Electronic Supplementary Material (ESI) for Physical Chemistry Chemical Physics.

SIX-FOLD SYMMETRY INTERNAL ROTATION IN TOLUENES: THE LOW BARRIER CHALLENGE OF 2,6- AND 3,5-DIFLUOROTOLUENE

ELECTRONIC SUPPLEMENTARY INFORMATION

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Figure S1. Torsional potential function for 2,6- and 3,5-difluorotoluene (torsion dihedral angle defined as H-C7-C1-C2; torsion origin for a methyl C-H bond coplanar with the benzyl ring).

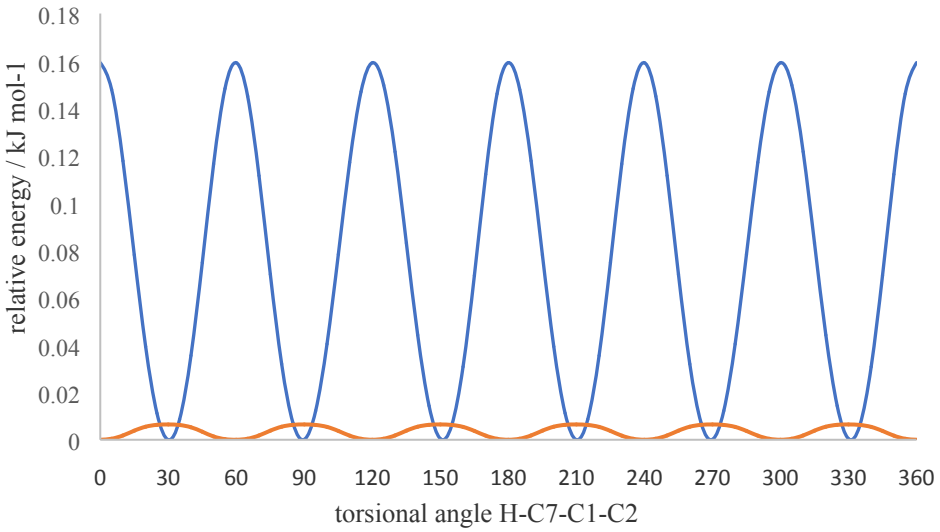

Figure S2. Illustration of rotational transitions in 2,6- and 3,5-diflurotoluene (top and down traces, respectively).

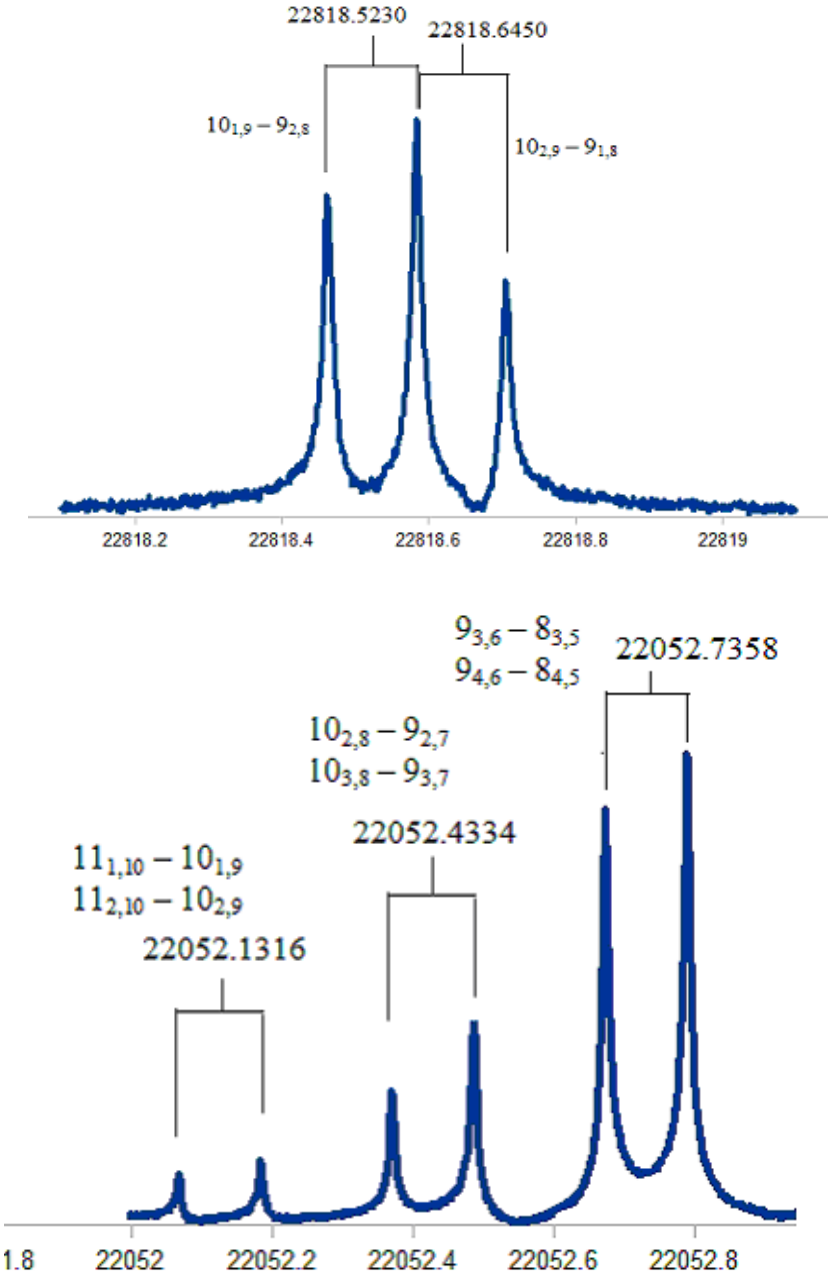

Table S1. Rotational parameters for the ^{13}C isotopic species of 2,6-difluorotoluene.

	$^{13}C(1)$	$^{13}C(2)$,$^{13}C(6)$	$^{13}C(3)$, $^{13}C(5)$	$^{13}C(4)$	$^{13}C(7)$
A (MHz)	2265.24743(25)	2270.4559(15)	2250.6222(11)	2226.00964(20)	2221.48138(22)
B (MHz)	1743.06740(12)	1734.8370(15)	1734.0077(11)	1742.99541(21)	1742.99796(19)
C (MHz)	991.045912(22)	989.368957(29)	985.316430(22)	983.436666(38)	982.547947(37)
N	53	61	68	57	47
σ (kHz)	1.0	1.6	1.2	1.8	1.8

Table S2. Rotational parameters for the ^{13}C isotopic species of 3,5-difluorotoluene.

	$^{13}C(1)$	$^{13}C(2)$,$^{13}C(6)$	$^{13}C(3)$, $^{3}C(5)$	$^{13}C(4)$	$^{13}C(7)$
A (MHz)	1751.37601(58)	1762.02786(65)	1762.57786(68)	1752.76720(21)	1745.19054(20)
B (MHz)	1745.21262(55)	1735.31944(66)	1736.21712(68)	1745.28119(29)	1711.98540(19)
C (MHz)	878.855314(37)	878.999347(21)	879.365172(17)	879.224262(44)	868.815129(27)
N	36	42	43	42	27
σ (kHz)	1.8	1.1	1.0	1.6	1.1

Table S3. Atomic coordinates for the substitution (r_s) and ab initio (r_e) structures of 2,6-difluorotoluene (Principal inertial axes labeled as *a*, *b*, *c*; all coordinates in ängstrom).

	r_s			*Ab initio*		
	a	*b*	*c*	*a*	*b*	*c*
C1	[0][a]	-0.71232(2)	[0]	0.000	-0.714	0.005
C2	-1.16907(9)	[0]	[0]	-1.174	0.032	0.000
C3	-1.20860(5)	1.41761(4)	[0]	-1.207	1.416	-0.001
C4	[0]	2.11167(1)	[0]	0.001	2.108	0.001
C5	1.20860(5)	1.41761(4)	[0]	1.207	1.416	0.001
C6	1.16907(9)	[0.000]	[0]	1.174	0.032	0.000
C7	[0]	-2.21867(1)	[0]	-0.001	-2.210	0.003
F				-2.343	-0.636	-0.003
F				2.342	-0.637	-0.003
H				-2.162	1.927	-0.001
H				0.001	3.192	0.000
H				2.163	1.926	0.000
H				0.003	-2.600	-1.019
H				-0.892	-2.593	0.501
H				0.884	-2.597	0.509

[a]Values in squared brackets were kept fixed to zero.

Table S4. Atomic coordinates for the substitution (r_s) and ab initio (r_e) structures of 3,5-difluorotoluene (Principal inertial axes labeled as *a*, *b*, *c*; all coordinates in angstrom).

	r_s			*Ab initio*		
	a	*b*	*c*	*A*	*B*	*C*
C1	[0]	1.45130(3)	[0]	-0.007	-1.456	-0.013
C2	-1.21040(3)	0.73822(8)	[0]	1.200	-0.755	-0.009
C3	-1.17228(4)	-0.6289(1)	[0]	1.181	0.629	0.001
C4	[0]	-1.36711(2)	[0]	0.006	1.362	0.007
C5	1.17228(4)	-0.6289(1)	[0]	-1.175	0.639	0.001
C6	1.21040(3)	0.73822(8)	[0]	-1.207	-0.744	-0.010
C7	[0]	2.96304(2)	[0]	-0.014	-2.957	0.012
F				2.348	1.295	0.001
F				-2.336	1.316	0.002
H				2.153	-1.273	-0.016
H				0.011	2.445	0.009
H				-2.165	-1.253	-0.018
H				-0.030	-3.326	1.042
H				0.874	-3.365	-0.473
H				-0.894	-3.356	-0.495

[a]Values in squared brackets were kept fixed to zero.

