Table 7: Rotational spectrum of DCN in the vibrational ground state. For each transition a calculated hyperfine-free rotational frequency is given followed by the measured hyperfine lines. Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution. Intensities were calculated for the linear and saturation experiment in absolute (given is the dimensionless intrinsic line strength) and relative units.

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
1	←	0		72414.6909(0002)					
1	1	0	1	72413.504(010)	-0.008	1.00E+00	33.33	1.00E+00	25.71
1	2	0	1	72414.933(010)	-0.004	1.67E+00	55.56	2.78E+00	71.43
1	0	0	1	72417.028(010)	0.004	3.33E-01	11.11	1.11E-01	2.86
2	←	1		144827.9960(0003)					
2	1	1	0	144826.822(005)[a]	0.002	6.67E-01	11.11	4.44E-01	4.03
3	←	2		217238.5297(0006)					
3	3	2	3	217236.999(005)	-0.004	3.33E-01	3.70	1.11E-01	0.44
3	2	2	1	217238.300(010)	0.004	1.80E+00	20.00	3.24E+00	12.73
3	3	2	2	217238.555(010)	0.017	2.67E+00	29.63	7.11E+00	27.93
3	4	2	3	217238.612(010)	0.009	3.86E+00	42.86	1.49E+01	58.43
3	2	2	3	217239.079(010)	-0.012	9.52E-03	0.11	9.07E-05	0.00
3	2	2	2	217240.622(010)	-0.004	3.33E-01	3.70	1.11E-01	0.44
4	←	3		289644.9062(0008)					
4	4	3	4	289643.313(003)	-0.004	2.50E-01	2.08	6.25E-02	0.14
4	3	3	2	289644.803(005)	-0.006	2.86E+00	23.81	8.16E+00	17.64
4	4	3	3	289644.921(005)	0.004	3.75E+00	31.25	1.41E+01	30.39
4	5	3	4	289644.957(005)	-0.005	4.89E+00	40.74	2.39E+01	51.65
4	3	3	3	289646.897(003)	0.000	2.50E-01	2.08	6.25E-02	0.14
5	←	4		362045.7401(0011)					
5	5	4	5	362044.106(010)	-0.003	2.00E-01	1.33	4.00E-02	0.05
5	4	4	3	362045.687(010)	-0.004	3.89E+00	25.93	1.51E+01	20.66
5	5	4	4	362045.773(002)	0.019	4.80E+00	32.00	2.30E+01	31.48
5	6	4	5	362045.773(002)	-0.015	5.91E+00	39.39	3.49E+01	47.71
5	4	4	4	362047.669(010)	-0.002	2.00E-01	1.33	4.00E-02	0.05
6	←	5		434439.6461(0014)					
6	6	5	6	434437.985(005)	0.002	1.67E-01	0.93	2.78E-02	0.03
6	6/7	5	6/6	434438.830(003)	0.006			2.16E-02	0.02
6	6/6	5	6/5	434438.830(003)	0.006			2.07E-02	0.02
6	6	5	5	434439.671(003)	0.008	5.83E+00	32.41	3.40E+01	32.05
6	7	5	6	434439.671(003)	-0.020	6.92E+00	38.46	4.79E+01	45.14
6	6/5	5	5/5	434440.593(003)	0.003			8.08E-03	0.01
6	5/5	5	5/4	434440.593(003)	0.003			5.46E-03	0.01
6	5	5	5	434441.536(005)	-0.001	1.67E-01	0.93	2.78E-02	0.03
7	←	6		506825.2394(0019)					
7	7	6	7	506823.555(005)	0.004	1.43E-01	0.68	2.04E-02	0.01
7	7/8	6	7/7	506824.406(005)	0.000			5.60E-02	0.04
7	7/7	6	7/6	506824.406(005)	0.000			5.26E-02	0.04
7	6	6	5	506825.255(010)	0.028	5.92E+00	28.21	3.51E+01	24.15
7	7	6	6	506825.255(010)	-0.004	6.86E+00	32.65	4.70E+01	32.37
7	8	6	7	506825.255(010)	-0.028	7.93E+00	37.78	6.29E+01	43.33
7	7/6	6	6/6	506826.176(005)	0.003			3.26E-02	0.02
7	6/6	6	6/5	506826.176(005)	0.003			2.51E-02	0.02

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
7	6	6	6	506827.095(005)	-0.006	1.43E-01	0.68	2.04E-02	0.01
8	←	7		579201.1351(0024)					
8	8	7	8	579199.427(010)	0.002	1.25E-01	0.52	1.56E-02	0.01
8	8/9	7	8/8	579200.292(010)	0.000			1.05E-01	0.06
8	8/8	7	8/7	579200.292(010)	0.000			9.84E-02	0.05
8	7	7	6	579201.154(010)	0.022	6.93E+00	28.89	4.81E+01	25.25
8	8	7	7	579201.154(010)	-0.003	7.88E+00	32.81	6.20E+01	32.57
8	9	7	8	579201.154(010)	-0.024	8.94E+00	37.25	7.99E+01	41.98
8	8/7	7	7/7	579202.062(005)	0.002			7.79E-02	0.04
8	7/7	7	7/6	579202.062(005)	0.002			6.40E-02	0.03
8	7	7	7	579202.969(010)	-0.006	1.25E-01	0.52	1.56E-02	0.01
9	←	8		651565.9490(0030)					
9	9	8	9	651564.220(005)	-0.001	1.11E-01	0.41	1.23E-02	0.01
9	9/10	8	9/ 9	651565.095(005)	-0.003			1.64E-01	0.07
9	9/9	8	9/8	651565.095(005)	-0.003			1.53E-01	0.06
9	8	8	7	651565.972(005)	0.019	7.94E+00	29.41	6.31E+01	26.10
9	9	8	8	651565.972(005)	-0.001	8.89E+00	32.92	7.90E+01	32.70
9	10	8	9	651565.972(005)	-0.021	9.95E+00	36.84	9.90E+01	40.95
9	9/8	8	8/8	651566.872(005)	0.005			1.39E-01	0.06
9	8/8	8	8/7	651566.872(005)	0.005			1.19E-01	0.05
9	8	8	8	651567.768(010)	-0.003	1.11E-01	0.41	1.23E-02	0.01
10	←	9		723918.2973(0038)					
10	10/11	9	10/10	723917.439(010)	0.000			2.26E-01	0.08
10	10/10	9	10/ 9	723917.439(010)	0.000			2.11E-01	0.07
10	9	9	8	723918.320(010)	0.013	8.95E+00	29.82	8.01E+01	26.79
10	10	9	9	723918.320(010)	-0.004	9.90E+00	33.00	9.80E+01	32.79
10	11	9	10	723918.320(010)	-0.022	1.10E+01	36.51	1.20E+02	40.14
10	10/9	9	9/9	723919.211(010)	0.001			2.08E-01	0.07
10	9/9	9	9/8	723919.211(010)	0.001			1.83E-01	0.06
11	←	10		796256.7964(0048)					
11	11/12	10	11/11	796255.935(010)	0.004			2.88E-01	0.08
11	11/11	10	11/10	796255.935(010)	0.004			2.69E-01	0.07
11	10	10	9	796256.825(010)	0.014	9.95E+00	30.16	9.90E+01	27.35
11	11	10	10	796256.825(010)	0.000	1.09E+01	33.06	1.19E+02	32.86
11	12	10	11	796256.825(010)	-0.018	1.20E+01	36.23	1.43E+02	39.48
12	←	11		868580.0636(0059)					
12	11	11	10	868580.091(010)	0.009	1.10E+01	30.43	1.20E+02	27.83
12	12	11	11	868580.091(010)	-0.004	1.19E+01	33.10	1.42E+02	32.92
12	13	11	12	868580.091(010)	-0.020	1.30E+01	36.00	1.68E+02	38.94
13	←	12		940886.7165(0073)					
13	12	12	11	940886.755(010)	0.017	1.20E+01	30.67	1.43E+02	28.24
13	13	12	12	940886.755(010)	0.005	1.29E+01	33.14	1.67E+02	32.97
13	14	12	13	940886.755(010)	-0.011	1.40E+01	35.80	1.95E+02	38.49
26	←	25		1878733.7425(0679)					
26	26	25	26	1878733.728(050)	1.955	3.85E-02	0.05	1.48E-03	0.00
26	25	25	24	1878733.728(050)	-0.065	2.50E+01	32.03	6.24E+02	30.75
26	26	25	25	1878733.728(050)	-0.069	2.60E+01	33.28	6.74E+02	33.22
26	27	25	26	1878733.728(050)	-0.084	2.70E+01	34.59	7.28E+02	35.88

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
26	25	25	25	1878733.728(050)	-1.723	3.85E-02	0.05	1.48E-03	0.00
27	←	26		1950663.1048(0782)					
27	27	26	27	1950663.153(050)	2.033	3.70E-02	0.05	1.37E-03	0.00
27	26	26	25	1950663.153(050)	-0.003	2.60E+01	32.08	6.75E+02	30.85
27	27	26	26	1950663.153(050)	-0.007	2.70E+01	33.29	7.27E+02	33.22
27	28	26	27	1950663.153(050)	-0.023	2.80E+01	34.55	7.83E+02	35.78
27	26	26	26	1950663.153(050)	-1.658	3.70E-02	0.05	1.37E-03	0.00

Table 8:Rotational spectrum of DCN in the first excited vibrational state $v_2=1^{e,f}$. For each transition a calculated hyperfine-free rotational frequency is given followed by the measured hyperfine lines. Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution. Intensities were calculated for the linear and saturation experiment in absolute (given is the dimensionless intrinsic line strength) and relative units.

