

Supplemental Material
Fourier-transform microwave spectroscopy of
the CISS radical

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Table S1. Observed transition frequencies of the $^{35}\text{ClSS}$ radical. (in MHz)

N	K_a	K_c	J	F	N'	K_a'	K_c'	J'	F'	Observed	Calculated	O.-C.
1	1	1	0.5	1.0	0	0	0	0.5	1.0	21438.398	21438.399	-0.001
1	1	1	0.5	1.0	0	0	0	0.5	2.0	21435.174	21435.175	-0.001
1	1	1	0.5	2.0	0	0	0	0.5	1.0	21428.653	21428.648	0.005
1	1	1	0.5	2.0	0	0	0	0.5	2.0	21425.423	21425.423	0.000
1	1	1	1.5	3.0	0	0	0	0.5	2.0	20405.390	20405.393	-0.003
1	1	0	0.5	1.0	1	0	1	0.5	2.0	16531.969	16531.956	0.013
1	1	0	0.5	2.0	1	0	1	0.5	2.0	16553.778	16553.776	0.002
1	1	0	1.5	0.0	1	0	1	1.5	1.0	15509.815	15509.819	-0.004
1	1	0	1.5	1.0	1	0	1	1.5	2.0	15521.855	15521.858	-0.003
1	1	0	1.5	2.0	1	0	1	1.5	2.0	15527.787	15527.789	-0.002
1	1	0	1.5	3.0	1	0	1	1.5	2.0	15518.600	15518.604	-0.004
1	1	0	1.5	3.0	1	0	1	1.5	3.0	15506.280	15506.281	-0.001
2	1	1	1.5	0.0	2	0	2	1.5	1.0	16643.816	16643.809	0.007
2	1	1	1.5	1.0	2	0	2	1.5	2.0	16656.382	16656.394	-0.012
2	1	1	1.5	2.0	2	0	2	1.5	1.0	16643.149	16643.168	-0.019
2	1	1	1.5	2.0	2	0	2	1.5	2.0	16656.546	16656.562	-0.016
2	1	1	1.5	2.0	2	0	2	1.5	3.0	16655.647	16655.664	-0.017
2	1	1	1.5	3.0	2	0	2	1.5	2.0	16662.678	16662.663	0.015
2	1	1	1.5	3.0	2	0	2	1.5	3.0	16661.780	16661.765	0.015
2	1	1	2.5	1.0	2	0	2	2.5	1.0	16010.750	16010.729	0.021
2	1	1	2.5	2.0	2	0	2	2.5	2.0	16009.884	16009.877	0.007
2	1	1	2.5	3.0	2	0	2	2.5	2.0	16006.111	16006.109	0.002
2	1	1	2.5	3.0	2	0	2	2.5	3.0	16008.749	16008.751	-0.002
2	1	1	2.5	4.0	2	0	2	2.5	4.0	16003.258	16003.261	-0.003
3	1	2	2.5	2.0	3	0	3	2.5	2.0	17159.084	17159.094	-0.010
3	1	2	2.5	3.0	3	0	3	2.5	3.0	17165.242	17165.220	0.022
3	1	2	2.5	4.0	3	0	3	2.5	4.0	17173.613	17173.617	-0.004
3	1	2	3.5	2.0	3	0	3	3.5	2.0	16635.184	16635.197	-0.013
3	1	2	3.5	3.0	3	0	3	3.5	3.0	16638.525	16638.525	0.000
3	1	2	3.5	3.0	3	0	3	3.5	4.0	16639.829	16639.833	-0.004
3	1	2	3.5	4.0	3	0	3	3.5	4.0	16638.432	16638.434	-0.002
3	1	2	3.5	5.0	3	0	3	3.5	5.0	16628.542	16628.542	0.000
4	1	3	3.5	3.0	4	0	4	3.5	3.0	17933.668	17933.658	0.010
4	1	3	3.5	4.0	4	0	4	3.5	4.0	17940.470	17940.470	0.000
4	1	3	3.5	5.0	4	0	4	3.5	5.0	17941.676	17941.682	-0.006
4	1	3	4.5	3.0	4	0	4	4.5	3.0	17471.067	17471.068	-0.001
4	1	3	4.5	4.0	4	0	4	4.5	4.0	17473.845	17473.844	0.001
4	1	3	4.5	5.0	4	0	4	4.5	5.0	17472.617	17472.614	0.003
4	1	3	4.5	6.0	4	0	4	4.5	6.0	17464.112	17464.111	0.001
5	0	5	5.5	6.0	4	1	4	4.5	5.0	12428.669	12428.669	0.000

N	K_a	K_c	J	F	N'	K_a'	K_c'	J'	F'	Observed	Calculated	O.-C.