Table S5. Rotational transitions of the parent species of 2,6-difluorotoluene, sorted by branch, together with fit residuals (o.-c., frequencies in MHz). Rotational transitions labeled with symmetry species, free rotor quantum number (m), and asymmetric rotor quantum numbers (J, K_a, K_c).

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
B1	0	2	1	2	B2	0	1	0	1	5246.3820(0.002)	-0.0011
A2	0	3	1	3	A1	0	2	0	2	7058.6730(0.002)	-0.0022
B1	0	4	1	4	B2	0	3	0	3	8956.8990(0.002)	0.0016
A2	0	5	1	5	A1	0	4	0	4	10918.4910(0.002)	0.0007
B1	0	6	1	6	B2	0	5	0	5	12897.7080(0.002)	0.0008
A2	0	7	1	7	A1	0	6	0	6	14880.6620(0.002)	-0.0001
B1	0	8	1	8	B2	0	7	0	7	16864.3640(0.002)	0.0007
A2	0	9	1	9	A1	0	8	0	8	18848.2310(0.002)	0.0023
B1	0	5	1	4	B2	0	5	0	5	8780.3766(0.002)	0.0043
A2	0	6	1	5	A1	0	6	0	6	10805.0584(0.002)	-0.0007
B1	0	7	1	6	B2	0	7	0	7	12802.7847(0.002)	-0.0046
A2	0	8	1	7	A1	0	8	0	8	14792.8227(0.002)	-0.0012
B1	0	9	1	8	B2	0	9	0	9	16780.3770(0.002)	-0.0021
B1	0	10	0	10	B2	0	9	0	9	20832.1420(0.002)	-0.0002
B2	0	11	0	11	B1	0	10	0	10	22816.0760(0.002)	0.0005
B1	0	12	0	12	B2	0	11	0	11	24800.0180(0.002)	-0.0010
B2	0	2	2	1	B1	0	1	1	0	7803.1620(0.002)	0.0002
B2	0	4	2	3	B1	0	3	1	2	11434.7910(0.002)	-0.0070
A1	0	5	2	4	A2	0	4	1	3	13095.0120(0.002)	0.0010
B2	0	6	2	5	B1	0	5	1	4	14938.3040(0.002)	0.0017
A1	0	7	2	6	A2	0	6	1	5	16881.5600(0.002)	0.0007
B2	0	8	2	7	B1	0	7	1	6	18854.9850(0.002)	0.0003
A1	0	9	2	8	A2	0	8	1	7	20835.8880(0.002)	0.0008
B2	0	10	2	9	B1	0	9	1	8	22818.6450(0.002)	0.0007
A1	0	11	2	10	A2	0	10	1	9	24801.9540(0.002)	-0.0011
A1	0	6	2	4	A2	0	6	1	5	8472.9084(0.002)	-0.0001
B2	0	7	2	5	B1	0	7	1	6	10616.8335(0.002)	-0.0024
A1	0	8	2	6	A2	0	8	1	7	12662.0328(0.002)	-0.0002
A1	0	10	2	8	A2	0	10	1	9	16669.4469(0.002)	0.0039
A1	0	5	2	4	A2	0	5	1	5	8852.1951(0.002)	-0.0001
B2	0	6	2	5	B1	0	6	1	6	10820.9657(0.002)	-0.0016
A1	0	7	2	6	A2	0	7	1	7	12805.9550(0.002)	-0.0013
B2	0	8	2	7	B1	0	8	1	8	14793.4083(0.002)	-0.0024
A1	0	9	2	8	A2	0	9	1	9	16780.4813(0.002)	-0.0010
A1	0	2	0	2	A2	0	1	1	1	4556.3270(0.002)	0.0003
B2	0	3	0	3	B1	0	2	1	2	6833.5910(0.002)	-0.0010
A1	0	4	0	4	A2	0	3	1	3	8904.6180(0.002)	-0.0001
B2	0	5	0	5	B1	0	4	1	4	10908.3320(0.002)	0.0010
A1	0	6	0	6	A2	0	5	1	5	12895.9170(0.002)	0.0003
B2	0	7	0	7	B1	0	6	1	6	14880.3660(0.002)	0.0007

A1	0	8	0	8	A2	0	7	1	7	16864.3170(0.002)	0.0009
B2	0	9	0	9	B1	0	8	1	8	18848.2190(0.002)	-0.0025
A1	0	10	1	10	A2	0	9	1	9	20832.1420(0.002)	0.0009
A2	0	11	1	11	A1	0	10	1	10	22816.0760(0.002)	0.0004
A1	0	12	1	12	A2	0	11	1	11	24800.0180(0.002)	-0.0010
A2	0	4	1	3	A1	0	3	2	2	10361.0980(0.002)	-0.0029
B1	0	5	1	4	B2	0	4	2	3	12741.5330(0.002)	-0.0039
A2	0	6	1	5	A1	0	5	2	4	14848.7810(0.002)	0.0004
B1	0	7	1	6	B2	0	6	2	5	16862.1880(0.002)	0.0007
A2	0	8	1	7	A1	0	7	2	6	18851.1840(0.002)	0.0003
B1	0	9	1	8	B2	0	8	2	7	20835.1910(0.002)	0.0012
A2	0	10	1	9	A1	0	9	2	8	22818.5230(0.002)	0.0005
B1	0	11	1	10	B2	0	10	2	9	24801.9380(0.002)	0.0034
A2	0	5	3	3	A1	0	4	2	2	16169.8604(0.002)	-0.0034
A2	0	7	3	5	A1	0	6	2	4	19112.5030(0.002)	0.0041
B1	0	8	3	6	B2	0	7	2	5	20920.8190(0.002)	0.0020
A2	0	9	3	7	A1	0	8	2	6	22849.9580(0.002)	0.0016
B1	0	3	3	0	B2	0	2	2	1	13151.1520(0.002)	0.0000
B1	0	5	3	2	B2	0	4	2	3	22601.1060(0.002)	0.0012
A2	0	5	3	3	A1	0	5	2	4	7041.0404(0.002)	0.0031
B1	0	6	3	4	B2	0	6	2	5	8786.5790(0.002)	-0.0017
A2	0	7	3	5	A1	0	7	2	6	10703.8475(0.002)	-0.0006
B1	0	8	3	6	B2	0	8	2	7	12682.6678(0.002)	-0.0004
A2	0	9	3	7	A1	0	9	2	8	14676.1063(0.002)	0.0040
A2	0	8	3	5	A1	0	8	2	6	10255.0970(0.002)	0.0044
B2	0	4	4	1	B1	0	3	3	0	17221.0370(0.002)	0.0030
A1	0	5	4	2	A2	0	4	3	1	19528.7730(0.002)	-0.0047
B2	0	6	4	3	B1	0	5	3	2	21198.5720(0.002)	-0.0018
A1	0	7	4	4	A2	0	6	3	3	22431.1230(0.002)	-0.0010
B2	0	8	4	5	B1	0	7	3	4	23620.4100(0.002)	0.0012
A1	0	10	2	8	A2	0	9	3	7	24811.8650(0.002)	0.0017
A1	0	7	4	4	A2	0	7	3	5	8797.5426(0.002)	0.0020
A1	0	9	4	6	A2	0	9	3	7	12522.2201(0.002)	0.0027
B2	0	5	4	1	B1	0	4	3	2	21069.6850(0.002)	0.0000
B1	0	5	5	0	B2	0	4	4	1	21939.2140(0.002)	-0.0012
A2	0	6	3	3	A1	0	5	4	2	15423.1802(0.002)	-0.0033
A2	0	8	3	5	A1	0	7	4	4	22266.9196(0.002)	-0.0011
A2	0	7	5	3	A1	0	7	4	4	7902.3806(0.002)	0.0041
A2	0	5	5	1	A1	0	4	4	0	21847.3400(0.002)	-0.0001
B1	0	6	5	2	B2	0	5	4	1	24435.4050(0.002)	0.0018
A1	0	6	6	0	A2	0	6	5	1	8487.5639(0.002)	-0.0059
B2	0	7	4	3	B1	0	6	5	2	16845.8636(0.002)	0.0018
A1	0	8	4	4	A2	0	7	5	3	21406.7351(0.002)	-0.0035
B2	0	8	6	3	B1	0	8	5	4	8780.1893(0.002)	0.0031