J‘	*F*‘	*J*“	*F*“	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs,\ lin}$	$I_{rel,\ lin}$	$I_{abs,\ sat}$	$I_{rel,\ sat}$
2	←	1	(e)	144974.2984(0004)					
2	2	1	1	144973.180(150)[b]	0.081	1.7E+01	12.50	2.8E+02	10.12
2	1	1	1	144974.640(100)[b]	0.444	5.6E+00	4.17	3.2E+01	1.12
2	3	1	2	144974.640(100)[b]	0.046	3.2E+01	23.33	9.9E+02	35.27
2	1	1	0	144976.170(100)[b]	0.037	7.5E+00	5.56	5.6E+01	2.00
2	←	1	(f)	145718.9907(0004)					
2	2	1	1	145717.850(150)[b]	0.059	1.7E+01	12.50	2.8E+02	10.12
2	1	1	1	145719.280(100)[b]	0.219	5.6E+00	4.17	3.2E+01	1.12
2	3	1	2	145719.280(100)[b]	-0.014	3.2E+01	23.33	9.9E+02	35.27
2	1	1	0	145720.760(100)[b]	0.021	7.5E+00	5.56	5.6E+01	2.00
3	←	2	(e)	217457.9237(0006)					
3	3	2	3	217456.888(010)	0.004	1.0E+01	1.85	1.1E+02	0.22
3	3	2	2	217457.624(005)	0.000	8.3E+01	14.81	6.9E+03	13.89
3	2	2	1	217458.053(010)	0.008	5.6E+01	10.00	3.1E+03	6.33
3	4	2	3	217458.053(010)	-0.006	1.2E+02	21.43	1.4E+04	29.07
3	2	2	2	217459.138(010)	-0.004	1.0E+01	1.85	1.1E+02	0.22
3	←	2	(f)	218574.8302(0006)					
3	3	2	3	218573.685(010)	0.006	1.0E+01	1.85	1.1E+02	0.22
3	3	2	2	218574.532(010)	0.002	8.3E+01	14.81	6.9E+03	13.89
3	2	2	1	218574.965(010)	0.031	5.6E+01	10.00	3.1E+03	6.33
3	4	2	3	218574.964(010)	-0.005	1.2E+02	21.43	1.4E+04	29.07
3	2	2	2	218576.214(010)	0.010	1.0E+01	1.85	1.1E+02	0.22
4	←	3	(e)	289937.3207(0008)					
4	4	3	4	289936.026(010)	0.000	1.5E+01	1.04	2.2E+02	0.07
4	4	3	3	289937.199(003)	-0.001	2.2E+02	15.62	4.9E+04	15.18
4	3	3	2	289937.326(003)	0.000	1.7E+02	11.90	2.8E+04	8.81
4	5	3	4	289937.404(003)	0.005	2.9E+02	20.37	8.3E+04	25.80
4	3	3	3	289938.837(005)	-0.007	1.5E+01	1.04	2.2E+02	0.07
4	←	3	(f)	291426.2830(0008)					
4	4	3	4	291424.874(010)	0.001	1.5E+01	1.04	2.2E+02	0.07
4	4	3	3	291426.152(003)	-0.011	2.2E+02	15.62	4.9E+04	15.18
4	3	3	2	291426.269(003)	-0.012	1.7E+02	11.90	2.8E+04	8.81
4	5	3	4	291426.357(003)	-0.007	2.9E+02	20.37	8.3E+04	25.80
4	3	3	3	291427.945(010)	-0.010	1.5E+01	1.04	2.2E+02	0.07
6	←	5	(e)	434877.7926(0015)					
6	6	5	6	434876.278(010)	0.006	2.3E+01	0.46	5.4E+02	0.01
6	6/ 7	5	6/ 6	434877.033(005)	-0.002			1.4E+02	0.00
6	6/ 6	5	6/ 5	434877.033(005)	-0.002			1.8E+02	0.00
6	6	5	5	434877.780(050)	0.022	8.1E+02	16.20	6.6E+05	16.01
6	5	5	4	434877.780(050)	0.004	6.8E+02	13.64	4.7E+05	11.34
6	7	5	6	434877.830(050)	-0.001	9.6E+02	19.23	9.3E+05	22.54
6	6/ 5	5	5/ 5	434878.615(005)	-0.001			4.1E+01	0.00
6	5/ 5	5	5/ 4	434878.615(005)	-0.001			3.6E+01	0.00

J'	*F*'	*J*"	*F*"	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
6	5	5	5	434879.460(010)	-0.006	2.3E+01	0.46	5.4E+02	0.01
6	←	5	(f)	437110.1809(0015)					
6	6	5	6	437108.550(010)	0.009	2.3E+01	0.46	5.4E+02	0.01
6	6/ 7	5	6/ 6	437109.361(005)	-0.003			2.0E+03	0.05
6	6/ 6	5	6/ 5	437109.361(005)	-0.003			2.2E+03	0.05
6	6	5	5	437110.159(050)	0.013	8.1E+02	16.20	6.6E+05	16.01
6	5	5	4	437110.159(050)	-0.003	6.8E+02	13.64	4.7E+05	11.34
6	7	5	6	437110.230(050)	0.009	9.6E+02	19.23	9.3E+05	22.54
6	6/ 5	5	5/ 5	437111.076(005)	0.001			1.2E+03	0.03
6	5/ 5	5	5/ 4	437111.076(005)	0.001			1.1E+03	0.03
6	5	5	5	437111.992(010)	-0.004	2.3E+01	0.46	5.4E+02	0.01
7	←	6	(e)	507336.0498(0020)					
7	7/ 8	6	7/ 7	507335.253(010)	-0.009			8.2E+02	0.01
7	7/ 7	6	7/ 6	507335.253(010)	-0.009			8.8E+02	0.01
7	7	6	6	507336.054(003)	0.026	1.3E+03	16.33	1.7E+06	16.17
7	6	6	5	507336.054(003)	0.020	1.1E+03	14.10	1.3E+06	12.06
7	8	6	7	507336.054(003)	-0.026	1.5E+03	18.89	2.3E+06	21.64
7	7/ 6	6	6/ 6	507336.900(010)	0.014			3.9E+02	0.00
7	6/ 6	6	6/ 5	507336.900(010)	0.014			3.4E+02	0.00
7	←	6	(f)	509939.7034(0020)					
7	7/ 8	6	7/ 7	509938.845(010)	-0.011			6.1E+03	0.06
7	7/ 7	6	7/ 6	509938.845(010)	-0.011			6.1E+03	0.06
7	7	6	6	509939.700(010)	0.019	1.3E+03	16.33	1.7E+06	16.17
7	6	6	5	509939.700(010)	0.015	1.1E+03	14.10	1.3E+06	12.06
7	8	6	7	509939.700(010)	-0.035	1.5E+03	18.89	2.3E+06	21.64
7	7/ 6	6	6/ 6	509940.619(010)	0.010			4.5E+03	0.04
7	6/ 6	6	6/ 5	509940.619(010)	0.010			4.0E+03	0.04
8	←	7	(e)	579784.4432(0025)					
8	8/ 9	7	8/ 8	579783.628(010)	-0.005			3.1E+03	0.01
8	8/ 8	7	8/ 7	579783.628(010)	-0.005			3.1E+03	0.01
8	7	7	6	579784.448(005)	0.020	1.7E+03	14.44	3.0E+06	12.61
8	8	7	7	579784.448(005)	0.020	2.0E+03	16.41	3.9E+06	16.27
8	9	7	8	579784.448(005)	-0.021	2.2E+03	18.63	5.0E+06	20.98
8	8/ 7	7	7/ 7	579785.295(010)	0.010			2.0E+03	0.01
8	7/ 7	7	7/ 6	579785.295(010)	0.010			1.7E+03	0.01
8	←	7	(f)	582758.9941(0025)					
8	8/ 9	7	8/ 8	582758.120(005)	-0.003			1.5E+04	0.06
8	8/ 8	7	8/ 7	582758.120(005)	-0.003			1.4E+04	0.06
8	7	7	6	582758.991(005)	0.013	1.7E+03	14.44	3.0E+06	12.61
8	8	7	7	582758.991(005)	0.012	2.0E+03	16.41	3.9E+06	16.27
8	9	7	8	582758.991(005)	-0.029	2.2E+03	18.63	5.0E+06	20.98
8	8/ 7	7	7/ 7	582759.910(005)	0.005			1.3E+04	0.05
8	7/ 7	7	7/ 6	582759.910(005)	0.005			1.1E+04	0.05
9	←	8	(e)	652221.5649(0032)					
9	9/10	8	9/ 9	652220.735(005)	-0.002			8.6E+03	0.02
9	9/ 9	8	9/ 8	652220.735(005)	-0.002			8.4E+03	0.02
9	8	8	7	652221.566(005)	0.015	2.5E+03	14.71	6.4E+06	13.04
9	9	8	8	652221.566(005)	0.012	2.8E+03	16.46	8.0E+06	16.34
9	10	8	9	652221.566(005)	-0.021	3.2E+03	18.42	1.0E+07	20.46