5	0	5	5.5	7.0	4	1	4	4.5	6.0	12425.692	12425.693	-0.001
5	1	4	4.5	5.0	5	0	5	4.5	5.0	18987.273	18987.277	-0.004
5	1	4	4.5	6.0	5	0	5	4.5	6.0	18988.145	18988.150	-0.005
5	1	4	5.5	4.0	5	0	5	5.5	4.0	18536.828	18536.828	0.000
5	1	4	5.5	5.0	5	0	5	5.5	5.0	18539.087	18539.086	0.001
5	1	4	5.5	6.0	5	0	5	5.5	6.0	18537.374	18537.369	0.005
5	1	4	5.5	7.0	5	0	5	5.5	7.0	18529.192	18529.188	0.004
2	0	2	1.5	1.0	1	0	1	0.5	1.0	10567.665	10567.655	0.010
2	0	2	1.5	2.0	1	0	1	0.5	1.0	10554.266	10554.261	0.005
2	0	2	1.5	2.0	1	0	1	0.5	2.0	10569.906	10569.907	-0.001
2	0	2	1.5	3.0	1	0	1	0.5	2.0	10570.806	10570.806	0.000
2	0	2	2.5	2.0	1	0	1	1.5	2.0	10513.828	10513.826	0.002
2	0	2	2.5	3.0	1	0	1	1.5	2.0	10511.182	10511.184	-0.002
2	0	2	2.5	3.0	1	0	1	1.5	3.0	10498.862	10498.860	0.002
2	0	2	2.5	4.0	1	0	1	1.5	3.0	10512.305	10512.306	-0.001
2	1	1	1.5	3.0	1	1	0	0.5	2.0	10678.809	10678.794	0.015
2	1	1	2.5	2.0	1	1	0	1.5	1.0	11001.858	11001.846	0.012
2	1	1	2.5	3.0	1	1	0	1.5	2.0	10992.147	10992.146	0.001
2	1	1	2.5	4.0	1	1	0	1.5	3.0	11009.284	11009.286	-0.002
2	1	2	1.5	3.0	1	1	1	0.5	2.0	9885.376	9885.378	-0.002
2	1	2	2.5	3.0	1	1	1	1.5	2.0	10254.881	10254.879	0.002
2	1	2	2.5	4.0	1	1	1	1.5	3.0	10267.380	10267.380	0.000
3	0	3	2.5	2.0	2	0	2	1.5	1.0	15807.607	15807.588	0.019
3	0	3	2.5	3.0	2	0	2	1.5	2.0	15813.364	15813.373	-0.009
3	0	3	2.5	4.0	2	0	2	1.5	3.0	15809.833	15809.834	-0.001
3	0	3	3.5	2.0	2	0	2	2.5	1.0	15762.832	15762.837	-0.005
3	0	3	3.5	3.0	2	0	2	2.5	2.0	15763.092	15763.094	-0.002
3	0	3	3.5	4.0	2	0	2	2.5	3.0	15764.432	15764.429	0.003
3	0	3	3.5	5.0	2	0	2	2.5	4.0	15765.313	15765.313	0.000
3	1	3	2.5	3.0	2	1	2	1.5	2.0	15143.188	15143.189	-0.001
3	1	3	3.5	2.0	2	1	2	2.5	1.0	15286.755	15286.747	0.008
3	1	3	3.5	3.0	2	1	2	2.5	2.0	15284.738	15284.739	-0.001
3	1	3	3.5	4.0	2	1	2	2.5	3.0	15285.655	15285.656	-0.001
3	1	3	3.5	5.0	2	1	2	2.5	4.0	15289.529	15289.530	-0.001
3	1	3	2.5	4.0	2	0	2	1.5	3.0	30560.598	30560.603	-0.005