E2	1	2	1	2	E2	1	1	0	1	6087.2890(0.002)	-0.0037
E2	1	4	1	4	E2	1	3	0	3	10389.3220(0.002)	-0.0006
E1	1	5	1	5	E1	1	4	0	4	11892.4451(0.002)	0.0011
E2	1	6	1	6	E2	1	5	0	5	13340.4850(0.002)	0.0003
E1	1	7	1	7	E1	1	6	0	6	15051.2920(0.002)	0.0000
E2	1	8	1	8	E2	1	7	0	7	16944.4190(0.002)	-0.0003
E1	1	9	1	9	E1	1	8	0	8	18897.8165(0.002)	0.0000
E2	1	10	1	10	E2	1	9	0	9	20868.2258(0.002)	-0.0009
E1	1	11	1	11	E1	1	10	0	10	22844.2687(0.002)	-0.0010
E2	1	12	1	12	E2	1	11	0	11	24822.8419(0.002)	-0.0001
E2	1	7	1	6	E2	1	7	0	7	10859.7707(0.002)	0.0012
E2	1	9	1	8	E2	1	9	0	9	15842.5178(0.002)	0.0014
E1	1	4	0	4	E1	1	3	1	3	6987.3722(0.002)	0.0026
E2	1	5	0	5	E2	1	4	1	4	10198.5916(0.002)	0.0003
E1	1	6	0	6	E1	1	5	1	5	12752.1919(0.002)	0.0001
E2	1	7	0	7	E2	1	6	1	6	14902.3230(0.002)	-0.0001
E1	1	8	0	8	E1	1	7	1	7	16913.1750(0.002)	0.0000
E2	1	9	0	9	E2	1	8	1	8	18891.9408(0.002)	-0.0002
E1	1	10	0	10	E1	1	9	1	9	20867.1995(0.002)	0.0015
E2	1	11	0	11	E2	1	10	1	10	22844.0972(0.002)	-0.0012
E1	1	12	0	12	E1	1	11	1	11	24822.8125(0.002)	-0.0021
E2	1	2	2	1	E2	1	1	1	0	6962.2023(0.002)	0.0028
E2	1	4	2	3	E2	1	3	1	2	12784.9210(0.002)	0.0040
E1	1	5	2	4	E1	1	4	1	3	15456.4180(0.002)	0.0005
E2	1	6	2	5	E2	1	5	1	4	17562.2300(0.002)	-0.0006
E1	1	7	2	6	E1	1	6	1	5	18881.1076(0.002)	-0.0010
E2	1	8	2	7	E2	1	7	1	6	19905.6965(0.002)	-0.0015
E1	1	9	2	8	E1	1	8	1	7	21286.8131(0.002)	-0.0009
E2	1	10	2	9	E2	1	9	1	8	23040.1202(0.002)	-0.0005
E1	1	11	2	10	E1	1	10	1	9	24940.9032(0.002)	-0.0013
E2	1	4	2	3	E2	1	4	1	4	8518.5291(0.002)	-0.0050
E2	1	6	2	5	E2	1	6	1	6	10200.2775(0.002)	0.0028
E1	1	7	2	6	E1	1	7	1	7	11847.1561(0.002)	0.0035
E2	1	8	2	7	E2	1	8	1	8	13821.0498(0.002)	0.0016
E2	1	10	2	9	E2	1	10	1	10	18014.4116(0.002)	0.0012
E2	1	3	2	1	E2	1	3	1	2	8779.6542(0.002)	0.0095
E2	1	9	2	7	E2	1	9	1	8	12161.1180(0.002)	-0.0027
E2	1	11	2	9	E2	1	11	1	10	17531.4598(0.002)	-0.0042
E2	1	5	1	4	E2	1	4	1	4	16177.1212(0.002)	0.0011
E2	1	4	3	2	E2	1	4	2	3	9742.6611(0.002)	0.0003
E1	1	5	3	3	E1	1	5	2	4	10239.5750(0.002)	0.0027
E1	1	7	3	5	E1	1	7	2	6	11066.0051(0.002)	0.0001
E2	1	8	3	6	E2	1	8	2	7	12048.2467(0.002)	-0.0025
E1	1	7	3	5	E1	1	6	2	4	22311.8156(0.002)	-0.0021
E2	1	8	3	6	E2	1	7	2	5	24499.3116(0.002)	-0.0043
E1	1	6	1	5	E1	1	5	2	4	11682.5470(0.002)	-0.0014
E2	1	7	1	6	E2	1	6	2	5	15561.8180(0.002)	0.0001
E1	1	8	1	7	E1	1	7	2	6	18589.6372(0.002)	0.0010
E2	1	9	1	8	E2	1	8	2	7	20913.4104(0.002)	0.0012
E1	1	10	1	9	E1	1	9	2	8	22954.5080(0.002)	-0.0008
E2	1	11	1	10	E2	1	10	2	9	24923.4842(0.002)	-0.0019

E2	1	5	3	2	E2	1	5	2	3	10651.2463(0.002)	0.0022
E1	1	6	3	3	E1	1	6	2	4	10984.7166(0.002)	0.0027
E2	1	7	3	4	E2	1	7	2	5	10585.9296(0.002)	0.0023
E2	1	3	3	0	E2	1	2	2	1	18038.7706(0.010)	-0.0012
E2	1	7	2	5	E2	1	6	2	5	23016.4464(0.002)	-0.0029
E2	1	5	4	1	E2	1	5	3	2	10227.8840(0.002)	-0.0020
E1	1	6	4	2	E1	1	6	3	3	11676.2812(0.002)	0.0005
E2	1	7	4	3	E2	1	7	3	4	12501.1035(0.002)	0.0006
E2	1	9	4	5	E2	1	9	3	6	12377.0149(0.002)	0.0001
E2	1	4	4	1	E2	1	3	3	0	15275.7366(0.002)	0.0038
E1	1	5	4	2	E1	1	4	3	1	17658.5800(0.002)	0.0041
E2	1	6	4	3	E2	1	5	3	2	20526.8258(0.002)	0.0010
E1	1	7	4	4	E1	1	6	3	3	23452.8368(0.002)	-0.0034
E1	1	8	2	6	E1	1	7	3	5	16697.9088(0.002)	-0.0001
E2	1	9	2	7	E2	1	8	3	6	21026.2843(0.002)	0.0036
E1	1	10	2	8	E1	1	9	3	7	24428.2364(0.002)	0.0040
E1	1	5	4	2	E1	1	5	3	3	10722.8960(0.002)	-0.0039
E2	1	6	4	3	E2	1	6	3	4	11615.4529(0.002)	0.0014
E1	1	7	4	4	E1	1	7	3	5	12125.7369(0.002)	0.0004
E2	1	8	4	5	E2	1	8	3	6	12457.7841(0.002)	-0.0041
E2	1	7	5	2	E2	1	7	4	3	12353.8773(0.002)	-0.0011
E1	1	5	5	1	E1	1	4	4	0	19887.0356(0.002)	-0.0055
E2	1	6	5	2	E2	1	5	4	1	21669.6732(0.002)	-0.0015
E1	1	7	5	3	E1	1	6	4	2	24413.9916(0.002)	-0.0037
E2	1	6	5	2	E2	1	6	4	3	11370.7300(0.002)	-0.0059
E2	1	8	5	4	E2	1	8	4	5	13447.5100(0.002)	0.0019
E2	1	5	4	1	E2	1	4	4	1	18149.8765(0.002)	0.0112
E1	1	6	4	2	E1	1	5	4	2	21016.3692(0.002)	0.0025
E2	1	7	4	3	E2	1	6	4	3	23920.2723(0.002)	-0.0032
E2	1	9	3	6	E2	1	8	4	5	17494.5451(0.002)	-0.0018
E2	1	5	5	0	E2	1	4	4	1	24858.5476(0.002)	-0.0013
E2	1	7	5	2	E2	1	6	5	2	24903.4203(0.002)	0.0024
E2	2	9	1	9	E2	2	8	0	8	19463.1213(0.002)	0.0025
E2	2	5	2	4	E2	2	4	1	3	15600.9320(0.002)	-0.0083
E2	2	6	1	5	E2	2	5	1	5	17778.5195(0.002)	0.0029
E2	2	5	3	3	E2	2	4	2	2	16485.5760(0.002)	0.0055
E2	2	7	3	5	E2	2	6	2	4	22266.4936(0.010)	-0.0026
E2	2	6	2	4	E2	2	5	2	4	18922.8913(0.002)	-0.0072
E2	2	8	2	6	E2	2	7	2	6	24575.8030(0.002)	0.0032
E2	2	6	3	3	E2	2	5	3	3	19835.7953(0.002)	0.0017

E2	2	7	4	4	E2	2	6	3	3	23197.7720(0.002)	0.0001	

Table S6. Rotational transitions of the parent species of 3,5-difluorotoluene sorted by branch, together with fit residuals (o.-c., frequencies in MHz). Rotational transitions labeled with symmetry species, free rotor quantum number (*m*), and asymmetric rotor quantum numbers (J, K_a, K_c).