J'	F'	J''	F''	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
9	9/ 8	8	8/ 8	652222.413(005)	0.004			6.7E+03	0.01
9	8/ 8	8	8/ 7	652222.413(005)	0.004			5.9E+03	0.01
9	8	8	8	652223.269(005)	0.004	3.5E+01	0.21	1.3E+03	0.00
9	←	8	(f)	655566.5929(0032)					
9	9	8	9	655564.821(020)	0.013	3.5E+01	0.21	1.3E+03	0.00
9	9/10	8	9/ 9	655565.707(005)	0.003			3.1E+04	0.06
9	9/ 9	8	9/ 8	655565.707(005)	0.003			3.0E+04	0.06
9	8	8	7	655566.592(005)	0.014	2.5E+03	14.71	6.4E+06	13.04
9	9	8	8	655566.592(005)	0.010	2.8E+03	16.46	8.0E+06	16.34
9	10	8	9	655566.592(005)	-0.023	3.2E+03	18.42	1.0E+07	20.46
9	9/ 8	8	8/ 8	655567.501(005)	-0.004			2.9E+04	0.06
9	8/ 8	8	8/ 7	655567.501(005)	-0.004			2.6E+04	0.05
9	8	8	8	655568.411(020)	-0.020	3.5E+01	0.21	1.3E+03	0.00
10	←	9	(e)	724646.0071(0040)					
10	10/11	9	10/10	724645.165(010)	0.001			2.0E+04	0.02
10	10/10	9	10/ 9	724645.165(010)	0.001			1.9E+04	0.02
10	9	9	8	724646.016(003)	0.021	3.5E+03	14.91	1.2E+07	13.39
10	10	9	9	724646.016(003)	0.017	3.9E+03	16.50	1.5E+07	16.39
10	11	9	10	724646.016(003)	-0.011	4.3E+03	18.25	1.9E+07	20.06
10	10/ 9	9	9/ 9	724646.854(010)	0.003			1.8E+04	0.02
10	9/ 9	9	9/ 8	724646.854(010)	0.003			1.6E+04	0.02
10	←	9	(f)	728361.0404(0040)					
10	10/11	9	10/10	728360.140(010)	0.004			5.8E+04	0.06
10	10/10	9	10/ 9	728360.140(010)	0.004			5.5E+04	0.06
10	9	9	8	728361.040(003)	0.013	3.5E+03	14.91	1.2E+07	13.39
10	10	9	9	728361.040(003)	0.008	3.9E+03	16.50	1.5E+07	16.39
10	11	9	10	728361.040(003)	-0.020	4.3E+03	18.25	1.9E+07	20.06
10	10/ 9	9	9/ 9	728361.947(010)	-0.006			5.6E+04	0.06
10	9/ 9	9	9/ 8	728361.947(010)	-0.006			5.1E+04	0.05
12	←	11	(e)	869451.2255(0062)					
12	11	11	10	869451.229(010)	0.014	6.3E+03	15.22	3.9E+07	13.91
12	12	11	11	869451.229(010)	0.009	6.8E+03	16.55	4.6E+07	16.46
12	13	11	12	869451.229(010)	-0.013	7.4E+03	18.00	5.5E+07	19.47
12	←	11	(f)	873904.6485(0062)					
12	11	11	10	873904.644(010)	0.007	6.3E+03	15.22	3.9E+07	13.91
12	12	11	11	873904.644(010)	0.001	6.8E+03	16.55	4.6E+07	16.46
12	13	11	12	873904.644(010)	-0.021	7.4E+03	18.00	5.5E+07	19.47
13	←	12	(e)	941829.1893(0076)					
13	12	12	11	941829.188(010)	0.009	8.0E+03	15.33	6.4E+07	14.12
13	13	12	12	941829.188(010)	0.003	8.7E+03	16.57	7.5E+07	16.48
13	14	12	13	941829.188(010)	-0.017	9.4E+03	17.90	8.8E+07	19.24
13	←	12	(f)	946650.8945(0076)					
13	12	12	11	946650.894(010)	0.010	8.0E+03	15.33	6.4E+07	14.12
13	13	12	12	946650.894(010)	0.004	8.7E+03	16.57	7.5E+07	16.48
13	14	12	13	946650.894(010)	-0.016	9.4E+03	17.90	8.8E+07	19.24
26	←	25	(e)	1880566.6355(0708)					
26	26	25	26	1880566.580(050)	1.926	1.0E+02	0.02	1.1E+04	0.00

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
26	25	25	24	1880566.580(050)	-0.046	6.7E+04	16.01	4.5E+09	15.38
26	26	25	25	1880566.580(050)	-0.049	7.0E+04	16.64	4.9E+09	16.61
26	27	25	26	1880566.580(050)	-0.064	7.3E+04	17.30	5.3E+09	17.94
26	25	25	25	1880566.580(050)	-1.683	1.0E+02	0.02	1.1E+04	0.00
26	←	25	(f)	1890096.7719(0708)					
26	26	25	26	1890096.785(050)	2.119	1.0E+02	0.02	1.1E+04	0.00
26	25	25	24	1890096.785(050)	0.019	6.7E+04	16.01	4.5E+09	15.38
26	26	25	25	1890096.785(050)	0.017	7.0E+04	16.64	4.9E+09	16.61
26	27	25	26	1890096.785(050)	0.001	7.3E+04	17.30	5.3E+09	17.94
26	25	25	25	1890096.785(050)	-1.750	1.0E+02	0.02	1.1E+04	0.00
27	←	26	(e)	1952560.8553(0816)					
27	27	26	27	1952560.822(050)	1.966	1.1E+02	0.02	1.2E+04	0.00
27	26	26	25	1952560.822(050)	-0.023	7.6E+04	16.04	5.7E+09	15.42
27	27	26	26	1952560.822(050)	-0.025	7.8E+04	16.64	6.2E+09	16.61
27	28	26	27	1952560.822(050)	-0.041	8.1E+04	17.27	6.6E+09	17.89
27	26	26	26	1952560.822(050)	-1.658	1.1E+02	0.02	1.2E+04	0.00
27	←	26	(f)	1962445.4406(0816)					
27	27	26	27	1962445.400(050)	2.081	1.1E+02	0.02	1.2E+04	0.00
27	26	26	25	1962445.400(050)	-0.035	7.6E+04	16.04	5.7E+09	15.42
27	27	26	26	1962445.400(050)	-0.037	7.8E+04	16.64	6.2E+09	16.61
27	28	26	27	1962445.400(050)	-0.053	8.1E+04	17.27	6.6E+09	17.89
27	26	26	26	1962445.400(050)	-1.801	1.1E+02	0.02	1.2E+04	0.00

Table 9: Table of the experimental direct *l* – type transitions in the first excited bending state of DCN used in the fit. For each transition a calculated hyperfine-free rotational frequency is given followed by the measured hyperfine lines. Please note that the hyperfine structure has not been resolved in all measurements. Intensities were calculated for the linear and saturation experiment in absolute (given is the dimensionless intrinsic line strength) and relative units.

J' *l'* =*1*[f]	*F'*	*J"* *l"*=*1*[e]	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$	Ref.
5	←	5		5583.7408(0011)						
5	5	5	5	5583.658(010)[c]	0.003	6.60E+02	31.15	4.35E+05	31.02	c
5	6	5	6	5583.776(010)[c]	0.002	8.11E+02	38.30	6.58E+05	46.90	c
5	4	5	4	5583.806(010)[c]	0.007	5.54E+02	26.18	3.07E+05	21.92	c
6	←	6		7816.1292(0016)						
6	6	6	6	7816.048(010)[c]	0.005	1.10E+03	31.76	1.22E+06	31.70	c
6	7	6	7	7816.166(010)[c]	0.002	1.31E+03	37.68	1.72E+06	44.60	c
6	5	6	5	7816.190(010)[c]	0.006	9.53E+02	27.42	9.09E+05	23.62	c
7	←	7		10419.7828(0023)						
7	7	7	7	10419.703(010)[c]	0.006	1.71E+03	32.15	2.92E+06	32.12	c
7	8	7	8	10419.825(010)[c]	0.006	1.98E+03	37.19	3.91E+06	42.96	c
7	6	7	6	10419.841(010)[c]	0.005	1.50E+03	28.30	2.26E+06	24.88	c
8	←	8		13394.3336(0031)						
8	8	8	8	13394.253(010)[c]	0.005	2.50E+03	32.41	6.24E+06	32.39	c
8	9	8	9	13394.385(010)[c]	0.015	2.84E+03	36.79	8.04E+06	41.74	c
8	7	8	7	13394.385(010)[c]	-0.001	2.23E+03	28.95	4.98E+06	25.84	c
9	←	9		16739.3616(0041)						
9	9	9	9	16739.278(010)[c]	0.002	3.49E+03	32.60	1.22E+07	32.58	c
9	10	9	10	16739.416(010)[c]	0.017	3.91E+03	36.47	1.53E+07	40.79	c
9	8	9	8	16739.416(010)[c]	0.003	3.16E+03	29.46	9.97E+06	26.61	c
10	←	10		20454.3950(0053)						
10	10	10	10	20454.400(050)[d]	0.091	4.72E+03	32.73	2.23E+07	32.72	d
10	11	10	11	20454.400(050)[d]	-0.033	5.23E+03	36.21	2.73E+07	40.04	d
10	9	10	9	20454.400(050)[d]	-0.045	4.31E+03	29.86	1.86E+07	27.23	d
11	←	11		24538.9103(0067)						
11	11	11	11	24538.920(050)[e]	0.096	6.21E+03	32.83	3.85E+07	32.82	e
11	12	11	12	24538.920(050)[e]	-0.028	6.80E+03	35.98	4.63E+07	39.42	e
11	10	11	10	24538.920(050)[e]	-0.040	5.71E+03	30.18	3.26E+07	27.74	e
12	←	12		28992.3332(0085)						
12	12	12	12	28992.370(040)[e]	0.123	7.97E+03	32.91	6.36E+07	32.90	e
12	13	12	13	28992.370(040)[e]	-0.002	8.67E+03	35.79	7.52E+07	38.91	e
12	11	12	11	28992.370(040)[e]	-0.012	7.38E+03	30.45	5.45E+07	28.18	e
13	←	13		33814.0384(0106)						
13	13	13	13	33814.030(050)	0.078	1.00E+04	32.97	1.01E+08	32.96	e
13	14	13	14	33814.030(050)	-0.047	1.09E+04	35.62	1.18E+08	38.48	e
13	12	13	12	33814.030(050)	-0.056	9.35E+03	30.68	8.74E+07	28.55	e
14	←	14		39003.3501(0131)						
14	14	14	14	39003.360(050)	0.097	1.24E+04	33.02	1.55E+08	33.01	e
14	15	14	15	39003.360(050)	-0.028	1.34E+04	35.47	1.79E+08	38.11	e
14	13	14	13	39003.360(050)	-0.037	1.16E+04	30.88	1.35E+08	28.87	e

