

Supplementary material 2

Ro-vibrational term values for the ν_6 vibrational state of the $\text{CH}_3^{35}\text{Cl}$ molecule (in cm^{-1})

Electronic supplementary materials to:

Effective dipole moment model for axially symmetric C_{3v} molecules: Application to the precise study of absolute line strengths of the ν_6 fundamental of CH_3Cl

O. N. Ulenikov^{†,a}, E. S. Bekhtereva^a, O. V. Gromova^a, A. L. Fomchenko^a,

Yu. B. Morzhikova^a, S. S. Sidko^a, C. Sydow^b, and S. Bauerecker^{§,b}

^a Research School of High-Energy Physics, National Research Tomsk Polytechnic University, Tomsk 634050, Russia;

^b Institut für Physikalische und Theoretische Chemie, Technische Universität Braunschweig, D - 38106, Braunschweig, Germany.

Ro-vibrational term values for the v_6 vibrational state of the $\text{CH}_3^{35}\text{Cl}$ molecule (in cm^{-1})^a.

J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ		
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	0	E	1018.95434	2	0	9	2	A ₁	1082.21378	3	0	13	0	E	1098.45251	2	1	15	14	A ₁	2095.41934	4	-15	18	7	E	1421.68934	6	-1		
1	1	A ₁	1021.12358	1	4	9	2	A ₂	1082.21378	3	-1	13	1	A ₁	1100.66713	-	2	15	14	A ₂	2095.41934	4	-15	18	8	E	1454.21676	3	2		
1	1	A ₂	1021.12259	1	2	9	3	E	1093.05960	8	2	13	1	A ₂	1100.57882	-	2	15	15	E	2158.01168	-	-4	18	8	A ₁	1495.93961	9	3		
1	1	E	1026.36326	-1	3	9	3	E	1108.76654	2	-3	13	1	E	1105.85747	6	-2	15	15	E	2235.75834	-	-14	18	8	A ₂	1495.93961	9	2		
2	0	E	1020.72141	1	3	9	4	A ₁	1123.94824	3	4	13	2	E	1112.36828	4	-2	16	0	E	1138.18676	3	-2	18	9	E	1532.78806	11	1		
2	1	A ₁	1022.88870	1	2	9	4	A ₂	1123.94824	3	4	13	2	A ₁	1122.83593	4	-2	16	1	A ₁	1140.29224	1	1	18	9	E	1579.69200	8	5		
2	1	A ₂	1022.89165	1	5	9	4	E	1144.88457	8	4	13	2	A ₂	1122.83593	4	-2	16	1	A ₂	1140.42415	-	-2	18	10	A ₁	1620.85546	4	0		
2	1	E	1028.13024	0	0	9	5	E	1164.39958	4	2	13	3	E	1133.68594	2	3	16	1	E	1145.58982	1	-2	18	10	A ₂	1620.85546	4	0		
2	2	E	1034.63621	2	4	9	5	A ₁	1190.55987	3	-2	13	3	E	1149.38416	5	-2	16	2	E	1152.10329	0	0	18	10	E	1672.92848	7	4		
2	2	A ₁	1045.11498	-4	9	9	5	A ₂	1190.55987	3	-2	13	4	A ₁	1164.57161	1	2	16	2	A ₁	1162.56511	5	2	18	11	E	1718.40020	3	-1		