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
B2	0	3	0	3	B1	0	2	0	2	6174.6440(0.002)	0.0008
B1	0	4	0	4	B2	0	3	0	3	7938.7798(0.002)	-0.0003
B2	0	5	0	5	B1	0	4	0	4	9702.9157(0.002)	-0.0003
B1	0	6	0	6	B2	0	5	0	5	11467.0502(0.002)	-0.0006
B2	0	7	0	7	B1	0	6	0	6	13231.1836(0.002)	-0.0006
B1	0	8	0	8	B2	0	7	0	7	14995.3156(0.002)	-0.0004
B2	0	9	0	9	B1	0	8	0	8	16759.4461(0.002)	0.0000
B1	0	10	0	10	B2	0	9	0	9	18523.5742(0.002)	0.0000
B2	0	11	0	11	B1	0	10	0	10	20287.7001(0.002)	0.0001
B1	0	12	0	12	B2	0	11	0	11	22051.8236(0.002)	0.0001
B2	0	13	0	13	B1	0	12	0	12	23815.9443(0.002)	0.0000
B1	0	7	1	6	B2	0	7	0	7	11468.9288(0.002)	-0.0017
B2	0	8	1	7	B1	0	8	0	8	13233.3680(0.002)	-0.0036
B1	0	9	1	8	B2	0	9	0	9	14997.8102(0.002)	0.0006
A2	0	3	1	3	A1	0	2	1	2	6174.6440(0.002)	0.0009
A1	0	4	1	4	A2	0	3	1	3	7938.7798(0.002)	-0.0003
A2	0	5	1	5	A1	0	4	1	4	9702.9157(0.002)	-0.0003
A1	0	6	1	6	A2	0	5	1	5	11467.0502(0.002)	-0.0006
A2	0	7	1	7	A1	0	6	1	6	13231.1836(0.002)	-0.0006
A1	0	8	1	8	A2	0	7	1	7	14995.3156(0.002)	-0.0004
A2	0	9	1	9	A1	0	8	1	8	16759.4461(0.002)	0.0000
A1	0	10	1	10	A2	0	9	1	9	18523.5742(0.002)	0.0000
A2	0	11	1	11	A1	0	10	1	10	20287.7001(0.002)	0.0001
A1	0	12	1	12	A2	0	11	1	11	22051.8236(0.002)	0.0001
A2	0	13	1	13	A1	0	12	1	12	23815.9443(0.002)	0.0000
B1	0	5	1	4	B2	0	4	1	3	11467.3651(0.002)	-0.0003
B2	0	6	1	5	B1	0	5	1	4	13231.4976(0.002)	-0.0001
B1	0	7	1	6	B2	0	6	1	5	14995.6283(0.002)	0.0000
B2	0	8	1	7	B1	0	7	1	6	16759.7571(0.002)	-0.0001
B1	0	9	1	8	B2	0	8	1	7	18523.8840(0.002)	-0.0001
B2	0	10	1	9	B1	0	9	1	8	20288.0096(0.002)	0.0009
B1	0	11	1	10	B2	0	10	1	9	22052.1316(0.002)	0.0007
B1	0	3	3	0	B2	0	2	1	1	11468.2560(0.002)	-0.0023
B1	0	8	2	6	B2	0	8	1	7	11468.8906(0.002)	0.0010
B2	0	9	2	7	B1	0	9	1	8	13233.3186(0.002)	0.0000
B1	0	10	2	8	B2	0	10	1	9	14997.7447(0.002)	0.0019
A1	0	7	2	6	A2	0	7	1	7	11468.9288(0.002)	-0.0017
A2	0	8	2	7	A1	0	8	1	8	13233.3680(0.002)	-0.0036
A1	0	9	2	8	A2	0	9	1	9	14997.8102(0.002)	0.0006

B1	0	9	3	6	B2	0	9	2	7	11468.8455(0.002)	0.0018
B2	0	10	3	7	B1	0	10	2	8	13233.2581(0.002)	-0.0016
B1	0	11	3	8	B2	0	11	2	9	14997.6697(0.002)	0.0003
B2	0	5	2	3	B1	0	4	2	2	13231.8111(0.002)	-0.0012
B1	0	6	2	4	B2	0	5	2	3	14995.9396(0.002)	-0.0001
B2	0	7	2	5	B1	0	6	2	4	16760.0662(0.002)	0.0000
B1	0	8	2	6	B2	0	7	2	5	18524.1909(0.002)	0.0002
B2	0	9	2	7	B1	0	8	2	6	20288.3136(0.002)	0.0005
B1	0	10	2	8	B2	0	9	2	7	22052.4334(0.002)	0.0005
A1	0	8	3	6	A2	0	8	2	7	11468.8906(0.002)	0.0010
A2	0	9	3	7	A1	0	9	2	8	13233.3186(0.002)	0.0000
A1	0	10	3	8	A2	0	10	2	9	14997.7447(0.002)	0.0019
A1	0	5	2	4	A2	0	4	2	3	11467.3651(0.002)	-0.0003
A2	0	6	2	5	A1	0	5	2	4	13231.4976(0.002)	-0.0001
A1	0	7	2	6	A2	0	6	2	5	14995.6283(0.002)	0.0000
A2	0	8	2	7	A1	0	7	2	6	16759.7571(0.002)	-0.0001
A1	0	9	2	8	A2	0	8	2	7	18523.8840(0.002)	-0.0001
A2	0	10	2	9	A1	0	9	2	8	20288.0096(0.002)	0.0009
A1	0	11	2	10	A2	0	10	2	9	22052.1316(0.002)	0.0007
A1	0	4	4	0	A2	0	3	2	1	14997.0908(0.002)	0.0041
A1	0	4	3	2	A2	0	3	2	1	11468.1892(0.002)	0.0032
B1	0	10	4	6	B2	0	10	3	7	11468.7896(0.002)	-0.0030
B2	0	11	4	7	B1	0	11	3	8	13233.1946(0.002)	-0.0004
B1	0	12	4	8	B2	0	12	3	9	14997.5889(0.002)	-0.0005
B1	0	7	3	4	B2	0	6	3	3	18524.5003(0.002)	0.0003
B2	0	8	3	5	B1	0	7	3	4	20288.6189(0.002)	0.0001
B1	0	9	3	6	B2	0	8	3	5	22052.7358(0.002)	0.0006
A2	0	5	3	3	A1	0	4	3	2	13231.8111(0.002)	0.0007
A1	0	6	3	4	A2	0	5	3	3	14995.9396(0.002)	-0.0001
A2	0	7	3	5	A1	0	6	3	4	16760.0662(0.002)	0.0000
A1	0	8	3	6	A2	0	7	3	5	18524.1909(0.002)	0.0002
A2	0	9	3	7	A1	0	8	3	6	20288.3136(0.002)	0.0005
A1	0	10	3	8	A2	0	9	3	7	22052.4334(0.002)	0.0005
B1	0	5	4	2	B2	0	4	3	1	14997.0908(0.002)	0.0015
A2	0	6	4	3	A1	0	5	3	2	16760.3832(0.002)	0.0020
A1	0	9	4	6	A2	0	9	3	7	11468.8455(0.002)	0.0018
A2	0	10	4	7	A1	0	10	3	8	13233.2581(0.002)	-0.0016
A1	0	11	4	8	A2	0	11	3	9	14997.6697(0.002)	0.0003
A1	0	7	4	4	A2	0	6	4	3	18524.5003(0.002)	0.0003
A2	0	8	4	5	A1	0	7	4	4	20288.6189(0.002)	0.0001
A1	0	9	4	6	A2	0	8	4	5	22052.7358(0.002)	0.0006
A1	0	10	5	6	A2	0	10	4	7	11468.7896(0.002)	-0.0030
A2	0	11	5	7	A1	0	11	4	8	13233.1946(0.002)	-0.0004
A1	0	12	5	8	A2	0	12	4	9	14997.5889(0.002)	-0.0005
B2	0	6	3	3	B1	0	5	4	2	16760.3739(0.002)	-0.0029
B1	0	11	5	6	B2	0	11	4	7	11468.7355(0.002)	-0.0010
B2	0	12	5	7	B1	0	12	4	8	13233.1250(0.002)	0.0007

B1	0	13	5	8	B2	0	13	4	9	14997.5024(0.002)	-0.0002
A1	0	11	6	6	A2	0	11	5	7	11468.7355(0.002)	-0.0010
A2	0	12	6	7	A1	0	12	5	8	13233.1250(0.002)	0.0007
A1	0	13	6	8	A2	0	13	5	9	14997.5024(0.002)	-0.0002
B1	0	12	6	6	B2	0	12	5	7	11468.6757(0.002)	0.0005
B2	0	13	6	7	B1	0	13	5	8	13233.0476(0.002)	-0.0001
B1	0	14	6	8	B2	0	14	5	9	14997.4095(0.002)	0.0003
A1	0	12	7	6	A2	0	12	6	7	11468.6757(0.002)	0.0005
A2	0	13	7	7	A1	0	13	6	8	13233.0476(0.002)	-0.0001
A1	0	14	7	8	A2	0	14	6	9	14997.4095(0.002)	0.0003
B1	0	13	7	6	B2	0	13	6	7	11468.6080(0.002)	-0.0009
B1	0	15	7	8	B2	0	15	6	9	14997.3089(0.002)	-0.0002
A1	0	13	8	6	A2	0	13	7	7	11468.6080(0.002)	-0.0009
A1	0	15	8	8	A2	0	15	7	9	14997.3089(0.002)	-0.0002
B1	0	14	8	6	B2	0	14	7	7	11468.5383(0.002)	0.0009
B2	0	15	8	7	B1	0	15	7	8	13232.8769(0.002)	-0.0001
A1	0	14	9	6	A2	0	14	8	7	11468.5383(0.002)	0.0009
A2	0	15	9	7	A1	0	15	8	8	13232.8769(0.002)	-0.0001
B1	0	15	9	6	B2	0	15	8	7	11468.4613(0.002)	0.0005
A1	0	15	10	6	A2	0	15	9	7	11468.4613(0.002)	0.0005
E2	1	10	0	10	E2	1	9	0	9	18545.9842(0.002)	-0.0006
E2	1	11	0	11	E2	1	10	0	10	20305.6635(0.002)	0.0001
E2	1	12	0	12	E2	1	11	0	11	22066.5509(0.002)	-0.0024
E2	1	13	0	13	E2	1	12	0	12	23828.2453(0.002)	0.0002
E1	1	3	1	3	E1	1	2	0	2	7157.5945(0.002)	0.0008
E2	1	4	1	4	E2	1	3	0	3	8719.2607(0.002)	0.0004
E1	1	5	1	5	E1	1	4	0	4	9997.5114(0.002)	0.0027
E2	1	6	1	6	E2	1	5	0	5	11564.5157(0.002)	0.0009
E1	1	7	1	7	E1	1	6	0	6	13286.2219(0.002)	-0.0006
E2	1	8	1	8	E2	1	7	0	7	15033.8052(0.002)	0.0031
E1	1	9	1	9	E1	1	8	0	8	16788.2340(0.002)	-0.0012
E2	1	7	1	6	E2	1	7	0	7	10682.6720(0.002)	0.0060
E2	1	9	1	8	E2	1	9	0	9	14464.7536(0.002)	-0.0018
E2	1	10	1	9	E2	1	10	0	10	16300.7707(0.002)	0.0019
E1	1	10	1	10	E1	1	9	1	9	18545.9842(0.002)	-0.0006
E1	1	11	1	11	E1	1	10	1	10	20305.6635(0.002)	0.0001
E1	1	12	1	12	E1	1	11	1	11	22066.5509(0.002)	-0.0024
E1	1	13	1	13	E1	1	12	1	12	23828.2453(0.002)	0.0002
E2	1	6	2	5	E2	1	6	1	6	8769.3315(0.002)	0.0019
E2	1	8	2	7	E2	1	8	1	8	12601.6664(0.002)	0.0021
E1	1	9	2	8	E1	1	9	1	9	14464.7654(0.002)	-0.0039
E1	1	10	2	9	E1	1	10	1	10	16300.7707(0.002)	0.0022
E2	1	10	1	9	E2	1	9	1	8	20381.9976(0.002)	-0.0006
E2	1	11	1	10	E2	1	10	1	9	22124.4842(0.002)	0.0001
E1	1	4	0	4	E1	1	3	1	3	7359.0809(0.002)	-0.0030