J' *l'* =1^f^	*F'*	*J"* *l"*=1^e^	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$	Ref.
15	←	15		44559.5425(0161)						
15	15	15	15	44559.550(050)	0.095	1.52E+04	33.06	2.31E+08	33.05	e
15	16	15	16	44559.550(050)	-0.031	1.62E+04	35.35	2.64E+08	37.79	e
15	14	15	14	44559.550(050)	-0.039	1.43E+04	31.04	2.03E+08	29.15	e
16	←	16		50481.8401(0195)						
16	16	16	16	50481.790(080)	0.038	1.83E+04	33.09	3.35E+08	33.09	e
16	17	16	17	50481.790(080)	-0.088	1.95E+04	35.23	3.80E+08	37.51	e
16	15	16	15	50481.790(080)	-0.096	1.73E+04	31.19	2.98E+08	29.40	e
17	←	17		56769.4181(0236)						
17	17	17	17	56769.320(080)	-0.010	2.18E+04	33.12	4.77E+08	33.11	e
17	18	17	18	56769.320(080)	-0.136	2.32E+04	35.13	5.37E+08	37.26	e
17	16	17	16	56769.320(080)	-0.143	2.07E+04	31.32	4.27E+08	29.62	e
18	←	18		63421.4033(0283)						
18	18	18	18	63421.280(080)	-0.035	2.58E+04	33.14	6.65E+08	33.14	e
18	19	18	19	63421.280(080)	-0.161	2.73E+04	35.04	7.43E+08	37.04	e
18	17	18	17	63421.280(080)	-0.168	2.45E+04	31.43	5.98E+08	29.82	e
19	←	19		70436.8739(0338)						
19	19	19	19	70436.843(050)	0.058	3.02E+04	33.16	9.11E+08	33.16	
19	20	19	20	70436.843(050)	-0.068	3.18E+04	34.96	1.01E+09	36.85	
19	18	19	18	70436.843(050)	-0.075	2.87E+04	31.54	8.24E+08	29.99	
20	←	20		77814.8607(0401)						
20	20	20	20	77814.839(050)	0.067	3.51E+04	33.17	1.23E+09	33.17	
20	21	20	21	77814.839(050)	-0.059	3.69E+04	34.88	1.36E+09	36.67	
20	19	20	19	77814.839(050)	-0.066	3.34E+04	31.63	1.12E+09	30.15	
22	←	22		93654.2709(0556)						
22	22	22	22	93654.257(050)	0.074	4.63E+04	33.20	2.14E+09	33.20	
22	23	22	23	93654.257(050)	-0.052	4.85E+04	34.75	2.35E+09	36.37	
22	21	22	21	93654.257(050)	-0.058	4.43E+04	31.79	1.97E+09	30.43	
23	←	23		102113.5228(0651)						
23	22	23	22	102113.517(050)	-0.051	5.06E+04	31.85	2.56E+09	30.55	
23	23	23	23	102113.517(050)	0.081	5.27E+04	33.21	2.78E+09	33.21	
23	24	23	24	102113.517(050)	-0.045	5.51E+04	34.69	3.03E+09	36.24	
24	←	24		110930.9492(0759)						
24	23	24	23	110930.983(050)	-0.013	5.74E+04	31.92	3.29E+09	30.66	
24	24	24	24	110930.983(050)	0.119	5.97E+04	33.22	3.57E+09	33.22	
24	25	24	25	110930.983(050)	-0.007	6.23E+04	34.64	3.88E+09	36.11	

Table 10: Rotational spectrum of $D^{13}CN$ in the vibrational ground state. For each transition a calculated hyperfine-free rotational frequency is given followed by the measured hyperfine lines. Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution. Intensities were calculated for the linear and saturation experiment in absolute (given is the dimensionless intrinsic line strength) and relative units.

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
1	←	0		71175.0667(0002)					
1	1	0	1	71173.890(010)	0.001	1.00E+00	33.33	1.00E+00	25.71
1	2	0	1	71175.318(010)	0.006	1.67E+00	55.56	2.78E+00	71.43
1	0	0	1	71177.411(010)	0.008	3.33E-01	11.11	1.11E-01	2.86
2	←	1		142348.7996(0005)					
2	2	1	2	142347.540(030)[f]	0.157	5.00E-01	8.33	2.50E-01	2.27
2	1	1	0	142347.540(030)[f]	-0.085	6.67E-01	11.11	4.44E-01	4.03
2	2	1	1	142348.883(030)[f]	0.077	1.50E+00	25.00	2.25E+00	20.39
2	3	1	2	142348.883(030)[f]	-0.031	2.80E+00	46.67	7.84E+00	71.04
2	1	1	1	142351.129(030)[f]	-0.010	5.00E-01	8.33	2.50E-01	2.27
3	←	2		213519.8648(0008)					
3	3	2	3	213518.338(005)	-0.005	3.33E-01	3.70	1.11E-01	0.44
3	2	2	1	213519.622(005)	-0.010	1.80E+00	20.00	3.24E+00	12.73
3	3	2	2	213519.865(010)	-0.009	2.67E+00	29.63	7.11E+00	27.93
3	4	2	3	213519.936(005)	-0.001	3.86E+00	42.86	1.49E+01	58.43
3	2	2	2	213521.965(005)	-0.001	3.33E-01	3.70	1.11E-01	0.44
4	←	3		284686.9284(0011)					
4	3	3	2	284686.822(005)	-0.011	2.86E+00	23.81	8.16E+00	17.64
4	4	3	3	284686.935(010)	-0.005	3.75E+00	31.25	1.41E+01	30.39
4	5	3	4	284686.977(005)	-0.007	4.89E+00	40.74	2.39E+01	51.66
5	←	4		355848.6571(0015)					
5	5	4	5	355847.038(003)	0.004	2.00E-01	1.33	4.00E-02	0.05
5	5/6	4	5/5	355847.858(005)	0.003			4.07E-03	0.01
5	5/5	4	5/4	355847.858(005)	0.003			4.11E-03	0.01
5	4	4	3	355848.612(005)	0.002	3.89E+00	25.93	1.51E+01	20.66
5	5	4	4	355848.703(010)	0.031	4.80E+00	32.00	2.30E+01	31.48
5	6	4	5	355848.703(010)	-0.001	5.91E+00	39.39	3.49E+01	47.71
5	4	4	4	355850.600(003)	0.005	2.00E-01	1.33	4.00E-02	0.05
6	←	5		427003.7172(0020)					
6	6	5	6	427002.064(005)	0.000	1.67E-01	0.93	2.78E-02	0.03
6	6/7	5	6/6	427002.908(005)	0.007			1.99E-02	0.02
6	6/6	5	6/5	427002.908(005)	0.007			1.89E-02	0.02
6	5	5	4	427003.737(020)	0.044	4.91E+00	27.27	2.41E+01	22.70
6	6	5	5	427003.737(020)	0.003	5.83E+00	32.41	3.40E+01	32.05
6	7	5	6	427003.737(020)	-0.024	6.92E+00	38.46	4.79E+01	45.14
6	6/5	5	5/5	427004.675(020)	0.009			6.50E-03	0.01
6	5/5	5	5/4	427004.675(020)	0.009			4.38E-03	0.00
6	5	5	5	427005.616(005)	0.000	1.67E-01	0.93	2.78E-02	0.03
7	←	6		498150.7756(0026)					
7	7	6	7	498149.097(005)	-0.002	1.43E-01	0.68	2.04E-02	0.01
7	7/8	6	7/7	498149.953(010)	0.005			5.30E-02	0.04
7	7/7	6	7/6	498149.953(010)	0.005			4.95E-02	0.03
7	6	6	5	498150.799(010)	0.034	5.92E+00	28.21	3.51E+01	24.15