3	1	3	3.5	2.0	2	0	2	2.5	1.0	30196.867	30196.861	0.006
3	1	3	3.5	3.0	2	0	2	2.5	2.0	30197.338	30197.335	0.003
3	1	3	3.5	4.0	2	0	2	2.5	3.0	30200.176	30200.176	0.000
3	1	3	3.5	5.0	2	0	2	2.5	4.0	30202.788	30202.789	-0.001
3	1	2	2.5	3.0	2	1	1	1.5	2.0	16322.060	16322.032	0.028
3	1	2	2.5	4.0	2	1	1	1.5	3.0	16321.667	16321.686	-0.019
3	1	2	3.5	3.0	2	1	1	2.5	2.0	16391.734	16391.742	-0.008

N	K_a	K_c	J	F	N'	K_a'	K_c'	J'	F'	Observed	Calculated	O.-C.
3	1	2	3.5	4.0	2	1	1	2.5	3.0	16394.114	16394.111	0.003
3	1	2	3.5	5.0	2	1	1	2.5	4.0	16390.597	16390.594	0.003
4	0	4	3.5	2.0	3	0	3	2.5	1.0	21063.560	21063.569	-0.009
4	0	4	3.5	3.0	3	0	3	2.5	2.0	21055.221	21055.246	-0.025
4	0	4	3.5	4.0	3	0	3	2.5	3.0	21054.253	21054.238	0.015
4	0	4	3.5	5.0	3	0	3	2.5	4.0	21061.594	21061.591	0.003
4	0	4	4.5	3.0	3	0	3	3.5	2.0	20997.434	20997.432	0.002
4	0	4	4.5	4.0	3	0	3	3.5	3.0	20996.985	20996.985	0.000
4	0	4	4.5	5.0	3	0	3	3.5	4.0	20998.288	20998.296	-0.008
4	0	4	4.5	6.0	3	0	3	3.5	5.0	20998.319	20998.318	0.001
4	1	4	3.5	2.0	3	1	3	2.5	1.0	20272.448	20272.448	0.000
4	1	4	3.5	3.0	3	1	3	2.5	2.0	20270.520	20270.521	-0.001
4	1	4	3.5	4.0	3	1	3	2.5	3.0	20271.736	20271.738	-0.002
4	1	4	3.5	5.0	3	1	3	2.5	4.0	20273.788	20273.789	-0.001
4	1	4	4.5	3.0	3	1	3	3.5	2.0	20337.509	20337.510	-0.001
4	1	4	4.5	4.0	3	1	3	3.5	3.0	20336.831	20336.829	0.002
4	1	4	4.5	5.0	3	1	3	3.5	4.0	20337.847	20337.849	-0.002
4	1	4	4.5	6.0	3	1	3	3.5	5.0	20339.554	20339.556	-0.002
4	1	3	3.5	3.0	3	1	2	2.5	2.0	21829.807	21829.809	-0.002
4	1	3	3.5	4.0	3	1	2	2.5	3.0	21829.483	21829.488	-0.005
4	1	3	3.5	5.0	3	1	2	2.5	4.0	21829.657	21829.656	0.001
4	1	3	4.5	3.0	3	1	2	3.5	2.0	21833.305	21833.304	0.001
4	1	3	4.5	4.0	3	1	2	3.5	3.0	21832.304	21832.303	0.001
4	1	3	4.5	5.0	3	1	2	3.5	4.0	21832.477	21832.477	0.000
4	1	3	4.5	6.0	3	1	2	3.5	5.0	21833.887	21833.886	0.001
4	1	4	3.5	4.0	3	0	3	2.5	3.0	35019.467	35019.482	-0.015
4	1	4	3.5	5.0	3	0	3	2.5	4.0	35024.565	35024.559	0.006
4	1	4	4.5	3.0	3	0	3	3.5	2.0	34771.540	34771.534	0.006