E2	1	5	0	5	E2	1	4	1	4	9709.1838(0.002)	-0.0025
E1	1	6	0	6	E1	1	5	1	5	11538.7194(0.002)	-0.0019
E2	1	7	0	7	E2	1	6	1	6	13284.9587(0.002)	-0.0008
E1	1	8	0	8	E1	1	7	1	7	15033.7583(0.002)	-0.0036
E2	1	9	0	9	E2	1	8	1	8	16788.2340(0.002)	-0.0003
E1	1	7	2	6	E1	1	6	1	5	15408.4296(0.002)	0.0032
E2	1	8	2	7	E2	1	7	1	6	16952.8008(0.002)	0.0004
E1	1	9	2	8	E1	1	8	1	7	18651.8641(0.002)	-0.0005
E2	1	9	2	7	E2	1	9	1	8	12420.9640(0.002)	-0.0006
E2	1	10	3	8	E2	1	10	1	9	14335.9283(0.002)	-0.0013
E1	1	10	2	9	E1	1	9	2	8	20381.9866(0.002)	0.0027
E1	1	11	2	10	E1	1	10	2	9	22124.4842(0.002)	-0.0002
E2	1	7	1	6	E2	1	6	2	5	15198.2922(0.002)	-0.0038
E1	1	8	1	7	E1	1	7	2	6	16938.9423(0.002)	-0.0008
E2	1	9	1	8	E2	1	8	2	7	18651.3250(0.002)	-0.0004
E1	1	10	2	8	E1	1	10	2	9	14335.8159(0.002)	0.0003
E2	1	8	3	6	E2	1	8	2	7	10453.9947(0.002)	-0.0002
E1	1	9	3	7	E1	1	9	2	8	12424.6128(0.002)	-0.0012
E2	1	8	4	5	E2	1	8	3	6	8542.5154(0.002)	0.0013
E1	1	10	2	8	E1	1	9	3	7	22293.1862(0.002)	0.0007
E2	1	6	5	2	E2	1	6	4	3	10678.2273(0.002)	-0.0007
E1	1	8	3	5	E1	1	7	4	4	17636.3211(0.002)	0.0006
E2	2	9	1	9	E2	2	8	0	8	16912.6245(0.002)	0.0008
E2	2	6	2	4	E2	2	5	2	4	16011.6707(0.002)	-0.0009
E2	2	6	3	3	E2	2	5	3	3	16425.3845(0.002)	0.0016

Table S7. Rotational transitions of the ^{13}C (2) and ^{13}C(6) isotopologues of 2,6-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
A1	0	10	0	10	A2	0	9	0	9	20776.9300(0.002)	-0.0007
A2	0	11	0	11	A1	0	10	0	10	22755.6030(0.002)	-0.0005
A1	0	12	0	12	A2	0	11	0	11	24734.2880(0.002)	0.0013
A1	0	4	1	4	A2	0	3	0	3	8934.7930(0.002)	0.0008
A2	0	5	1	5	A1	0	4	0	4	10890.0030(0.002)	-0.0016
A1	0	6	1	6	A2	0	5	0	5	12863.6408(0.002)	0.0002
A2	0	7	1	7	A1	0	6	0	6	14841.2580(0.002)	0.0010
A1	0	8	1	8	A2	0	7	0	7	16819.6780(0.002)	-0.0011
A2	0	9	1	9	A1	0	8	0	8	18798.2808(0.002)	0.0016
A2	0	3	0	3	A1	0	2	1	2	6810.8930(0.002)	-0.0008
A1	0	4	0	4	A2	0	3	1	3	8879.5760(0.002)	-0.0002
A2	0	5	0	5	A1	0	4	1	4	10879.0750(0.002)	-0.0005
A1	0	6	0	6	A2	0	5	1	5	12861.6780(0.002)	-0.0007
A2	0	7	0	7	A1	0	6	1	6	14840.9260(0.002)	0.0002
A1	0	8	0	8	A2	0	7	1	7	16819.6250(0.002)	-0.0005
A2	0	9	0	9	A1	0	8	1	8	18798.2697(0.002)	-0.0011
A1	0	10	1	10	A2	0	9	1	9	20776.9300(0.002)	0.0003
A2	0	11	1	11	A1	0	10	1	10	22755.6030(0.002)	-0.0004
A1	0	12	1	12	A2	0	11	1	11	24734.2880(0.002)	0.0013
A1	0	5	2	4	A2	0	4	1	3	13070.7745(0.002)	-0.0004
A2	0	6	2	5	A1	0	5	1	4	14902.6939(0.002)	0.0001
A1	0	7	2	6	A2	0	6	1	5	16838.0810(0.002)	-0.0001
A2	0	8	2	7	A1	0	7	1	6	18805.4380(0.002)	-0.0003
A1	0	9	2	8	A2	0	8	1	7	20780.8510(0.002)	0.0009
A2	0	3	3	1	A1	0	2	2	0	12514.6220(0.002)	0.0003
A2	0	5	3	3	A1	0	4	2	2	16164.2806(0.002)	-0.0016
A1	0	6	3	4	A2	0	5	2	3	17539.6200(0.002)	-0.0009
A2	0	7	3	5	A1	0	6	2	4	19079.0945(0.002)	0.0047
A1	0	8	3	6	A2	0	7	2	5	20872.0644(0.002)	-0.0002
A1	0	3	3	0	A2	0	2	2	1	13135.7850(0.002)	-0.0038
A2	0	4	3	1	A1	0	3	2	2	17249.9736(0.002)	0.0032
A1	0	5	1	4	A2	0	4	2	3	12698.3172(0.002)	-0.0022
A2	0	6	1	5	A1	0	5	2	4	14806.5420(0.002)	-0.0010
A1	0	7	1	6	A2	0	6	2	5	16816.8817(0.002)	0.0009
A2	0	8	1	7	A1	0	7	2	6	18801.2000(0.002)	-0.0007
A1	0	9	1	8	A2	0	8	2	7	20780.0600(0.002)	0.0018
A1	0	6	2	4	A2	0	5	3	3	16203.3522(0.002)	-0.0014
A2	0	7	2	5	A1	0	6	3	4	18629.5000(0.002)	-0.0007
A1	0	8	2	6	A2	0	7	3	5	20750.3864(0.002)	-0.0005
E	1	5	1	5	E	1	4	0	4	11875.7050(0.002)	0.0017
E	1	6	1	6	E	1	5	0	5	13316.5432(0.002)	0.0017
E	1	7	1	7	E	1	6	0	6	15016.3250(0.002)	0.0018
E	1	8	1	8	E	1	7	0	7	16901.2020(0.002)	0.0003
E	1	6	0	6	E	1	5	1	5	12708.6909(0.002)	-0.0018

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E   1   7   0   7    E   1   6   1   6    14859.8670(0.002)  0.0002
E   1   8   0   8    E   1   7   1   7    16867.8428(0.002) -0.0009
E   1   9   0   9    E   1   8   1   8    18841.9953(0.002)  0.0002

E   1   4   2   3    E   1   3   1   2    12761.5351(0.002) -0.0025
E   1   5   2   4    E   1   4   1   3    15426.7443(0.002) -0.0015
E   1   6   2   5    E   1   5   1   4    17537.7435(0.002)  0.0013
E   1   7   2   6    E   1   6   1   5    18866.6509(0.002)  0.0006
E   1   8   2   7    E   1   7   1   6    19885.4907(0.002)  0.0004
E   1   9   2   8    E   1   8   1   7    21246.5109(0.002)  0.0002

E   1   3   1   2    E   1   2   1   2     9467.0763(0.002)  0.0009
E   1   4   1   3    E   1   3   1   3    12479.2290(0.002)  0.0008
E   1   5   1   4    E   1   4   1   4    16117.3107(0.002)  0.0027