J'	F'	J''	F''	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
7	7	6	6	498150.799(010)	0.004	6.86E+00	32.65	4.70E+01	32.37
7	8	6	7	498150.799(010)	-0.019	7.93E+00	37.78	6.29E+01	43.33
7	7/6	6	6/6	498151.720(010)	0.006			2.78E-02	0.02
7	6/6	6	6/5	498151.720(010)	0.006			2.14E-02	0.01
7	6	6	6	498152.643(005)	-0.004	1.43E-01	0.68	2.04E-02	0.01
8	←	7		569288.4994(0033)					
8	8	7	8	569286.800(005)	-0.003	1.25E-01	0.52	1.56E-02	0.01
8	8/9	7	8/8	569287.662(005)	-0.001			1.02E-01	0.05
8	8/8	7	8/7	569287.662(005)	-0.001			9.44E-02	0.05
8	7	7	6	569288.519(005)	0.021	6.93E+00	28.89	4.81E+01	25.25
8	8	7	7	569288.519(005)	-0.003	7.88E+00	32.81	6.20E+01	32.57
8	9	7	8	569288.519(005)	-0.022	8.94E+00	37.25	7.99E+01	41.99
8	8/7	7	7/7	569289.435(005)	0.005			6.90E-02	0.04
8	7/7	7	7/6	569289.435(005)	0.005			5.67E-02	0.03
8	7	7	7	569290.339(005)	-0.010	1.25E-01	0.52	1.56E-02	0.01
9	←	8		640415.5559(0042)					
9	9	8	9	640413.840(010)	-0.002	1.11E-01	0.41	1.23E-02	0.01
9	9/10	8	9/ 9	640414.713(005)	0.001			1.60E-01	0.07
9	9/9	8	9/8	640414.713(005)	0.001			1.49E-01	0.06
9	8	8	7	640415.587(005)	0.026	7.94E+00	29.41	6.31E+01	26.10
9	9	8	8	640415.587(005)	0.006	8.89E+00	32.92	7.90E+01	32.70
9	10	8	9	640415.587(005)	-0.011	9.95E+00	36.84	9.90E+01	40.96
9	9/8	8	8/8	640416.482(005)	0.002			1.26E-01	0.05
9	8/8	8	8/7	640416.482(005)	0.002			1.08E-01	0.04
9	8	8	8	640417.378(010)	-0.011	1.11E-01	0.41	1.23E-02	0.01
10	←	9		711530.6130(0053)					
10	10/11	9	10/10	711529.756(020)	-0.007			2.22E-01	0.07
10	10/10	9	10/ 9	711529.756(020)	-0.007			2.07E-01	0.07
10	9	9	8	711530.641(005)	0.017	8.95E+00	29.82	8.01E+01	26.79
10	10	9	9	711530.641(005)	0.001	9.90E+00	33.00	9.80E+01	32.80
10	11	9	10	711530.641(005)	-0.015	1.10E+01	36.51	1.20E+02	40.14
10	9/10	9	9/ 9	711531.535(020)	0.003			1.93E-01	0.06
10	9/9	9	9/8	711531.535(020)	0.003			1.69E-01	0.06
11	←	10		782632.3387(0065)					
11	11/12	10	11/11	782631.477(020)	-0.006			2.85E-01	0.08
11	11/11	10	11/10	782631.477(020)	-0.006			2.66E-01	0.07
11	10	10	9	782632.367(005)	0.013	9.95E+00	30.16	9.90E+01	27.36
11	11	10	10	782632.367(005)	-0.001	1.09E+01	33.06	1.19E+02	32.87
11	12	10	11	782632.367(005)	-0.016	1.20E+01	36.23	1.43E+02	39.48
11	11/10	10	10/10	782633.249(020)	-0.004			2.62E-01	0.07
11	10/10	10	10/ 9	782633.249(020)	-0.004			2.34E-01	0.06
12	←	11		853719.4017(0081)					
12	11	11	10	853719.433(020)	0.013	1.10E+01	30.43	1.20E+02	27.83
12	12	11	11	853719.433(020)	0.000	1.19E+01	33.10	1.42E+02	32.92
12	13	11	12	853719.433(020)	-0.014	1.30E+01	36.00	1.68E+02	38.94
13	←	12		924790.4711(0099)					
13	12	12	11	924790.489(020)	-0.004	1.20E+01	30.67	1.43E+02	28.24
13	13	12	12	924790.489(020)	-0.015	1.29E+01	33.14	1.67E+02	32.97
13	14	12	13	924790.489(020)	-0.029	1.40E+01	35.80	1.95E+02	38.49

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs,\ lin}$	$I_{rel,\ lin}$	$I_{abs,\ sat}$	$I_{rel,\ sat}$
27	←	26		1917362.3932(1018)					
27	27	26	27	1917362.532(100)	2.057	3.70E-02	0.05	1.37E-03	0.00
27	26	26	25	1917362.532(100)	0.079	2.60E+01	32.08	6.75E+02	30.85
27	27	26	26	1917362.532(100)	0.075	2.70E+01	33.29	7.27E+02	33.22
27	28	26	27	1917362.532(100)	0.062	2.80E+01	34.55	7.83E+02	35.78
27	26	26	26	1917362.532(100)	-1.593	3.70E-02	0.05	1.37E-03	0.00
28	←	27		1988034.3301(1169)					
28	28	27	28	1988034.420(100)	2.016	3.57E-02	0.04	1.28E-03	0.00
28	27	27	26	1988034.420(100)	0.025	2.70E+01	32.12	7.28E+02	30.94
28	28	27	27	1988034.420(100)	0.021	2.80E+01	33.29	7.82E+02	33.23
28	29	27	28	1988034.420(100)	0.008	2.90E+01	34.50	8.40E+02	35.70
28	27	27	27	1988034.420(100)	-1.643	3.57E-02	0.04	1.28E-03	0.00

Table 11: Rotational spectrum of $D^{13}CN$ in the first excited vibrational state $v_2=1^{e,f}$. For each transition a calculated hyperfine-free rotational frequency is given followed by the measured hyperfine lines. Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution. Intensities were calculated for the linear and saturation experiment in absolute (given is the dimensionless intrinsic line strength) and relative units.

J'	F'	J"	F"	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
2	←	1	(e)	142462.2686(0006)					
2	2	1	1	142462.267(020)[g]	1.196	1.7E+01	12.50	2.8E+02	10.13
2	2	1	2	142462.267(020)[g]	0.443	5.6E+00	4.17	3.2E+01	1.13
2	1	1	1	142462.267(020)[g]	0.098	5.6E+00	4.17	3.2E+01	1.13
2	3	1	2	142462.267(020)[g]	-0.292	3.2E+01	23.33	9.9E+02	35.31
2	1	1	0	142462.267(020)[g]	-1.825	7.5E+00	5.56	5.6E+01	2.00
2	←	1	(f)	143191.3791(0006)					
2	2	1	1	143191.390(020)[g]	1.208	1.7E+01	12.50	2.8E+02	10.13
2	2	1	2	143191.390(020)[g]	0.555	5.6E+00	4.17	3.2E+01	1.13
2	1	1	1	143191.390(020)[g]	-0.056	5.6E+00	4.17	3.2E+01	1.13
2	3	1	2	143191.390(020)[g]	-0.287	3.2E+01	23.33	9.9E+02	35.31
2	1	1	0	143191.390(020)[g]	-1.730	7.5E+00	5.56	5.6E+01	2.00
3	←	2	(e)	213690.0172(0009)					
3	3	2	3	213688.977(010)	-0.002	1.0E+01	1.85	1.1E+02	0.22
3	3/ 3	2	3/ 2	213689.347(020)	0.001			1.8E+00	0.00
3	3	2	2	213689.713(010)	-0.001	8.3E+01	14.81	6.9E+03	13.90
3	2	2	1	213690.145(010)	0.011	5.6E+01	10.00	3.1E+03	6.33
3	4	2	3	213690.145(010)	-0.001	1.2E+02	21.43	1.4E+04	29.08
3	2	2	2	213691.234(010)	0.003	1.0E+01	1.85	1.1E+02	0.22
3	←	2	(f)	214783.5584(0009)					
3	3	2	3	214782.412(010)	-0.001	1.0E+01	1.85	1.1E+02	0.22
3	3	2	2	214783.256(010)	0.001	8.3E+01	14.81	6.9E+03	13.90
3	2	2	1	214783.683(010)	0.024	5.6E+01	10.00	3.1E+03	6.33
3	4	2	3	214783.683(010)	-0.008	1.2E+02	21.43	1.4E+04	29.08
3	2	2	2	214784.925(010)	0.002	1.0E+01	1.85	1.1E+02	0.22
4	←	3	(e)	284913.7030(0013)					
4	4	3	4	284912.411(005)	0.001	1.5E+01	1.04	2.2E+02	0.07
4	4	3	3	284913.565(005)	-0.012	2.2E+02	15.62	4.9E+04	15.18
4	3	3	2	284913.699(005)	-0.004	1.7E+02	11.90	2.8E+04	8.81
4	5	3	4	284913.768(005)	-0.006	2.9E+02	20.37	8.3E+04	25.80
4	3	3	3	284915.221(005)	0.001	1.5E+01	1.04	2.2E+02	0.07
4	←	3	(f)	286371.5254(0013)					
4	4	3	4	286370.117(005)	-0.005	1.5E+01	1.04	2.2E+02	0.07
4	4	3	3	286371.385(005)	-0.015	2.2E+02	15.62	4.9E+04	15.18
4	3	3	2	286371.513(005)	-0.005	1.7E+02	11.90	2.8E+04	8.81
4	5	3	4	286371.591(005)	-0.008	2.9E+02	20.37	8.3E+04	25.80
4	3	3	3	286373.179(005)	-0.007	1.5E+01	1.04	2.2E+02	0.07
5	←	4	(e)	356131.9719(0018)					
5	5	4	5	356130.537(003)	-0.003	1.9E+01	0.67	3.6E+02	0.03
5	5/ 6	4	5/ 5	356131.239(100)	-0.014			1.4E+01	0.00
5	5/ 5	4	5/ 4	356131.239(100)	-0.014			2.6E+01	0.00
5	5	4	4	356131.906(020)	0.002	4.6E+02	16.00	2.1E+05	15.73
5	4	4	3	356131.906(020)	-0.045	3.7E+02	12.96	1.4E+05	10.32