2	2	A ₂	1045.11498	-4	9	9	6	E	1214.40510	6	2	13	4	A ₂	1164.57161	1	2	16	2	A ₂	1162.56511	5	0	18	11	A ₁	1775.62904	3	0		
3	0	E	1023.37195	4	2	9	6	E	1245.78276	13	7	13	4	E	1185.49635	4	-2	16	3	E	1173.41919	1	1	18	11	A ₂	1775.62904	3	0		
3	1	A ₁	1025.54370	4	7	9	7	A ₁	1273.95415	5	-2	13	5	E	1205.01881	4	2	16	3	E	1189.10891	8	3	18	12	E	1825.40152	0	0		
3	1	A ₂	1025.53785	1	2	9	7	A ₂	1273.95415	5	-2	13	5	A ₁	1231.16463	7	-2	16	4	A ₁	1204.30195	5	-3	18	12	E	1887.77169	4	-4		
3	1	E	1030.78066	1	0	9	7	E	1310.54103	3	1	13	5	A ₂	1231.16463	7	-2	16	4	A ₂	1204.30195	5	-3	18	13	E	1941.83656	11	-3		
3	2	E	1037.28680	2	6	9	8	E	1343.03411	0	-1	13	6	E	1255.01892	5	0	16	4	E	1225.21537	3	-2	18	13	A ₂	1941.83656	11	-3		
3	2	A ₁	1047.76518	2	-3	9	8	A ₁	1384.82095	5	6	13	6	E	1286.37912	3	-1	16	5	E	1244.74512	9	3	18	13	E	2009.33243	12	-10		
3	2	A ₂	1047.76518	2	-3	9	8	A ₂	1384.82095	5	6	13	7	A ₁	1314.56135	5	-3	16	5	A ₁	1270.87673	5	-4	18	14	E	2067.68065	2			
3	3	E	1058.60755	3	2	9	9	E	1421.63023	6	-1	13	7	A ₂	1314.56135	5	-3	16	5	A ₂	1270.87673	5	-4	18	14	A ₁	2140.28540	6	-5		
3	3	E	1074.32179	-7	9	9	9	E	1468.60642	7	7	13	7	E	1351.12788	4	0	16	6	E	1294.73995	3	0	18	14	E	2140.28540	6	-5		
4	0	E	1026.90593	4	1	10	0	E	1066.65799	1	2	13	8	E	1383.63347	3	-2	16	6	E	1326.08310	8	-2	18	15	E	2202.90684	5	-1		
4	1	A ₁	1029.06997	1	2	10	1	A ₁	1068.80103	0	3	13	8	A ₁	1425.39701	8	7	16	7	A ₁	1354.27592	4	-1	18	15	E	2280.60255	26	-2		
4	1	A ₂	1029.07969	3	1	10	1	A ₂	1068.85442	2	2	13	8	A ₂	1425.39701	8	7	16	7	A ₂	1354.27592	4	-1	18	16	A ₁	2347.48647	0			
4	1	E	1034.31447	3	0	10	1	E	1074.06450	3	-2	13	9	E	1462.22054	6	-1	16	7	E	1390.82251	8	-1	18	16	A ₂	2347.48647	0			
4	2	E	1040.82081	3	4	10	2	E	1080.57334	1	5	13	9	E	1509.17034	6	3	16	8	E	1423.34039	5	1	18	16	E	2430.25425	26			
4	2	A ₁	1051.29871	1	-3	10	2	A ₁	1091.04554	4	-3	13	10	A ₁	1550.30584	10	3	16	8	A ₁	1465.08104	7	5	18	17	E	2501.38865	-9			
4	2	A ₂	1051.29871	1	-3	10	2	A ₂	1091.04554	4	-3	13	10	A ₂	1550.30584	10	3	16	8	A ₂	1465.08104	7	5	18	18	E	2664.58105	-	8		
4	3	E	1062.14146	2	5	10	3	E	1101.89229	1	3	13	10	E	1602.43000	1	1	16	9	E	1501.91857	5	0	19	0	E	1185.85487	4	-1		
4	3	E	1077.85496	2	-3	10	3	E	1117.59733	3	-3	13	11	E	1647.87051	1	1	16	9	E	1548.84253	4	0	19	1	A ₁	1188.11976	9			