E   1   3   2   1    E   1   2   2   1    10343.6873(0.002)  0.0000
E   1   4   2   2    E   1   3   2   2    13265.8853(0.002) -0.0043
E   1   5   2   3    E   1   4   2   3    16192.2560(0.002) -0.0017
E   1   6   2   4    E   1   5   2   4    19265.3411(0.002)  0.0023

E   1   7   1   6    E   1   6   2   5    15465.9853(0.002)  0.0016
E   1   8   1   7    E   1   7   2   6    18513.4255(0.002) -0.0020
E   1   9   1   8    E   1   8   2   7    20849.5412(0.002) -0.0032

E   1   4   3   2    E   1   3   2   1    13729.7239(0.002)  0.0018
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Table S8. Rotational transitions of the ^{13}C (1) isotopologue of 2,6-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
B1	0	4	1	4	B2	0	3	0	3	8947.5178(0.002)	0.0007
A2	0	5	1	5	A1	0	4	0	4	10907.7892(0.002)	-0.0003
B1	0	6	1	6	B2	0	5	0	5	12885.2636(0.002)	0.0004
A2	0	7	1	7	A1	0	6	0	6	14866.3536(0.002)	0.0012
B1	0	8	1	8	B2	0	7	0	7	16848.1568(0.002)	-0.0017
A2	0	9	1	9	A1	0	8	0	8	18830.1239(0.002)	0.0018
B1	0	10	0	10	B2	0	9	0	9	20812.1316(0.002)	-0.0006
B2	0	11	0	11	B1	0	10	0	10	22794.1617(0.002)	0.0003
B2	0	6	2	5	B1	0	5	1	4	14922.0739(0.002)	-0.0005
A1	0	7	2	6	A2	0	6	1	5	16864.7469(0.002)	-0.0016
B2	0	8	2	7	B1	0	7	1	6	18836.6690(0.002)	0.0003
A1	0	9	2	8	A2	0	8	1	7	20815.7814(0.002)	0.0013
A1	0	10	1	10	A2	0	9	1	9	20812.1316(0.002)	0.0004
A2	0	11	1	11	A1	0	10	1	10	22794.1617(0.002)	0.0002
B2	0	3	0	3	B1	0	2	1	2	6829.2246(0.002)	-0.0006
A1	0	4	0	4	A2	0	3	1	3	8896.7455(0.002)	0.0002
B2	0	5	0	5	B1	0	4	1	4	10898.0122(0.002)	-0.0001
A1	0	6	0	6	A2	0	5	1	5	12883.5573(0.002)	0.0017
B2	0	7	0	7	B1	0	6	1	6	14866.0721(0.002)	0.0002
A1	0	8	0	8	A2	0	7	1	7	16848.1139(0.002)	-0.0004
B2	0	9	0	9	B1	0	8	1	8	18830.1129(0.002)	-0.0025
B1	0	5	1	4	B2	0	4	2	3	12733.7656(0.002)	-0.0005
A2	0	6	1	5	A1	0	5	2	4	14835.8523(0.002)	-0.0018
B1	0	7	1	6	B2	0	6	2	5	16846.2624(0.002)	-0.0002
A2	0	8	1	7	A1	0	7	2	6	18833.0750(0.002)	0.0003
A2	0	5	3	3	A1	0	4	2	2	16136.2159(0.010)	-0.0001
B1	0	6	3	4	B2	0	5	2	3	17522.4218(0.010)	0.0027
A2	0	7	3	5	A1	0	6	2	4	19085.9826(0.010)	0.0023
B1	0	8	3	6	B2	0	7	2	5	20897.5882(0.002)	0.0000
A1	0	6	2	4	A2	0	5	3	3	16281.2322(0.002)	0.0002
B2	0	7	2	5	B1	0	6	3	4	18680.7407(0.002)	0.0005
A1	0	8	2	6	A2	0	7	3	5	20791.1189(0.002)	0.0006
E1	1	5	1	5	E1	1	4	0	4	11873.7329(0.002)	0.0008
E2	1	6	1	6	E2	1	5	0	5	13322.1086(0.002)	0.0008
E1	1	7	1	7	E1	1	6	0	6	15034.4638(0.002)	-0.0008
E2	1	8	1	8	E2	1	7	0	7	16927.3320(0.002)	0.0000
E1	1	9	1	9	E1	1	8	0	8	18879.3532(0.002)	-0.0001
E2	1	4	2	3	E2	1	3	1	2	12767.5067(0.002)	-0.0002
E1	1	5	2	4	E1	1	4	1	3	15436.0087(0.002)	-0.0013
E2	1	6	2	5	E2	1	5	1	4	17534.4046(0.002)	0.0000
E1	1	7	2	6	E1	1	6	1	5	18845.4116(0.002)	-0.0001
E2	1	8	2	7	E2	1	7	1	6	19870.7551(0.002)	0.0005
E2	1	3	1	2	E2	1	2	1	2	9470.0591(0.002)	0.0007
E1	1	4	1	3	E1	1	3	1	3	12497.4798(0.002)	0.0000

E2	1	5	0	5	E2	1	4	1	4	10199.1274(0.002)	0.0011
E1	1	6	0	6	E1	1	5	1	5	12744.6144(0.002)	-0.0012
E2	1	7	0	7	E2	1	6	1	6	14889.4069(0.002)	0.0000
E1	1	8	0	8	E1	1	7	1	7	16897.1535(0.002)	-0.0004
E2	1	9	0	9	E2	1	8	1	8	18873.7246(0.002)	-0.0001
E2	1	7	1	6	E2	1	6	2	5	15573.4168(0.002)	-0.0001
E1	1	8	1	7	E1	1	7	2	6	18584.6388(0.002)	0.0005
E1	1	4	2	2	E1	1	3	2	2	13268.1832(0.002)	-0.0002
E2	1	5	2	3	E2	1	4	2	3	16205.8536(0.002)	0.0008
E2	1	4	3	2	E2	1	3	2	1	13725.8127(0.002)	-0.0010
E1	1	4	3	1	E1	1	3	3	1	14225.7354(0.002)	0.0007

Table S9. Rotational transitions of the ^{13}C (3) and ^{13}C (5) isotopologues of 2,6-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
A1	0	4	1	4	A2	0	3	0	3	8895.3999(0.002)	0.0003
A2	0	5	1	5	A1	0	4	0	4	10844.6241(0.002)	0.0005
A1	0	6	1	6	A2	0	5	0	5	12810.7441(0.002)	0.0001
A2	0	7	1	7	A1	0	6	0	6	14780.3983(0.002)	-0.0007
A1	0	8	1	8	A2	0	7	0	7	16750.7517(0.002)	-0.0008
A2	0	9	1	9	A1	0	8	0	8	18721.2602(0.002)	0.0008
A1	0	10	0	10	A2	0	9	0	9	20691.8105(0.002)	-0.0009
A2	0	11	0	11	A1	0	10	0	10	22662.3826(0.002)	0.0000
A1	0	12	0	12	A2	0	11	0	11	24632.9633(0.002)	0.0001
A2	0	3	0	3	A1	0	2	1	2	6790.8584(0.002)	-0.0012
A1	0	4	0	4	A2	0	3	1	3	8845.6556(0.002)	0.0000
A2	0	5	0	5	A1	0	4	1	4	10835.0878(0.002)	-0.0015
A1	0	6	0	6	A2	0	5	1	5	12809.0860(0.002)	-0.0005
A2	0	7	0	7	A1	0	6	1	6	14780.1274(0.002)	-0.0006
A1	0	8	0	8	A2	0	7	1	7	16750.7096(0.002)	-0.0004
A2	0	9	0	9	A1	0	8	1	8	18721.2514(0.002)	-0.0015
A1	0	10	1	10	A2	0	9	1	9	20691.8105(0.002)	-0.0002
A2	0	11	1	11	A1	0	10	1	10	22662.3826(0.002)	0.0001
A1	0	12	1	12	A2	0	11	1	11	24632.9633(0.002)	0.0002
A2	0	4	2	3	A1	0	3	1	2	11345.0875(0.002)	-0.0011
A1	0	5	2	4	A2	0	4	1	3	12999.3101(0.002)	0.0001
A2	0	6	2	5	A1	0	5	1	4	14834.8717(0.002)	0.0002
A1	0	7	2	6	A2	0	6	1	5	16766.9593(0.002)	0.0000
A2	0	8	2	7	A1	0	7	1	6	18727.6750(0.002)	0.0009
A1	0	9	2	8	A2	0	8	1	7	20695.3989(0.002)	0.0001
A2	0	10	2	9	A1	0	9	1	8	22664.8554(0.002)	0.0017
A1	0	5	1	4	A2	0	4	2	3	12662.4075(0.002)	-0.0008
A2	0	6	1	5	A1	0	5	2	4	14750.7597(0.002)	-0.0005
A1	0	7	1	6	A2	0	6	2	5	16749.0127(0.002)	0.0008
A2	0	8	1	7	A1	0	7	2	6	18724.2014(0.002)	0.0002
A1	0	9	1	8	A2	0	8	2	7	20694.7697(0.002)	-0.0007
A2	0	10	1	9	A1	0	9	2	8	22664.7481(0.002)	0.0026
A2	0	3	3	1	A1	0	2	2	0	12407.7668(0.002)	0.0004
A2	0	5	3	3	A1	0	4	2	2	16033.7073(0.002)	0.0008
A1	0	6	3	4	A2	0	5	2	3	17413.4098(0.002)	0.0004
A2	0	7	3	5	A1	0	6	2	4	18971.5497(0.002)	0.0005
A1	0	8	3	6	A2	0	7	2	5	20775.2226(0.002)	0.0004
A1	0	3	3	0	A2	0	2	2	1	13048.4905(0.002)	-0.0022
A1	0	6	2	4	A2	0	5	3	3	16195.3042(0.002)	-0.0004
A2	0	7	2	5	A1	0	6	3	4	18575.8856(0.002)	-0.0003
A1	0	8	2	6	A2	0	7	3	5	20671.7948(0.002)	0.0013
E	1	4	1	4	E	1	3	0	3	10310.2779(0.002)	-0.0014
E	1	5	1	5	E	1	4	0	4	11800.9316(0.002)	-0.0020
E	1	6	1	6	E	1	5	0	5	13241.9621(0.002)	-0.0022
E	1	7	1	7	E	1	6	0	6	14946.2324(0.002)	-0.0011
E	1	8	1	8	E	1	7	0	7	16829.0236(0.002)	0.0003