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs,\ lin}$	$I_{rel,\ lin}$	$I_{abs,\ sat}$	$I_{rel,\ sat}$
5	6	4	5	356131.990(020)	-0.025	5.6E+02	19.70	3.2E+05	23.83
5	5/ 4	4	4/ 4	356132.752(005)	-0.008			1.2E+00	0.00
5	4/ 4	4	4/ 3	356132.752(005)	-0.008			1.3E+00	0.00
5	4	4	4	356133.587(003)	-0.007	1.9E+01	0.67	3.6E+02	0.03
5	←	4	(f)	357953.8766(0018)					
5	5	4	5	357952.340(003)	0.008	1.9E+01	0.67	3.6E+02	0.03
5	5/ 6	4	5/ 5	357953.106(005)	0.004			4.5E+02	0.03
5	5/ 5	4	5/ 4	357953.106(005)	0.004			6.1E+02	0.05
5	5	4	4	357953.847(020)	0.038	4.6E+02	16.00	2.1E+05	15.73
5	4	4	3	357953.847(020)	-0.006	3.7E+02	12.96	1.4E+05	10.32
5	6	4	5	357953.925(020)	0.003	5.6E+02	19.70	3.2E+05	23.83
5	5/ 4	4	4/ 4	357954.733(005)	0.000			1.4E+02	0.01
5	4/ 4	4	4/ 3	357954.733(005)	0.000			1.6E+02	0.01
5	4	4	4	357955.643(003)	0.005	1.9E+01	0.67	3.6E+02	0.03
6	←	5	(e)	427343.4702(0023)					
6	6	5	6	427341.952(005)	0.000	2.3E+01	0.46	5.4E+02	0.01
6	6/ 7	5	6/ 6	427342.707(005)	-0.001			1.5E+02	0.00
6	6/ 6	5	6/ 5	427342.707(005)	-0.001			1.9E+02	0.00
6	6	5	5	427343.448(020)	0.022	8.1E+02	16.20	6.6E+05	16.01
6	5	5	4	427343.448(020)	0.003	6.8E+02	13.64	4.7E+05	11.34
6	7	5	6	427343.505(020)	0.007	9.6E+02	19.23	9.3E+05	22.55
6	6/ 5	5	5/ 5	427344.293(005)	0.008			3.6E+01	0.00
6	5/ 5	5	5/ 4	427344.293(005)	0.008			3.2E+01	0.00
6	5	5	5	427345.135(005)	0.000	2.3E+01	0.46	5.4E+02	0.01
6	←	5	(f)	429529.2085(0023)					
6	6	5	6	429527.580(005)	0.005	2.3E+01	0.46	5.4E+02	0.01
6	6/ 7	5	6/ 6	429528.389(005)	-0.001			1.9E+03	0.05
6	6/ 6	5	6/ 5	429528.389(005)	-0.001			2.1E+03	0.05
6	6	5	5	429529.182(020)	0.017	8.1E+02	16.20	6.6E+05	16.01
6	5	5	4	429529.182(020)	0.001	6.8E+02	13.64	4.7E+05	11.34
6	7	5	6	429529.237(020)	-0.001	9.6E+02	19.23	9.3E+05	22.55
6	6/ 5	5	5/ 5	429530.100(005)	0.009			9.9E+02	0.02
6	5/ 5	5	5/ 4	429530.100(005)	0.009			9.2E+02	0.02
6	5	5	5	429531.017(005)	0.007	2.3E+01	0.46	5.4E+02	0.01
7	←	6	(e)	498546.8441(0030)					
7	7	6	6	498546.835(010)	0.024	1.3E+03	16.33	1.7E+06	16.17
7	6	6	5	498546.835(010)	0.018	1.1E+03	14.10	1.3E+06	12.06
7	8	6	7	498546.835(010)	-0.027	1.5E+03	18.89	2.3E+06	21.64
7	←	6	(f)	501096.1179(0030)					
7	7	6	6	501096.095(020)	0.009	1.3E+03	16.33	1.7E+06	16.17
7	6	6	5	501096.095(020)	0.005	1.1E+03	14.10	1.3E+06	12.06
7	8	6	7	501096.149(020)	0.012	1.5E+03	18.89	2.3E+06	21.64
8	8/ 9	7	8/ 8	569739.916(005)	-0.008			3.1E+03	0.01
8	8/ 8	7	8/ 7	569739.916(005)	-0.008			3.1E+03	0.01
8	←	7	(e)	569740.7404(0038)					
8	8	7	7	569740.729(010)	0.016	2.0E+03	16.41	3.9E+06	16.27
8	7	7	6	569740.729(010)	0.016	1.7E+03	14.44	3.0E+06	12.61
8	9	7	8	569740.729(010)	-0.022	2.2E+03	18.63	5.0E+06	20.98
8	8/ 7	7	7/ 7	569741.580(005)	0.010			1.8E+03	0.01

J'	F'	J"	F"	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
8	7/ 7	7	7/ 6	569741.580(005)	0.010			1.6E+03	0.01
8	←	7	(f)	572653.2024(0038)					
8	8	7	8	572651.460(020)	-0.001	3.1E+01	0.26	9.8E+02	0.00
8	8/ 9	7	8/ 8	572652.327(005)	-0.001			1.5E+04	0.06
8	8/ 8	7	8/ 7	572652.327(005)	-0.001			1.4E+04	0.06
8	8	7	7	572653.200(010)	0.025	2.0E+03	16.41	3.9E+06	16.27
8	7	7	6	572653.200(010)	0.026	1.7E+03	14.44	3.0E+06	12.61
8	9	7	8	572653.200(010)	-0.015	2.2E+03	18.63	5.0E+06	20.98
8	8/ 7	7	7/ 7	572654.109(005)	0.010			1.2E+04	0.05
8	7/ 7	7	7/ 6	572654.109(005)	0.010			1.0E+04	0.04
8	7	7	7	572655.022(020)	-0.002	3.1E+01	0.26	9.8E+02	0.00
9	←	8	(e)	640923.8060(0047)					
9	9	8	9	640922.143(010)	-0.002	3.5E+01	0.21	1.3E+03	0.00
9	9/10	8	9/ 9	640922.968(005)	-0.003			8.9E+03	0.02
9	9/ 9	8	9/ 8	640922.968(005)	-0.003			8.6E+03	0.02
9	9	8	8	640923.795(010)	0.015	2.8E+03	16.46	8.0E+06	16.34
9	8	8	7	640923.795(010)	0.017	2.5E+03	14.71	6.4E+06	13.04
9	10	8	9	640923.795(010)	-0.016	3.2E+03	18.42	1.0E+07	20.47
9	9/ 8	8	8/ 8	640924.640(005)	0.004			6.3E+03	0.01
9	8/ 8	8	8/ 7	640924.640(005)	0.004			5.6E+03	0.01
9	8	8	8	640925.484(010)	-0.009	3.5E+01	0.21	1.3E+03	0.00
9	←	8	(f)	644199.0598(0047)					
9	9	8	9	644197.277(005)	-0.004	3.5E+01	0.21	1.3E+03	0.00
9	9/10	8	9/ 9	644198.165(005)	-0.001			3.1E+04	0.06
9	9/ 9	8	9/ 8	644198.165(005)	-0.001			2.9E+04	0.06
9	9	8	8	644199.053(010)	0.018	2.8E+03	16.46	8.0E+06	16.34
9	8	8	7	644199.053(010)	0.022	2.5E+03	14.71	6.4E+06	13.04
9	10	8	9	644199.053(010)	-0.013	3.2E+03	18.42	1.0E+07	20.47
9	9/ 8	8	8/ 8	644199.960(005)	0.003			2.7E+04	0.05
9	8/ 8	8	8/ 7	644199.960(005)	0.003			2.4E+04	0.05
9	8	8	8	644200.870(005)	-0.010	3.5E+01	0.21	1.3E+03	0.00
10	←	9	(e)	712094.6883(0058)					
10	10/11	9	10/10	712093.833(020)	-0.004			2.1E+04	0.02
10	10/10	9	10/ 9	712093.833(020)	-0.004			2.0E+04	0.02
10	10	9	9	712094.682(005)	0.019	3.9E+03	16.50	1.5E+07	16.39
10	9	9	8	712094.682(005)	0.023	3.5E+03	14.91	1.2E+07	13.39
10	11	9	10	712094.682(005)	-0.007	4.3E+03	18.25	1.9E+07	20.06
10	10/ 9	9	9/ 9	712095.518(020)	0.001			1.7E+04	0.02
10	9/ 9	9	9/ 8	712095.518(020)	0.001			1.5E+04	0.02
10	←	9	(f)	715732.2887(0058)					
10	10/11	9	10/10	715731.370(020)	-0.008			5.8E+04	0.06
10	10/10	9	10/ 9	715731.370(020)	-0.008			5.5E+04	0.06
10	10	9	9	715732.272(005)	0.008	3.9E+03	16.50	1.5E+07	16.39
10	9	9	8	715732.272(005)	0.013	3.5E+03	14.91	1.2E+07	13.39
10	11	9	10	715732.272(005)	-0.018	4.3E+03	18.25	1.9E+07	20.06
10	10/ 9	9	9/ 9	715733.175(020)	-0.008			5.3E+04	0.06
10	9/ 9	9	9/ 8	715733.175(020)	-0.008			4.8E+04	0.05
11	←	10	(e)	783252.0351(0072)					
11	11/12	10	11/11	783251.157(020)	-0.012			4.2E+04	0.03