4	4	A ₁	1093.03230	2	5	10	4	A ₁	1132.78027	1	3	13	11	A ₁	1705.15596	2	-3	16	10	A ₁	1589.99380	2	1	19	1	A ₂	1187.93545	3	1		
4	4	A ₂	1093.03230	2	5	10	4	A ₂	1132.78027	1	3	13	11	A ₂	1705.15596	2	-3	16	10	A ₂	1589.99380	2	1	19	1	E	1193.25565	4	-2		
4	4	E	1113.97733	-6	10	10	4	E	1153.71410	8	2	13	12	E	1754.89392	10	9	16	10	E	1642.08917	2	-1	19	2	E	1199.77242	5	-1		
5	0	E	1031.32331	1	0	10	5	E	1173.23072	5	3	13	12	E	1817.32620	-8	16	11	E	1687.54731	6	4	19	2	A ₁	1210.22706	6	-6			
5	1	A ₁	1033.49958	2	1	10	5	A ₁	1199.38786	5	-3	13	13	A ₁	1871.35298	2	-1	16	11	A ₁	1744.80089	2	1	19	2	A ₂	1210.22706	6	-2		
5	1	A ₂	1033.48501	1	1	10	5	A ₂	1199.38786	5	-3	13	13	A ₂	1871.35298	2	-1	16	11	A ₂	1744.80089	2	1	19	3	E	1221.08620	2	0		
5	1	E	1038.73164	2	1	10	6	E	1223.23504	3	-1	13	13	E	1938.91668	-	-22	16	12	E	1794.55820	6	-1	19	3	E	1236.76554	3	-2		
5	2	E	1045.23823	3	3	10	6	E	1254.60888	1	0	14	0	E	110.81531	2	-2	16	12	E	1856.95560	3	-5	19	4	A ₁	1251.96553	2	0		
5	2	A ₁	1055.71552	2	-2	10	7	A ₁	1282.78268	5	-1	14	1	A ₁	1112.93515	1	1	16	13	A ₁	1911.00378	-	-3	19	4	A ₂	1251.96553	2	0		
5	2	A ₂	1055.71552	2	-2	10	7	A ₂	1282.78268	5	-1	14	1	A ₂	1113.03704	1	1	16	13	A ₂	1911.00378	-	-3	19	4	E	1272.86524	5	-2		
5	3	E	1066.55864	8	-1	10	7	E	1319.36514	4	2	14	1	E	1118.21970	4	-2	16	13	E	1978.52948	10	-1	19	5	E	1292.40373	3	-2		
5	3	E	1082.27127	4	-2	10	8	E	1351.86095	1	0	14	2	E	1124.73133	5	-1	16	14	E	2036.85928	2	0	19	5	A ₁	1318.51837	10	1		
5	4	A ₁	1097.44922	2	4	10	8	A ₁	1393.64269	3	5	14	2	A ₁	1135.19715	6	-3	16	14	A ₁	2109.49638	-	-6	19	5	A ₂	1318.51837	10	1		
5	4	A ₂	1097.44922	2	4	10	8	A ₂	1393.64269	3	5	14	2	A ₂	1135.19715	6	-5	16	14	A ₂	2109.49638	-	-6	19	6	A ₁	1342.39227	4	0		
5	4	E	1118.39302	3	-5	10	9	E	1430.45509	5	0	14	3	E	1146.04842	0	16	15	E	2172.09782	1	0	19	6	E	1373.71496	5	-1			
5	5	E	1137.90328	1	3	10	9	E	1477.42551	7	4	14	3	E	1161.74399	1	-4	16	15	E	2249.82850	-	-6	19	7	A ₁	1401.92047	4	-1		
5	5	A ₁	1164.07304	3	10	10	A ₁	1518.54838	5	0	14	4	A ₁	1176.93323	1	3	16	16	A ₁	2316.69058	7	-6	19	7	A ₂	1401.92047	4	-1			
5	5	A ₂	1164.07304	3	10	10	A ₂	1518.54838	5	0	14	4	A ₂	1176.93323	1	3	16	16</													