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E   1   9   1   9    E   1   8   0   8    18770.0331(0.002) -0.0010
E   1  10   1  10    E   1   9   0   9    20727.4036(0.002) -0.0011

E   1   5   0   5    E   1   4   1   4    10146.0171(0.002)  0.0021
E   1   6   0   6    E   1   5   1   5    12673.5276(0.002)  0.0016
E   1   7   0   7    E   1   6   1   6    14804.0827(0.002)  0.0002
E   1   8   0   8    E   1   7   1   7    16799.5786(0.002) -0.0009
E   1   9   0   9    E   1   8   1   8    18764.5659(0.002) -0.0007
E   1  10   0  10    E   1   9   1   9    20726.4576(0.002) -0.0020

E   1   4   2   3    E   1   3   1   2    12690.8254(0.002) -0.0006
E   1   5   2   4    E   1   4   1   3    15343.6783(0.002) -0.0003
E   1   6   2   5    E   1   5   1   4    17426.8345(0.002)  0.0026
E   1   7   2   6    E   1   6   1   5    18726.5735(0.002)  0.0004
E   1   8   2   7    E   1   7   1   6    19747.0967(0.002)  0.0033
E   1   9   2   8    E   1   8   1   7    21131.5390(0.002)  0.0006

E   1   3   1   2    E   1   2   1   2     9412.8464(0.002) -0.0011
E   1   4   1   3    E   1   3   1   3    12424.8396(0.002) -0.0021
E   1   5   1   4    E   1   4   1   4    16081.6829(0.002) -0.0005

E   1   7   1   6    E   1   6   2   5    15498.1552(0.002)  0.0016
E   1   8   1   7    E   1   7   2   6    18484.2001(0.002)  0.0008
E   1   9   1   8    E   1   8   2   7    20778.5214(0.002)  0.0000
E   1  10   1   9    E   1   9   2   8    22800.7052(0.002)  0.0007

E   1   3   2   1    E   1   2   2   1    10270.7840(0.002)  0.0015
E   1   4   2   2    E   1   3   2   2    13187.7304(0.002)  0.0006
E   1   5   2   3    E   1   4   2   3    16109.7445(0.002) -0.0006
E   1   6   2   4    E   1   5   2   4    19189.1987(0.002) -0.0022
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Table S10. Rotational transitions of the ^{13}C (4) isotopologue of 2,6-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
B1	0	10	0	10	B2	0	9	0	9	20652.3100(0.002)	0.0002
B2	0	11	0	11	B1	0	10	0	10	22619.1275(0.002)	0.0003
B1	0	4	1	4	B2	0	3	0	3	8873.4636(0.002)	-0.0001
A2	0	5	1	5	A1	0	4	0	4	10822.6136(0.002)	-0.0013
B1	0	6	1	6	B2	0	5	0	5	12785.9606(0.002)	-0.0001
A2	0	7	1	7	A1	0	6	0	6	14752.0878(0.002)	-0.0006
B1	0	8	1	8	B2	0	7	0	7	16718.7398(0.002)	-0.0008
A2	0	9	1	9	A1	0	8	0	8	18685.5072(0.002)	-0.0003
B2	0	3	0	3	B1	0	2	1	2	6792.3986(0.002)	-0.0004
B2	0	5	0	5	B1	0	4	1	4	10815.3739(0.002)	-0.0004
B2	0	7	0	7	B1	0	6	1	6	14751.9075(0.002)	-0.0006
A1	0	8	0	8	A2	0	7	1	7	16718.7141(0.002)	-0.0001
B2	0	9	0	9	B1	0	8	1	8	18685.5035(0.002)	-0.0003
A1	0	5	2	4	A2	0	4	1	3	12942.1351(0.002)	-0.0005
B2	0	6	2	5	B1	0	5	1	4	14794.9248(0.002)	-0.0008
A1	0	7	2	6	A2	0	6	1	5	16731.3808(0.002)	-0.0011
B2	0	8	2	7	B1	0	7	1	6	18690.7127(0.002)	0.0002
A1	0	9	2	8	A2	0	8	1	7	20655.3449(0.002)	0.0024
B2	0	10	2	9	B1	0	9	1	8	22621.2534(0.002)	-0.0031
A1	0	10	1	10	A2	0	9	1	9	20652.3100(0.002)	0.0008
A2	0	11	1	11	A1	0	10	1	10	22619.1275(0.002)	0.0002
B1	0	5	1	4	B2	0	4	2	3	12666.6844(0.002)	-0.0006
A2	0	6	1	5	A1	0	5	2	4	14730.7300(0.002)	0.0008
B1	0	7	1	6	B2	0	6	2	5	16718.5778(0.002)	-0.0002
A2	0	8	1	7	A1	0	7	2	6	18688.3962(0.002)	0.0009
B1	0	9	1	8	B2	0	8	2	7	20654.9498(0.002)	-0.0005
A2	0	10	1	9	A1	0	9	2	8	22621.1940(0.002)	0.0007
B1	0	4	3	2	B2	0	3	2	1	14316.9244(0.002)	-0.0006
A2	0	5	3	3	A1	0	4	2	2	15879.0585(0.002)	0.0038
A2	0	7	3	5	A1	0	6	2	4	18884.0148(0.002)	0.0007
B1	0	8	3	6	B2	0	7	2	5	20716.6311(0.002)	-0.0008
B1	0	3	3	0	B2	0	2	2	1	12961.4930(0.002)	-0.0042
A1	0	6	2	4	A2	0	5	3	3	16268.5440(0.002)	0.0015
B2	0	7	2	5	B1	0	6	3	4	18578.6965(0.002)	0.0005
A1	0	8	2	6	A2	0	7	3	5	20642.2954(0.002)	-0.0013
B2	0	9	2	7	B1	0	8	3	6	22628.6021(0.002)	0.0036
E2	1	6	1	6	E2	1	5	0	5	13180.1624(0.002)	0.0058
E2	1	8	1	8	E2	1	7	0	7	16791.8338(0.002)	0.0003
E1	1	9	1	9	E1	1	8	0	8	18732.2495(0.002)	0.0008
E2	1	10	1	10	E2	1	9	0	9	20686.8141(0.002)	0.0018
E2	1	3	1	2	E2	1	2	1	2	9365.7105(0.002)	0.0025
E2	1	5	0	5	E2	1	4	1	4	10195.2446(0.002)	-0.0029
E1	1	6	0	6	E1	1	5	1	5	12679.4353(0.002)	-0.0019
E2	1	7	0	7	E2	1	6	1	6	14784.4713(0.002)	-0.0010

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E1  1   8   0   8    E1  1   7   1   7    16768.7438(0.002)  0.0005
E2  1   9   0   9    E2  1   8   1   8    18728.2076(0.002) -0.0007
E1  1  10   0  10    E1  1   9   1   9    20686.1544(0.002) -0.0005

E2  1   4   2   3    E2  1   3   1   2    12631.4652(0.002)  0.0005
E1  1   5   2   4    E1  1   4   1   3    15276.1589(0.002) -0.0024
E1  1   9   2   8    E1  1   8   1   7    21042.9387(0.002) -0.0033

E2  1   3   2   1    E2  1   2   2   1    10193.0762(0.002)  0.0029
E1  1   4   2   2    E1  1   3   2   2    13116.8323(0.002) -0.0006
E2  1   5   2   3    E2  1   4   2   3    16048.4324(0.002) -0.0014
E1  1   6   2   4    E1  1   5   2   4    19161.2358(0.002)  0.0025

E2  1   7   1   6    E2  1   6   2   5    15644.2909(0.002)  0.0015
E1  1   8   1   7    E1  1   7   2   6    18530.1675(0.002) -0.0001
E2  1   9   1   8    E2  1   8   2   7    20762.3243(0.002) -0.0006