J'	F'	J''	F''	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
11	11/11	10	11/10	783251.157(020)	-0.012			4.0E+04	0.02
11	10	10	9	783252.022(005)	0.017	4.8E+03	15.08	2.3E+07	13.67
11	11	10	10	783252.022(005)	0.013	5.2E+03	16.53	2.7E+07	16.43
11	12	10	11	783252.022(005)	-0.010	5.7E+03	18.12	3.3E+07	19.74
11	11/10	10	10/10	783252.858(020)	-0.002			3.6E+04	0.02
11	10/10	10	10/ 9	783252.858(020)	-0.002			3.3E+04	0.02
11	11/12	10	11/11	787250.560(030)	-0.003			1.0E+05	0.06
11	11/11	10	11/10	787250.560(030)	-0.003			9.3E+04	0.06
11	←	10	(f)	787251.4880(0072)					
11	10	10	9	787251.468(005)	0.011	4.8E+03	15.08	2.3E+07	13.67
11	11	10	10	787251.468(005)	0.005	5.2E+03	16.53	2.7E+07	16.43
11	12	10	11	787251.468(005)	-0.018	5.7E+03	18.12	3.3E+07	19.74
11	11/10	10	10/10	787252.370(030)	-0.009			9.4E+04	0.06
11	10/10	10	10/ 9	787252.370(030)	-0.009			8.6E+04	0.05
12	←	11	(e)	854394.4945(0088)					
12	11	11	10	854394.463(010)	0.000	6.3E+03	15.22	3.9E+07	13.91
12	12	11	11	854394.463(010)	-0.005	6.8E+03	16.55	4.6E+07	16.46
12	13	11	12	854394.463(010)	-0.025	7.4E+03	18.00	5.5E+07	19.47
12	←	11	(f)	858755.2578(0088)					
12	11	11	10	858755.234(010)	0.009	6.3E+03	15.22	3.9E+07	13.91
12	12	11	11	858755.234(010)	0.003	6.8E+03	16.55	4.6E+07	16.46
12	13	11	12	858755.234(010)	-0.018	7.4E+03	18.00	5.5E+07	19.47
13	←	12	(e)	925520.7154(0107)					
13	12	12	11	925520.688(010)	0.006	8.0E+03	15.33	6.4E+07	14.12
13	13	12	12	925520.688(010)	0.001	8.7E+03	16.57	7.5E+07	16.48
13	14	12	13	925520.688(010)	-0.017	9.4E+03	17.90	8.8E+07	19.24
13	←	12	(f)	930242.1988(0107)					
13	12	12	11	930242.166(010)	0.001	8.0E+03	15.33	6.4E+07	14.12
13	13	12	12	930242.166(010)	-0.004	8.7E+03	16.57	7.5E+07	16.48
13	14	12	13	930242.166(010)	-0.023	9.4E+03	17.90	8.8E+07	19.24
27	←	26	(e)	1918827.6872(1076)					
27	27	26	27	1918827.613(100)	1.916	1.1E+02	0.02	1.2E+04	0.00
27	26	26	25	1918827.613(100)	-0.019	7.6E+04	16.04	5.7E+09	15.42
27	27	26	26	1918827.613(100)	-0.022	7.8E+04	16.64	6.2E+09	16.61
27	28	26	27	1918827.613(100)	-0.035	8.1E+04	17.27	6.6E+09	17.89
27	26	26	26	1918827.613(100)	-1.656	1.1E+02	0.02	1.2E+04	0.00
27	←	26	(f)	1928511.2862(1076)					
27	27	26	27	1928511.208(050)	2.042	1.1E+02	0.02	1.2E+04	0.00
27	26	26	25	1928511.208(050)	-0.016	7.6E+04	16.04	5.7E+09	15.42
27	27	26	26	1928511.208(050)	-0.019	7.8E+04	16.64	6.2E+09	16.61
27	28	26	27	1928511.208(050)	-0.032	8.1E+04	17.27	6.6E+09	17.89
27	26	26	26	1928511.208(050)	-1.780	1.1E+02	0.02	1.2E+04	0.00
28	←	27	(e)	1989548.6727(1235)					
28	28	27	28	1989548.549(100)	1.879	1.1E+02	0.02	1.3E+04	0.00
28	27	27	26	1989548.549(100)	-0.070	8.4E+04	16.06	7.1E+09	15.47
28	28	27	27	1989548.549(100)	-0.072	8.8E+04	16.65	7.7E+09	16.62
28	29	27	28	1989548.549(100)	-0.086	9.1E+04	17.25	8.2E+09	17.85

J'	*F'*	*J"*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$
28	27	27	27	1989548.549(100)	-1.704	1.1E+02	0.02	1.3E+04	0.00
28	←	27	(f)	1999578.6528(1235)					
28	28	27	28	1999578.690(100)	2.170	1.1E+02	0.02	1.3E+04	0.00
28	27	27	26	1999578.690(100)	0.099	8.4E+04	16.06	7.1E+09	15.47
28	28	27	27	1999578.690(100)	0.096	8.8E+04	16.65	7.7E+09	16.62
28	29	27	28	1999578.690(100)	0.083	9.1E+04	17.25	8.2E+09	17.85
28	27	27	27	1999578.690(100)	-1.663	1.1E+02	0.02	1.3E+04	0.00

Table 12: Table of the experimental direct *l* – type transitions in the first excited bending state of $D^{13}CN$ used in the fit. For each transition a calculated hyperfine-free rotational frequency is given followed by the measured hyperfine lines. Please note that the hyperfine structure has not been resolved experimentally. Intensities were calculated for the linear and saturation experiment in absolute (given is the dimensionless intrinsic line strength) and relative units.

J' $l'=1^f$	*F'*	*J"* $l"=1^e$	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs, lin}$	$I_{rel, lin}$	$I_{abs, sat}$	$I_{rel, sat}$	Ref.
6	←	6		7652.6973(0000)						
6	5	6	5	7652.700(050)	-0.053	9.5E+02	27.42	9.1E+05	23.62	d
6	6	6	6	7652.700(050)	0.084	1.1E+03	31.76	1.2E+06	31.70	d
6	7	6	7	7652.700(050)	-0.033	1.3E+03	37.68	1.7E+06	44.60	d
7	←	7		10201.9712(0000)						
7	6	7	6	10201.950(050)	-0.075	1.5E+03	28.30	2.3E+06	24.88	d
7	7	7	7	10201.950(050)	0.059	1.7E+03	32.15	2.9E+06	32.12	d
7	8	7	8	10201.950(050)	-0.058	2.0E+03	37.19	3.9E+06	42.96	d
8	←	8		13114.4332(0000)						
8	8	8	8	13114.350(100)	-0.003	2.5E+03	32.41	6.2E+06	32.39	d
8	9	8	9	13114.350(100)	-0.122	2.8E+03	36.79	8.0E+06	41.74	d
8	9	8	8	13116.350(100)	0.243	3.5E+01	0.46	1.3E+03	0.01	d
9	←	9		16389.6871(0000)						
9	8	9	8	16389.630(100)	-0.110	3.2E+03	29.46	1.0E+07	26.61	d
9	9	9	9	16389.630(100)	0.022	3.5E+03	32.60	1.2E+07	32.58	d
9	10	9	10	16389.630(100)	-0.097	3.9E+03	36.47	1.5E+07	40.79	d
10	←	10		20027.2875(0000)						
10	9	10	9	20027.100(100)	-0.240	4.3E+03	29.86	1.9E+07	27.23	d
10	10	10	10	20027.100(100)	-0.109	4.7E+03	32.73	2.2E+07	32.72	d
10	11	10	11	20027.100(100)	-0.228	5.2E+03	36.21	2.7E+07	40.04	d
11	←	11		24026.7404(0000)						
11	10	11	10	24026.600(100)	-0.193	5.7E+03	30.18	3.3E+07	27.74	d
11	11	11	11	24026.600(100)	-0.062	6.2E+03	32.83	3.9E+07	32.82	d
11	12	11	12	24026.600(100)	-0.182	6.8E+03	35.98	4.6E+07	39.42	d
19	←	19		68973.9808(0000)						
19	18	19	18	68973.949(050)	-0.073	2.9E+04	31.54	8.2E+08	29.99	
19	19	19	19	68973.949(050)	0.056	3.0E+04	33.16	9.1E+08	33.16	
19	20	19	20	68973.949(050)	-0.066	3.2E+04	34.96	1.0E+09	36.85	
20	←	20		76200.0127(0000)						
20	19	20	19	76199.970(050)	-0.080	3.3E+04	31.63	1.1E+09	30.15	
20	20	20	20	76199.970(050)	0.048	3.5E+04	33.17	1.2E+09	33.17	
20	21	20	21	76199.970(050)	-0.074	3.7E+04	34.88	1.4E+09	36.67	
21	←	21		83780.3561(0000)						
21	20	21	20	83780.316(050)	-0.074	3.9E+04	31.71	1.5E+09	30.30	
21	21	21	21	83780.316(050)	0.054	4.0E+04	33.19	1.6E+09	33.19	
21	22	21	22	83780.316(050)	-0.068	4.2E+04	34.81	1.8E+09	36.51	
22	←	22		91714.0059(0000)						
22	21	22	21	91713.964(050)	-0.071	4.4E+04	31.79	2.0E+09	30.43	
22	22	22	22	91713.964(050)	0.057	4.6E+04	33.20	2.1E+09	33.20	
22	23	22	23	91713.964(050)	-0.066	4.8E+04	34.75	2.3E+09	36.37	

J' *l' =1^f*	*F'*	*J"* *l"=1^e*	*F"*	ν_{exp} [MHz] (σ)	o-c [MHz]	$I_{abs,\,lin}$	$I_{rel,\,lin}$	$I_{abs,\,sat}$	$I_{rel,\,sat}$	Ref.
23	←	23		99999.9134(0000)						
23	22	23	22	99999.891(050)	-0.047	5.1E+04	31.85	2.6E+09	30.55	
23	23	23	23	99999.891(050)	0.081	5.3E+04	33.21	2.8E+09	33.21	
23	24	23	24	99999.891(050)	-0.041	5.5E+04	34.69	3.0E+09	36.24	
24	←	24		108636.9868(0000)						
24	23	24	23	108636.966(050)	-0.040	5.7E+04	31.92	3.3E+09	30.66	
24	24	24	24	108636.966(050)	0.088	6.0E+04	33.22	3.6E+09	33.22	
24	25	24	25	108636.966(050)	-0.034	6.2E+04	34.64	3.9E+09	36.11	
25	←	25		117624.0917(0000)						
25	24	25	24	117624.122(050)	0.018	6.5E+04	31.97	4.2E+09	30.77	
25	25	25	25	117624.122(050)	0.145	6.7E+04	33.23	4.5E+09	33.23	
25	26	25	26	117624.122(050)	0.022	7.0E+04	34.59	4.9E+09	36.00	

Table 13: Rotational spectrum of $DC^{15}N$ in the ground vibrational state. Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution.

J′	*J*″	ν_{exp} [MHz]	σ [MHz]	o-c [MHz]
1	0	70339.382	0.010	0.004
2	1	140677.458[g]	0.020	0.007
3	2	211012.913	0.010	0.000
4	3	281344.465	0.010	0.006
5	4	351670.782	0.003	-0.002
6	5	421990.583	0.005	0.000
7	6	492302.551	0.005	0.000
9	8	632897.780	0.005	0.003
10	9	703178.425	0.005	-0.002
11	10	773446.033	0.005	0.003
12	11	843699.279	0.010	-0.005
13	12	913936.884	0.010	-0.003
25	24	1755094.147	0.100	0.064
26	25	1825009.987	0.050	-0.017
27	26	1894892.090	0.050	-0.029
28	27	1964739.146	0.030	0.010

Table 14: Rotational spectrum of $DC^{15}N$ in the first excited bending state. Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution.

J'	*l* ' = 1	*J"*	*l*" = 1	ν_{exp} [MHz]	σ [MHz]	o-c [MHz]
5	f	5	e	5280.6200[c]	0.010	0.002
6	f	6	e	7391.8550[c]	0.010	0.004
7	f	7	e	9854.2310[c]	0.010	0.004
8	f	8	e	12667.4110[c]	0.010	0.004
9	f	9	e	15831.0120[c]	0.010	0.004
19	f	19	e	66622.222	0.010	-0.004
20	f	20	e	73601.793	0.010	-0.003
21	f	21	e	80923.574	0.010	-0.007
22	f	22	e	88586.613	0.010	0.004
23	f	23	e	96589.872	0.010	0.006
24	f	24	e	104932.301	0.010	0.002
25	f	25	e	113612.810	0.010	-0.002
2	e	1	e	140825.528[g]	0.020	0.006
2	f	1	f	141529.809[g]	0.010	0.028
3	e	2	e	211234.960	0.010	-0.003
3	f	2	f	212291.228	0.010	-0.003
4	e	3	e	281640.424	0.010	0.004
4	f	3	f	283048.555	0.020	0.003
5	e	4	e	352040.568	0.003	0.002
5	f	4	f	353800.342	0.010	-0.027
6	e	5	e	422434.072	0.005	-0.001
6	f	5	f	424545.305	0.005	-0.002
7	e	6	e	492819.613	0.005	0.000
7	f	6	f	495281.988	0.005	-0.001
8	e	7	e	563195.861	0.030	0.000
8	f	7	f	566009.043	0.005	0.001
9	e	8	e	633561.488	0.005	-0.001
9	f	8	f	636725.082	0.005	-0.009
10	e	9	e	703915.173	0.005	0.001
10	f	9	f	707428.764	0.005	0.002
11	f	10	f	778118.688	0.005	0.004
12	e	11	e	844581.399	0.010	0.002
12	f	11	f	848793.488	0.010	0.004
13	e	12	e	914891.295	0.010	0.006
13	f	12	f	919451.795	0.010	0.004
25	e	24	e	1756886.865	0.100	-0.024
25	f	24	f	1765567.450	0.050	0.048
26	e	25	e	1826869.635	0.050	0.043
26	f	25	f	1835887.046	0.005	-0.004
27	e	26	e	1896817.908	0.030	-0.005
27	f	26	f	1906171.166	0.030	0.025
28	e	27	e	1966730.627	0.050	0.087
28	f	27	f	1976418.393	0.050	0.067

Table 15: Rotational spectrum of $D^{13}C^{15}N$ in the vibrational ground state. Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution.

J'	*J"*	ν_{exp} [MHz]	σ [MHz]	o-c [MHz]
1	0	69062.400	0.010	0.010
2	1	138123.535[g]	0.020	0.009
3	2	207182.151	0.010	-0.003
4	3	276237.015	0.003	-0.003
5	4	345286.885	0.010	0.019
6	5	414330.442	0.005	0.000
7	6	483366.492	0.003	-0.002
9	8	621411.010	0.005	-0.001
10	9	690416.970	0.005	0.000
11	10	759410.394	0.005	0.002
12	11	828390.031	0.010	0.005
13	12	897354.628	0.010	0.007
26	25	1791957.487	0.100	0.032
27	26	1860580.510	0.050	0.049
28	27	1929169.777	0.030	0.033
29	28	1997724.078	0.100	0.014

Table 16: Rotational spectrum of $D^{13}C^{15}N$ in the first excited bending state (01^10). Please refer to the text as to which lines where measured in sub-Doppler and which in Doppler resolution.

J'	*l'* = 1	*J"*	*l"* = 1	ν_{exp} [MHz]	σ [MHz]	o-c [MHz]
19	f	19	e	65105.796	0.010	0.003
20	f	20	e	71927.711	0.010	0.000
21	f	21	e	79084.358	0.010	0.001
22	f	22	e	86574.809	0.010	-0.006
23	f	23	e	94398.120	0.010	-0.009
24	f	24	e	102553.311	0.010	0.007
25	f	25	e	111039.309	0.010	0.002
2	e	1	e	138239.614[g]	0.020	0.033
2	f	1	f	138927.705[g]	0.020	0.005
3	e	2	e	207356.187	0.005	0.000
3	f	2	f	208388.254	0.005	0.002
4	e	3	e	276468.959	0.010	-0.014
4	f	3	f	277844.836	0.010	-0.012
5	e	4	e	345576.667	0.005	0.002
5	f	4	f	347296.178	0.005	0.009
6	e	5	e	414677.990	0.005	0.000
6	f	5	f	416740.898	0.005	0.002
7	e	6	e	483771.672	0.005	-0.002
7	f	6	f	486177.717	0.005	0.006
9	e	8	e	621931.034	0.005	0.001
9	f	8	f	625022.346	0.005	0.008
10	e	9	e	690994.158	0.005	-0.005
10	f	9	f	694427.513	0.005	-0.003
11	e	10	e	760044.563	0.005	-0.001
11	f	10	f	763819.514	0.005	-0.001
12	e	11	e	829080.961	0.010	-0.005
12	f	11	f	833197.020	0.010	-0.001
13	e	12	e	898102.091	0.010	-0.005
13	f	12	f	902558.714	0.010	-0.004
26	e	25	e	1793410.161	0.050	-0.014
26	f	25	f	1802225.850	0.100	-0.083
27	e	26	e	1862084.468	0.050	-0.007
27	f	26	f	1871228.921	0.050	0.042
28	e	27	e	1930724.504	0.030	-0.027
28	f	27	f	1940196.421	0.030	-0.014
29	e	28	e	1999329.046	0.100	-0.043

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