Continued

J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ		
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
20	14	A_2	2174.58628	4	4	23	2	A_2	1286.10404	8	3	25	9	E	1715.35891	-4		27	16	A_1	2529.50106	29	-7	30	6	E	1584.84736	2	0		
20	15	E	2237.22991	4	-5	23	3	E	1296.97130	1	1	25	10	A_1	1756.57648	-1		27	16	A_2	2529.50106	29	-7	30	6	E	1616.06539	11	-1		
20	16	A_1	2381.79480	12	-7	23	3	E	1312.63400	4	-2	25	10	A_2	1756.57648	-1		27	17	E	2683.32022	0		30	7	A_1	1644.33606	5	5		
20	16	A_2	2381.79480	12	-7	23	4	A_1	1327.84510	10	4	25	10	E	1808.55085	1	3	27	18	E	2846.42408	-6		30	7	A_2	1644.33606	5	5		
20	16	E	2464.52036		13	23	4	A_2	1327.84510	10	4	25	11	E	1854.08283	15	-5	27	19	A_1	3018.77838	12		30	7	E	1680.73653	12	2		
20	17	E	2535.68148	7	1	23	4	E	1348.72291	0	0	25	11	A_1	1911.20259	3	3	27	19	A_2	3018.77838	12		30	8	E	1713.34440	7	-1		
20	18	E	2698.85705		1	23	5	E	1368.27546	2	0	25	11	A_2	1911.20259	3	3	28	0	E	1376.38503	7	-1	30	8	A_1	1754.91774	13	4		
20	19	A_1	2871.28711		14	23	5	A_1	1394.36282	7	-3	25	12	E	1961.04185	4	1	28	1	A_1	1378.36729	4	-3	30	8	A_2	1754.91774	13	4		
20	19	A_2	2871.28711		14	23	5	A_2	1394.36282	7	-3	25	12	E	2023.29218	4	3	28	1	A_2	1378.76007	4	-5	30	9	E	1791.85788	5	-2		
21	0	E	1222.03784	4	1	23	6	E	1418.25387	3	-2	25	13	A_1	2077.43061	4	1	28	1	E	1383.77718	10	-8	30	9	E	1838.59292	9	-6		
21	1	A_1	1224.32346		-1	23	6	E	1449.54402	4	8	25	13	A_2	2077.43061	4	1	28	2	E	1390.30869	4	-1	30	10	A_1	1879.85976	3	-2		
21	1	A_2	1224.09955	4	-1	23	7	A_1	1477.76970	5	-3	25	13	E	2144.79555	18	-2	28	2	A_1	1400.73351	3	-5	30	10	A_2	1879.85976	3	-2		
21	1	E	1229.43691	4	-2	23	7	A_2	1477.76970	5	-3	25	14	E	2203.22438	1	-1	28	2	A_2	1400.73351	3	0	30	10	E	1931.74436	4	3		
21	2	E	1235.95628	6	-2	23	7	E	1514.25429	9	4	25	14	A_1	2275.68677	-4		28	3	E	1411.61350	1	-3	30	11	E	1977.33135	4	1		
21	2	A_1	1246.40544	4	-4	23	8	E	1546.81034	3	3	25	14	A_2	2275.68677	-4		28	3	E	1427.25081	11	1	30	11	A_1	2034.35174	2	5		
21	2	A_2	1246.40544	4	0	23	8	A_1	1588.47986	4	5	25	15	E	2338.39637	11	-7	28	4	A_1	1442.47879	3	-3	30	11	A_2	2034.35174	2	5		
21	3	E	1257.26842	2	-1	23	8	A_2	1588.47986	4	5	25	15	E	2415.93790	-1		28	4	A_2	1442.47879	3	-3	30	12	E	2084.25185	2	1		
21	3	E	1272.93988	6	0	23	9	E	1625.36099	3	3	25	16	A_1	2482.91796	10	-5	28	4	E	1463.32336	4	-1	30	12	E	2146.39313	4	9		
21	4	A_1	1288.14508	1	-3	23	9	E	1672.20465	6	2	25	16	A_2	2482.91796	10	-5	28	5	E	1482.89736	4	-2	30	13	A_1	2200.59855	1	1		
21	4	A_2	1288.14508	1	-3	23	10	A_1	1713.40493	3	-3	25	17	E	2636.75842	9	3	28	5	A_1	1508.94344	6	1	30	13	A_2	2200.59855	1	1		
21	4	E	1309.03445	5	2	23	10	A_2	1713.40493	3	-3	25	18	E	2799.88490	0		28	5	A_2	1508.94344	6	1	30	13	E	2267.84443	2	11		
21	5	E	1328.57959	3	-2	23	10	E	1765.41069	0		25	19	A_1	2972.26308	14		28	6	E	1532.86054	2	-1	30	14	E	2326.34670	1			
21	5	A_1	1354.68127	7	2	23	11	E	1810.92356	2	1	25	19	A_2	2972.26308	14		28	6	E	1564.10101	6	-9	30	15	E	2461.46954	6	-1		
21	5	A_2	1354.68127	7	2	23	11	A_1	1868.07796	6	-1	25	20	E	3153.85597	3		28	7	A_1	1592.35768	6	0	30	16	A_1	2605.93837	11	-3		
21	6	E	1378.56335	6	3	23	11	A_2	1868.07796	6	-1	26	0	E	1327.89203	1	1	28	7	A_2	1592.35768	6	0	30	16	A_2	2605.93837	11	-3		
21	6	E	1409.87048	7	2	23	12	E	1917.89595	7	-3	26	1	A_1	1329.89908	5	-1	28	7	E	1628.78443	9	0	30	17	E	2759.72252	6	-5		
21	7	A_1	1438.08560	4	-3	23	12	E	1980.18443	6	-2	26	1	A_2	1330.23890	5	-1	28	8	E	1661.37615	5	3	30	18	E	2922.78945	5			
21	7	A_2	1438.08560	4	-3	23	13	A_1	2034.29946	4	-1	26	1	E	1335.28631	6	-3	28	8	A_1	1702.97949	4	2	30	19	A_1	3095.10424	-5			
21	7	E	1474.59014	10	3	23	13	A_2	2034.29946	4	-1	26	2	E	1341.81380	3	-2	28	8	A_2	1702.97949	4	2	30	19	A_2	3095.10424	-5			
21	8	E	1507.13390	3	2	23	13	E	2101.70618	4	6	26	2	A_1	1352.24643	4	-2	28	9	E	1739.90120	4	-1	31	0	E	1455.70541	8	-1		
21	8	A_1	1548.82631	5	6	23	14	E	2160.10924	4	0	26	2	A_2	1352.24643	4	-2	28	9	E	1786.67021	6	0	31	1	A_2	1458.12677	0			
21	8	A_2	1548.82631	5	6	23	14	A_1	2232.61705	19	6	26	3	E	1363.12100	2	0	28	10	A_1	1827.91621	-2	31	1	A_1	1457.64726	11	2			
21	9	E	1585.69340	4	2	23	14	A_2	2232.61705	19	6	26	3	E	1378.76905	6	-4	28	10	A_2	1827.91621	-2	31	1	E	1463.09432	6	2			
21	9	E	1632.56293	3	6	23	15	E	2295.29849	8	-3	26	4	A_1	1393.98987	3	-2	28	10	E	1879.83863	2	0	31	2	E	1469.63252	10	-1		
21	10	A_1	1673.74741	3	0	23	15	E	2372.88918	9	2	26	4	A_2	1393.98987	3	-2	28	11	E	1925.40245	5	-2	31	2	A_1	1480.04434	5	0		
21	10	A_2	1673.74741	3	0	23	16	A_1	2439.83861	15	6	26	4	E	1414.84858	7	2	28	11	A_1	1982.46474	2	5	31	2	A_2	1480.04434	5	-9		
21	10	E	1725.78199	2	2	23	16	A_2	2439.83861	15	6	26	5	E	1434.41346	2	-1	28	11	A_2	1982.46474	2	5	31	3	E	1490.93341	5	0		
21	11	E	1771.27723	2	2	23	17	E	2593.69859	6	-3	26	5	A_1	1460.47703	5	0	28	12	E	2032.33919	3	2	31	3	E	1506.55281	4	-1		
21	11	A_1	1828.46352	1	-1	23	18	E	2756.84607	-2		26	5	A_2	1460.47703	5	0	28	12	E	2094.52644	4	8	31	4	A_1	1521.79273	1	-5		
21	11	A_2	1828.46352	1	-1	23	19	A_1	2929.24615	-2		26	6	E	1484.38306	5	-3	28	13	A_1	2148.70359	2	0	31	4	A_2	1521.79273	1	-5		
21	12	E	1878.26202	2	1	23	19	A_2	2929.24628	-2		26	6	E	1515.64456	7	-4	28	13	A_2	2148.70359	2	0	31	4	E	1542.61411	4	-1		
21	12	E	1940.58554	2	1	23	20	E	3110.86248	25	0	26	7	A_1	1543.88812	17	-1	28	13	E	2215.99970	9	9	31	5	E	1562.20311	4	-2		
21	13	A_1	1994.67903	9	-1	24	0	E	1282.91255	2	-2	26	7	A_2	1543.88812	17	-1	28	14	E	2274.47096	1	0	31	5	A_1	1588.22048	4	3		
21	13	A_2	1994.67903	9	-1	24	1	A_1	1284.94280	5	0	26	7	E	1580.33937	9	2	28	15	E	2409.61452	15	-3	31	5	A_2	1588.22048	4	3		
21	13	E	2062.12396		0	24	1	A_2	1285.23338	-1		26	8	E	1612.91597	5	2	28	15												

J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ
1	2	3	4			1	2	3	4			1	2	3	4			1	2	3	4			1	2	3	4		
32	19	A_1	3150.35214		2	35	12	E	2229.34207	8	2	38	11	E	2220.02936	4	1	41	11	E	2325.43522	19	-7	44	11	A_1	2495.31599	8	3
33	0	E	1512.96776	6	-1	35	12	E	2291.35460	2	-8	38	11	A_2	2276.85363	7	3	41	11	A_1	2382.17424		8	44	11	A_2	2495.31599	8	3
33	1	A_2	1515.42268		-3	35	13	A_1	2345.63918	8	-5	38	11	A_1	2276.85363	7	3	41	11	A_2	2382.17424		8	44	12	E	2545.44558	8	2
33	1	A_1	1514.88060	8	-3	35	13	A_2	2345.63918	8	-5	38	12	E	2326.87408	14	-6	41	12	E	2432.24720	27	-1	44	12	E	2607.17668		0
33	1	E	1520.35431	1	-1	35	13	E	2412.74436	7	-4	38	12	E	2388.79995	3	-2	41	12	E	2494.07922	5	0	44	13	A_1	2661.63489	4	0
33	2	E	1526.89770	4	0	35	14	E	2471.33356	7	-8	38	13	A_1	2443.13807	2	3	41	13	A_1	2548.47518	4	2	44	13	A_2	2661.63489	4	0
33	3	E	1548.19567		2	35	15	E	2606.39858		-1	38	13	A_2	2443.13807	2	3	41	13	A_2	2548.47518	4	2	44	14	E	2787.21229	12	0
33	3	E	1563.80207	10	2	35	16	A_2	2750.80536	10	-2	38	14	E	2568.79630	6	-4	41	14	E	2674.09444	7	-1	44	16	A_1	3066.42266		-6
33	4	A_2	1579.05074	2	1	35	16	A_1	2750.80536	10	-2	38	15	E	2703.82236	6	-1	41	15	E	2809.07845	10	2	44	16	A_2	3066.42266		-6
33	4	A_1	1579.05074	2	1	35	17	E	2904.52340	19	4	38	16	A_1	2848.18750	11	6	41	16	A_2	2953.39842	8	-3	45	0	E	1929.91854	4	0
33	4	E	1599.85523	4	0	36	0	E	1605.42501	11	9	38	16	A_2	2848.18750	11	6	41	16	A_1	2953.39842	8	-3	45	1	A_2	1932.62093		0
33	5	E	1619.45511	5	-3	36	1	A_1	1607.29140	5	3	38	17	E	3001.86091	19	-2	41	17	E	3107.02388		0	45	1	A_1	1931.62553	2	0
33	5	A_1	1645.45165	10	1	36	1	A_2	1607.93418		-1	39	0	E	1705.74600	4	0	42	0	E	1813.91596	7	0	45	1	E	1937.29022	6	0
33	5	A_2	1645.45165	10	1	36	1	E	1612.80786	3	1	39	1	A_2	1708.31459		-1	42	1	A_1	1815.67931		-4	45	2	E	1943.87732	4	-3
33	6	E	166																										

Continued

J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ	J	K	Γ	E^{exp}	Δ	δ									
1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4							
47 10	E	2513.86445	7	4	50 1	A ₁	2142.22037	2	52 7	E	2482.52068	3	-2	55 10	A ₂	2823.33820	8	-6	59 5	A ₁	2706.21114			5	59 5	A ₂	2706.21114			5	59 6	E	2761.12506			5		
47 11	A ₁	2616.26216	17	8	50 1	A ₂	2143.44369	0	52 8	E	2515.38291	2	2	55 10	E	2874.53048			18	59 5	A ₂	2706.21114			5	59 6	E	2761.12506			5	59 7	A ₁	2789.71366			-2	
47 11	A ₂	2616.26216	17	8	50 1	E	2147.97957	-4	52 8	A ₁	2556.48851	9	-2	55 11	A ₁	2976.79809			3	59 6	E	2761.12506			5	59 7	A ₂	2789.71366			-5	59 8	E	2858.50059			0	
47 12	E	2666.45230	7	1	50 2	E	2154.59292	12	-2	52 8	A ₂	2556.48851	9	-2	55 11	A ₂	2976.79809			3	59 7	A ₁	2789.71366			5	59 8	E	2858.50059			-3	59 9	E	2936.75857			-4
47 12	E	2728.07545	13	5	50 2	A ₁	2164.88008	0	52 9	E	2639.92546	4	2	56 0	E	2421.97874	5	-10	59 7	A ₂	2789.71366			-5	59 8	A ₁	2899.40400			-3	60 1	A ₁	2628.15023			12		
47 13	A ₁	2782.60038	6	2	50 2	A ₂	2164.87548	6	4	52 10	A ₁	2681.51664	0	56 1	A ₁	2423.45403	5	2	59 8	E	2858.50059			0	60 1	A ₂	2692.80152			4	3	60 2	E	2640.80675			1	
47 13	A ₂	2782.60038	6	2	50 3	E	2175.85432	0	2	52 10	A ₂	2681.51664	0	56 1	A ₂	2424.98060			5	59 8	A ₂	2899.40400			-3	60 2	E	2640.80675			1	60 3	E	2677.36765	6		5	
47 14	E	2908.13296		-2	50 3	E	2191.31140	13	0	52 10	E	2732.81341	1	4	56 1	E	2429.33758	2	0	59 9	E	2936.75857			-4	60 3	E	2677.36765	6		5	60 4	A ₁	2692.80152			4	
47 16	A ₁	3187.24350	8	8	50 4	A ₁	2206.66083	1	0	53 0	E	2277.41506	6	-2	56 2	A ₁	2446.21897	7	4	60 1	A ₁	2628.15023			12	60 4	A ₂	2692.80152			4	3	60 5	E	2733.08827			-1
47 16	A ₂	3187.24350	8	8	50 4	A ₂	2206.66083	1	0	53 1	A ₁	2280.32809			3	56 2	A ₂	2446.21897	7	4	60 2	E	2640.80675			1	60 5	E	2733.08827			-1	60 6	E	2758.66905			-1
48 0	A	2053.73627	11	-3	50 4	A	2227.27600	8	-2	53 1	A ₂	2278.95713	10	0	56 3	E	2457.23245			-3	60 3	E	2677.36765	6		5	60 6	E	2758.66905			-1	60 7	A ₁	2715.37914	12		-4
48 1	A ₁	2055.38382	3	-2	50 5	E	2246.99945	5	2	53 1	E	2284.77713	5	2	56 3	E	2472.61871	9	-5	60 3	E	2677.36765	6		5	60 7	A ₂	2692.80152			4	3	60 8	A ₁	2951.82521			5
48 1	A ₂	2056.51327		-2	50 5	A ₁	2272.76415	8	-4	53 2	A ₁	2291.40890	8	0	56 4	A ₁	2488.01641	5	0	60 4	A ₁	2692.80152			4	3	60 8	A ₂	2951.82521			5	60 9	E	2766.58762			-7
48 1	A	2061.10427	5	1	50 5	A ₂	2272.76415	8	-4	53 2	A ₂	2301.66238	8	5	56 4	A ₂	2488.01641	5	0	60 4	A ₂	2692.80152			4	3	60 9	E	2766.58762			-7	61 1	A ₁	2715.37914	12		-4
48 2	E	2067.70662	8	6	50 6	E	2296.86029	6	1	53 2	A ₁	2301.66238	8	5	56 4	E	2508.54395			-4	60 5	E	2733.08827			-1	61 1	A ₂	2681.46735	10		2	61 2	E	2694.15559			2
48 2	A ₁	2078.01076	18	5	50 7	A ₁	2356.23244	6	-1	53 3	E	2312.66125	5	2	56 5	A ₁	2553.98382	13	-3	60 5	E	2733.08827			-1	61 2	E	2694.15559			2	61 3	E	2715.37914	12		-4	
48 2	A ₂	2078.01076	18	5	50 7	A ₂	2356.23244	6	-1	53 3	E	2312.66125	5	2	56 5	A ₂	2553.98382	13	-3	60 5	A ₂	2692.80152			4	3	61 3	E	2715.37914	12		-4	61 4	A ₁	2746.14189			-3
48 3	E	2088.97338	11	2	50 7	E	2392.26996	17	-6	53 4	E	2328.08420	8	1	56 5	E	2578.14803	10	-3	60 6	E	2758.66905			-1	61 4	A ₂	2746.14189			-3	61 5	E	2786.42299			0	
48 3	A	2104.45186	15	2	50 8	E	2425.10326			53 5	E	2383.78100	11	8	56 6	E	2608.92865	26	-3	60 7	A ₁	2715.37914	12		-4	61 5	E	2786.42299			0	61 6	E	2836.21107	5		0	
48 4	A ₁	2119.78674	8	-2	50 8	A ₁	2466.26189	11	5	53 5	A ₁	2409.49430	12	0	56 7	E	2673.36666			3	60 8	A ₁	2951.82521			5	61 6	E	2836.21107	5		0	61 7	A ₁	2951.82521			5
48 4	A ₂	2119.78674	8	-2	50 8	A ₂	2466.26189	11	5	53 5	A ₂	2409.49430	12	0	56 10	A ₁	2872.33334	21	-6	60 8	A ₂	2951.82521			5	61 7	A ₂	2951.82521			5	61 8	E	2895.49474	8		-1	
48 4	E	2140.42866	21	0	50 9	E	2503.45792	7	2	53 6	E	2433.62334	6	-2	56 10	A ₂	2872.33334	21	-6	60 8	E	2895.49474	8		-1	61 8	E	2895.49474	8		-1	61 9	E	2964.26104			-11	
48 5	E	2160.13454	5	0	50 9	E	2549.72558	5	1	53 6	E	2464.46845	10	-2	56 10	E	2923.48942			14	61 8	E	2895.49474	8		-1	61 9	E	2964.26104			-11	62 0	E	2734.30599			5
48 5	A ₁	2185.93181		4	50 10	A ₁	2591.27993	3	2	53 7	A ₁	2492.97304	10	-8	56 11	A ₁	3025.73948			20	62 0	E	2734.30599			5	62 1	A ₁	2735.64011			5	62 2	E	2737.50156			3
48 5	A ₂	2185.93181		4	50 10	A ₂	2591.27993	3	2	53 7	A ₂	2492.97304	10	-8	56 11	A ₂	3025.73948			20	62 1	A ₂	2737.50156			3	62 2	E	2737.50156			3	62 3	E	2741.65895			-1
48 6	E	2210.00705	13	-2	50 10	E	2642.64313		-0	53 7	E	2528.94028	18	0	57 0	E	2471.88806	5	-1	61 8	E	2895.49474	8		-1	62 3	E	2741.65895			-1	62 4	E	2746.14189			-3	
48 6	E	2240.95145	14	6	50 11	A ₁	2744.99438	6	-4	53 8	E	2561.81740	3	-2	57 1	A ₁	2474.92060	9	4	61 4	A ₁	2746.14189			-3	62 4	E	2746.14189			-3	62 5	E	2768.42299			0	
48 7	A ₁	2269.39348	6	1	50 11	A ₂	2744.99438	6	-4	53 8	A ₁	2602.89576	5	-1	57 1	A ₂	2473.34032			-7	61 4	A ₂	2746.14189			-3	62 5	E	2768.42299			0	61 6	E	2836.21107	5		0
48 7	A ₂	2269.39348	6	1	50 12	E	2795.24932			53 8	A ₂	2602.89576	5	-1	57 1	E	2479.24580	7	3	61 5	E	2786.42299			0	61 6	E	2836.21107	5		0	61 7	A ₁	2951.82521			5	
48 7	E	2305.47561	14	-3	50 13	A ₁	2911.35345	15	-3	53 10	A ₁	2727.92912	3	57	2	E	2485.90575	3	1	61 6	E	2836.21107	5		0	61 7	A ₂	2951.82521			5	61 8	E	2895.49474	8		-1	
48 8	E	2338.28110	10	7	50 13	A ₂	2911.35345	15	-3	53 10	A ₂	2727.92912	3	57	2	A ₂	2496.12371	5	-2	61 7	A ₁	2951.82521			5	61 8	E	2895.49474	8		-1	61 9	E	2964.26104			-11	
48 8	A ₁	2379.49048	9	-6	50 14	E	3036.83845	10	-1	53 12	E	2931.81736	23	-2	57 3	E	2507.14462	7	3	61 7	A ₂	2951.82521			5	61 8	E	2895.49474	8		-1	61 9	E	2964.26104			-11	
48 8	A ₂	2379.49048	9	-6	51 0	E	2185.35056	3	-2	54 0	E	2324.74149	27	-3	57 3	E	2522.51804	18	-2	61 8	E	2895.49474	8		-1	62 0	E	2734.30599			5	62 1	A ₁	2735.64011			5	
48 9	E	2416.65511		2	51 1	A ₁	2188.20740	0	54	1	A ₁	2326.26160	9	3	57 4	A ₁	2537.92445			0	61 10	A ₁	3130.18157	15		15	62 1	A ₂	2737.50156			3	62 2	E	2741.65895			-1
48 9	E	2462.98008	4	2	51 1	A ₂	2186.93576	5	1	54 1	A ₁	2327.68348		0	57 4	A ₂	2537.92445			15	62 2	E	2741.65895			-1	62 3	E	2768.42299			0	62 4	E	2768.42299			0
48 10	A ₁	2504.49905	7	2	51 1	E	2192.71492	5	-1	54 1	E	2332.10245	18	1	57 4	E	2558.43629	5	-4	62 0	E	2734.30599			5	62 1	A ₁	2735.64011			5	62 2	E	2737.50156			3	
48 10	A ₂	2504.49905	7	2	51 2	E	2199.33419	4	2	54 2	E	2338.74088	14	0	57 5	E	2578.22785	15	3	62 1	A ₂	2737.50156																