E2  1   4   3   2    E2  1   3   2   1    13553.5092(0.002) -0.0021

E1  1   4   3   1    E1  1   3   3   1    14035.1509(0.002) -0.0002
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Table S11. Rotational transitions of the ^{13}C (7) isotopologue of 2,6-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
B1	0	4	1	4	B2	0	3	0	3	8864.8711(0.002)	0.0015
A2	0	5	1	5	A1	0	4	0	4	10812.6858(0.002)	0.0002
B1	0	6	1	6	B2	0	5	0	5	12774.3670(0.002)	0.0001
B1	0	8	1	8	B2	0	7	0	7	16703.6238(0.002)	-0.0003
A2	0	9	1	9	A1	0	8	0	8	18668.6170(0.002)	0.0013
B1	0	10	0	10	B2	0	9	0	9	20633.6422(0.002)	0.0007
B2	0	11	0	11	B1	0	10	0	10	22598.6834(0.002)	0.0012
B2	0	3	0	3	B1	0	2	1	2	6787.9855(0.002)	0.0008
A1	0	6	0	6	A2	0	5	1	5	12773.2400(0.002)	-0.0009
B2	0	7	0	7	B1	0	6	1	6	14738.5710(0.002)	-0.0011
A1	0	8	0	8	A2	0	7	1	7	16703.5993(0.002)	0.0001
B2	0	9	0	9	B1	0	8	1	8	18668.6111(0.002)	-0.0011
A1	0	5	2	4	A2	0	4	1	3	12926.6478(0.002)	-0.0016
B2	0	6	2	5	B1	0	5	1	4	14780.2427(0.002)	0.0003
A1	0	7	2	6	A2	0	6	1	5	16715.8623(0.002)	-0.0009
B2	0	8	2	7	B1	0	7	1	6	18673.6816(0.002)	0.0001
A1	0	9	2	8	A2	0	8	1	7	20636.6068(0.002)	-0.0004
A1	0	10	1	10	A2	0	9	1	9	20633.6422(0.002)	0.0012
A2	0	11	1	11	A1	0	10	1	10	22598.6834(0.002)	0.0011
B1	0	3	3	0	B2	0	2	2	1	12942.3609(0.002)	-0.0021
B1	0	4	3	2	B2	0	3	2	1	14289.4578(0.010)	-0.0052
A2	0	5	3	3	A1	0	4	2	2	15849.4187(0.002)	0.0040
B1	0	6	3	4	B2	0	5	2	3	17251.6115(0.010)	-0.0026
A2	0	7	3	5	A1	0	6	2	4	18861.0975(0.002)	-0.0008
B1	0	8	3	6	B2	0	7	2	5	20695.8175(0.002)	-0.0014
A2	0	4	1	3	A1	0	3	2	2	10359.4458(0.002)	0.0010
B1	0	5	1	4	B2	0	4	2	3	12658.5041(0.002)	0.0002
A2	0	6	1	5	A1	0	5	2	4	14718.3035(0.002)	0.0007
B1	0	7	1	6	B2	0	6	2	5	16703.6115(0.002)	-0.0055
A2	0	8	1	7	A1	0	7	2	6	18671.4835(0.002)	-0.0008
B1	0	9	1	8	B2	0	8	2	7	20636.2404(0.002)	0.0018
A1	0	6	2	4	A2	0	5	3	3	16265.9046(0.002)	0.0015
B2	0	7	2	5	B1	0	6	3	4	18566.1329(0.002)	0.0015
A1	0	8	2	6	A2	0	7	3	5	20624.6596(0.002)	0.0000
E2	1	6	1	6	E2	1	5	0	5	13163.2474(0.002)	0.0027
E2	1	8	1	8	E2	1	7	0	7	16775.9843(0.002)	-0.0007
E1	1	9	1	9	E1	1	8	0	8	18715.0439(0.002)	0.0001
E1	1	6	0	6	E1	1	5	1	5	12671.8644(0.002)	-0.0025
E2	1	7	0	7	E2	1	6	1	6	14772.1260(0.002)	-0.0009
E1	1	8	0	8	E1	1	7	1	7	16753.6781(0.002)	0.0018
E2	1	9	0	9	E2	1	8	1	8	18711.1702(0.002)	-0.0006
E1	1	5	2	4	E1	1	4	1	3	15257.2248(0.002)	-0.0019
E1	1	7	2	6	E1	1	6	1	5	18536.9928(0.002)	-0.0002
E2	1	8	2	7	E2	1	7	1	6	19573.9891(0.002)	0.0014

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E2  1   5   1   4    E2  1   4   1   4    16107.4937(0.002)  0.0009

E2  1   5   2   3    E2  1   4   2   3    16030.3808(0.002) -0.0030
E1  1   6   2   4    E1  1   5   2   4    19146.0954(0.002)  0.0032

E2  1   7   1   6    E2  1   6   2   5    15653.4238(0.002)  0.0005
E1  1   8   1   7    E1  1   7   2   6    18523.4712(0.002) -0.0015
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Table S12. Rotational transitions of the ^{13}C (1) isotopologue of 3,5-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
A2	0	3	0	3	A1	0	2	0	2	6152.2218(0.002)	0.0018
B2	0	5	0	5	B1	0	4	0	4	9667.5582(0.002)	-0.0016
B1	0	6	0	6	B2	0	5	0	5	11425.2657(0.002)	-0.0004
B2	0	7	0	7	B1	0	6	0	6	13182.9704(0.002)	-0.0009
B1	0	8	0	8	B2	0	7	0	7	14940.6743(0.002)	-0.0007
B2	0	9	0	9	B1	0	8	0	8	16698.3762(0.002)	-0.0007
B1	0	10	0	10	B2	0	9	0	9	18456.0750(0.002)	-0.0019
B2	0	11	0	11	B1	0	10	0	10	20213.7740(0.002)	-0.0006
B1	0	12	0	12	B2	0	11	0	11	21971.4691(0.002)	-0.0009
A1	0	4	1	4	A2	0	3	0	3	7909.8542(0.002)	0.0007
A2	0	5	1	5	A1	0	4	1	4	9667.5582(0.002)	-0.0016
A1	0	6	1	6	A2	0	5	1	5	11425.2657(0.002)	-0.0004
A2	0	7	1	7	A1	0	6	1	6	13182.9704(0.002)	-0.0009
A1	0	8	1	8	A2	0	7	1	7	14940.6743(0.002)	-0.0007
A2	0	9	1	9	A1	0	8	1	8	16698.3762(0.002)	-0.0007
A1	0	10	1	10	A2	0	9	1	9	18456.0750(0.002)	-0.0019
A2	0	11	1	11	A1	0	10	1	10	20213.7740(0.002)	-0.0006
A1	0	12	1	12	A2	0	11	1	11	21971.4691(0.002)	-0.0009
B1	0	4	0	4	B2	0	3	1	3	7909.8542(0.002)	0.0017
B2	0	6	1	5	B1	0	5	1	4	13183.2880(0.002)	0.0001
B1	0	7	1	6	B2	0	6	1	5	14940.9871(0.002)	0.0002
B2	0	8	1	7	B1	0	7	1	6	16698.6873(0.002)	0.0014
B1	0	9	1	8	B2	0	8	1	7	18456.3853(0.002)	0.0016
B2	0	10	1	9	B1	0	9	1	8	20214.0790(0.002)	-0.0007
B1	0	11	1	10	B2	0	10	1	9	21971.7748(0.002)	0.0013
A1	0	6	3	4	A2	0	5	2	3	14941.3739(0.002)	0.0008
B2	0	7	2	5	B1	0	6	2	4	16699.0217(0.002)	0.0001
B1	0	8	2	6	B2	0	7	2	5	18456.7048(0.002)	0.0009
A2	0	6	2	5	A1	0	5	2	4	13183.2880(0.002)	0.0001
A1	0	7	2	6	A2	0	6	2	5	14940.9871(0.002)	0.0002
A2	0	8	2	7	A1	0	7	2	6	16698.6873(0.002)	0.0014
A1	0	9	2	8	A2	0	8	2	7	18456.3853(0.002)	0.0016
A2	0	10	2	9	A1	0	9	2	8	20214.0790(0.002)	-0.0007
A1	0	11	2	10	A2	0	10	2	9	21971.7748(0.002)	0.0013
A2	0	7	3	5	A1	0	6	3	4	16699.0217(0.002)	-0.0001
A1	0	8	3	6	A2	0	7	3	5	18456.7048(0.002)	0.0009
B2	0	6	3	3	B1	0	5	3	2	16702.3679(0.002)	-0.0009
B1	0	7	3	4	B2	0	6	3	3	18457.2307(0.002)	0.0071
B1	0	6	2	4	B2	0	5	3	3	14941.3446(0.002)	-0.0007
A1	0	7	4	4	A2	0	6	4	3	18457.1361(0.002)	-0.0044
E2	1	8	0	8	E2	1	7	0	7	14978.5998(0.002)	0.0013
E2	1	9	0	9	E2	1	8	0	8	16726.7689(0.002)	0.0016
E2	1	10	0	10	E2	1	9	0	9	18478.1874(0.002)	0.0012

E2	1	6	1	6	E2	1	5	0	5	11519.2833(0.002)	0.0004
E1	1	7	1	7	E1	1	6	0	6	13237.0093(0.002)	-0.0002
E1	1	8	1	8	E1	1	7	1	7	14978.5747(0.002)	0.0017
E1	1	9	1	9	E1	1	8	1	8	16726.7689(0.002)	0.0011
E1	1	10	1	10	E1	1	9	1	9	18478.1874(0.002)	0.0012
E2	1	8	2	7	E2	1	7	1	6	16886.0915(0.002)	-0.0012
E1	1	6	0	6	E1	1	5	1	5	11497.3759(0.002)	-0.0003
E2	1	7	0	7	E2	1	6	1	6	13236.0594(0.002)	0.0005
E1	1	6	1	5	E1	1	5	2	4	13007.5134(0.002)	0.0000
E2	1	7	1	6	E2	1	6	2	5	15151.0855(0.002)	-0.0027
E1	1	8	1	7	E1	1	7	2	6	16875.6367(0.002)	-0.0015
E2	1	6	3	4	E2	1	5	2	3	16886.6626(0.002)	-0.0018

Table S13. