12	20214.31
P 11	19963.99	R 13	20225.26
P _f 10	19973.14	R 14	20236.20
P _e 10	19973.31	R 15	20247.08
P _f 9	19982.54	R 17	20268.66
P _e 9	19982.81	R 18	20279.35
P _e 8	19992.27	R 19	20289.93
P _e 7	20001.98	R 22	20321.19
P _f 6	20011.49	R 24	20341.40
P _e 6	20011.80	R 25	20351.30
P _e 5	20021.84	R 28	20380.02
P _f 4	20031.33	R 30	20398.17
P _e 4	20031.89	R 31	20406.95
Q 3	20073.08	R 32	20415.46
Q _f 8	20075.77	R 33	20423.77
Q _f 9	20076.48	R 35	20439.59
Q _e 9	20076.65	R 36	20447.04
Q 18	20085.84	R 37	20454.20
Q 19	20086.96	R 39	20467.58
Q 22	20091.16	R 40	20473.79

Table 9. Identified lines of BeD A - X (4,4).

Lines	W.No.	Lines	W.No.
P 37	19779.01	Q 16	20082.37
P 33	19801.94	Q 18	20084.02
P 32	19807.95	Q 19	20084.93
P 30	19820.37	Q 21	20086.64
P 29	19826.70	Q 23	20088.41
P 28	19833.37	Q 25	20090.23
P 27	19840.05	Q 27	20091.95
P 26	19846.93	Q 30	20094.24
P 24	19861.07	Q 31	20094.95
P 22	19875.84	R _e 6	20148.26
P 19	19899.15	R 9	20179.70
P 16	19923.80	R 11	20200.60
P 15	19932.27	R 13	20221.39
P 14	19940.99	R 14	20231.71
P 13	19949.80	R 18	20272.13
P 12	19958.74	R 21	20301.36
P 11	19967.83	R 24	20329.30
P 10	19977.04	R 26	20347.05
P _f 8	19995.70	R 27	20355.74
P _e 8	19995.94	R 28	20364.01
P _e 7	20005.55	R 29	20372.13
P _e 6	20015.26	R 30	20380.02
P _e 5	20025.07	R 32	20395.09
Q _e 8	20077.26	R 34	20408.96
Q _f 8	20077.26	R 35	20415.46
Q _f 9	20077.66	R 36	20421.54
Q _e 9	20077.81	R 37	20427.40
Q 15	20081.61	R 38	20432.82

Table 10. Identified lines of BeT A - X (0,0).

Lines	W.No.	Lines	W.No.
P 39	19825.76	Q 27	20075.71
P 38	19828.28	R 4	20082.37
P 37	19830.84	Q 31	20085.78
P 36	19833.49	Q 32	20088.13
P 35	19836.53	R 5	20090.81
P 34	19839.57	Q 33	20090.81
P 32	19846.01	Q 34	20094.03
P 28	19861.25	Q 35	20096.12
P 27	19865.45	R 9	20126.76
P 29	19867.22	R 12	20154.25
P 26	19869.92	R 13	20163.50
P 22	19889.26	R 14	20172.85
P 21	19894.42	R 15	20182.19
P 12	19949.05	R 16	20191.54
P 10	19962.89	R 17	20200.90
P 8	19977.14	R 19	20220.47
P 7	19984.62	R 20	20229.18
P 6	19992.57	R 24	20267.65
P 5	19999.70	R 26	20286.22
P 4	20007.38	R 27	20295.85
Q 9	20044.06	R 28	20305.25
Q 12	20047.53	R 29	20314.68
Q 16	20053.05	R 31	20333.56
Q 17	20054.43	R 32	20342.73
Q 19	20058.09	R 33	20352.02
Q 20	20059.98	R 36	20379.62
Q 21	20062.07	R 38	20397.46
R 2	20065.10	R 39	20406.36
Q 23	20066.20	R 40	20415.09
Q 24	20069.10	R 41	20423.79

Table 11. Identified lines of BeT A - X (1,1).

Lines	W.No.	Lines	W.No.
P 42	19830.84	Q 22	20076.74
P 41	19833.49	Q 25	20082.37
P 40	19836.53	R 3	20087.13
P 39	19839.57	Q 27	20087.13
P 37	19846.01	Q 28	20089.15
P 36	19847.85	Q 29	20090.81
P 32	19863.34	Q 30	20094.03
P 31	19865.45	R 4	20096.12
P 30	19869.92	Q 31	20096.12
P 28	19877.75	Q 32	20098.07
P 27	19882.13	Q 33	20101.14
P 26	19886.47	R 5	20104.20
P 25	19891.42	R 6	20112.77
P 20	19916.28	R 8	20130.58
P 18	19927.32	R 13	20174.57
P 16	19938.97	R 15	20192.68
P 15	19945.06	R 16	20201.72
P 14	19951.49	R 18	20220.47
P 9	19985.79	R 19	20229.18
P 8	19992.57	R 21	20247.10
P 7	19999.70	R 22	20256.22
P 6	20007.38	R 23	20265.16
Q 8	20057.41	R 24	20274.27
Q 9	20058.09	R 26	20292.22
Q 11	20059.98	R 33	20354.12
Q 12	20061.06	R 34	20362.78
Q 13	20062.07	R 35	20371.22
Q 16	20066.20	R 36	20379.62
Q 18	20069.10		

Table 12. Identified lines of BeT A - X (2,2).

Lines	W.No.	Lines	W.No.
P 33	19869.92	Q 25	20089.15
P 31	19875.60	Q 26	20092.16
P 30	19880.04	Q 27	20094.03
P 28	19889.26	Q 28	20096.12
P 25	19902.32	R 3	20097.20
P 20	19927.32	Q 29	20098.07
P 18	19938.97	Q 31	20102.11
P 16	19951.49	Q 32	20104.85
P 15	19957.41	R 4	20105.91
P 12	19977.14	R 7	20130.58
P 11	19983.85	R 13	20182.19
P 10	19991.01	R 14	20191.54
P 9	19997.76	R 15	20199.76
P 8	20004.73	R 16	20208.29
P 6	20019.53	R 17	20217.05
Q 9	20069.10	R 19	20234.45
Q 16	20075.71	R 20	20243.11
Q 17	20076.74	R 21	20251.74
R 1	20081.62	R 23	20268.91
Q 21	20082.37	R 25	20286.22
Q 22	20084.66	R 30	20329.84
Q 23	20085.78	R 31	20338.05
Q 24	20088.13	R 32	20346.46
R 2	20089.15		

Table 13. Estimated equivalent width values for BeH A - X (1,1).

Head	W.No.(cm ⁻¹)	W (mÅ)
P ₁ 21	19718.57	26.5
P ₂ 11	19853.02	28.6
P ₀ 2	20012.72	12.4
R ₁ 6	20194.55	30.1
R ₂ 13	20340.64	10.5
R ₂ 17	20421.62	7.6
R ₂ 23	20534.27	17.5

Table 14. Estimated equivalent width values for BeH A - X (2,2).

Head	W.No.(cm ⁻¹)	W (mÅ)
P _{1/2} 22	19720.47	29.5
P _{2u} 12	19853.02	21.5
P ₀ 4	19988.56	20.1
Q _{1/2} 23	20100.13	7.4
Q ₀ 25	20104.68	1.9
R _{1/2} 7	20220.55	10.5
R _{1/2} 10	20279.94	17.5
R _{2u} 14	20357.16	3.2
R _{1/2} 17	20412.73	5.2
R ₂ 18	20430.69	6.2
R _{2u} 22	20498.21	13.7
R ₀ 24	20529.09	3.9
R _{1/2} 26	20557.76	7.4
R ₀ 28	20583.58	2.7

Table 15. Estimated equivalent width values for BeD A - X (1,1).

Head	W.No.(cm ⁻¹)	W (mÅ)
P 33	19792.12	15.1
P 30	19806.00	13.1
P 22	19853.07	28.6
P 12	19932.61	31.2
Q _e 6	20056.75	10.7
R _e 2	20088.03	19.7
Q 24	20088.04	19.7
R 18	20278.21	33.2
R 22	20325.91	36.1
R 28	20395.20	9.7
R 38	20499.34	8.7

Table 16. Estimated equivalent width values for BeT A - X (2,2).

Head	W.No.(cm ⁻¹)	W (mÅ)
P 30	19880.04	27.5
P 18	19938.97	60.4
P 16	19951.49	19.0
P 15	19957.41	26.0
Q 24	20088.13	17.1
Q 29	20098.07	26.8
Q 31	20102.11	14.5
R 7	20130.58	51.4
R 13	20182.19	12.9
R 19	20234.45	9.5
R 23	20268.91	30.8
R 25	20286.22	6.3
R 30	20329.84	9.2
R 31	20338.05	15.0

Table 17. Rotational Temperature.

Molecule	Band	B _e (cm ⁻¹)	Slope	T (K)
BeH (A - X)	1-1	10.457	0.00155	4228
	2-2	10.457	0.00162	4057
BeD (A - X)	1-1	5.761	0.00092	3941
BeT (A - X)	2-2	4.192	0.00081	3243