4	1	4	4.5	4.0	3	0	3	3.5	3.0	34771.074	34771.069	0.005
4	1	4	4.5	5.0	3	0	3	3.5	4.0	34773.591	34773.596	-0.005
4	1	4	4.5	6.0	3	0	3	3.5	5.0	34777.031	34777.031	0.000
5	0	5	4.5	3.0	4	0	4	3.5	2.0	26251.381	26251.373	0.008
5	0	5	4.5	4.0	4	0	4	3.5	3.0	26250.753	26250.750	0.003
5	0	5	4.5	5.0	4	0	4	3.5	4.0	26251.487	26251.489	-0.002
5	0	5	4.5	6.0	4	0	4	3.5	5.0	26251.983	26251.982	0.001
5	0	5	5.5	5.0	4	0	4	4.5	4.0	26203.239	26203.243	-0.004
5	0	5	5.5	6.0	4	0	4	4.5	5.0	26203.967	26203.968	-0.001
5	0	5	5.5	7.0	4	0	4	4.5	6.0	26204.405	26204.406	-0.001
5	1	5	5.5	4.0	4	1	4	4.5	3.0	25393.133	25393.135	-0.002
5	1	5	5.5	5.0	4	1	4	4.5	4.0	25392.870	25392.871	-0.001
5	1	5	5.5	6.0	4	1	4	4.5	5.0	25393.691	25393.691	0.000
5	1	5	5.5	7.0	4	1	4	4.5	6.0	25394.622	25394.622	0.000

N	K_a	K_c	J	F	N'	K_a'	K_c'	J'	F'	Observed	Calculated	O.-C.
5	1	4	4.5	4.0	4	1	3	3.5	3.0	27298.343	27298.347	-0.004
5	1	4	4.5	5.0	4	1	3	3.5	4.0	27298.296	27298.296	0.000
5	1	4	4.5	6.0	4	1	3	3.5	5.0	27298.449	27298.450	-0.001
5	1	4	5.5	4.0	4	1	3	4.5	3.0	27268.995	27268.996	-0.001
5	1	4	5.5	5.0	4	1	3	4.5	4.0	27268.486	27268.485	0.001
5	1	4	5.5	6.0	4	1	3	4.5	5.0	27268.723	27268.723	0.000
5	1	4	5.5	7.0	4	1	3	4.5	6.0	27269.484	27269.483	0.001
4	2	4	4.5	4.0	3	2	3	3.5	3.0	21255.194	21255.193	0.001
4	2	4	4.5	5.0	3	2	3	3.5	4.0	21254.698	21254.698	0.000
4	2	4	4.5	6.0	3	2	3	3.5	5.0	21259.686	21259.686	0.000
4	2	3	4.5	4.0	3	2	2	3.5	3.0	21188.904	21188.906	-0.002
4	2	3	4.5	5.0	3	2	2	3.5	4.0	21188.502	21188.500	0.002
4	2	3	4.5	6.0	3	2	2	3.5	5.0	21193.773	21193.773	0.000
6	0	6	5.5	5.0	5	0	5	4.5	4.0	31419.064	31419.063	0.001
6	0	6	5.5	6.0	5	0	5	4.5	5.0	31419.438	31419.436	0.002
6	0	6	5.5	7.0	5	0	5	4.5	6.0	31419.743	31419.743	0.000
6	0	6	6.5	5.0	5	0	5	5.5	4.0	31376.264	31376.263	0.001
6	0	6	6.5	6.0	5	0	5	5.5	5.0	31376.264	31376.262	0.002
6	0	6	6.5	7.0	5	0	5	5.5	6.0	31376.847	31376.847	0.000
6	0	6	6.5	8.0	5	0	5	5.5	7.0	31377.318	31377.317	0.001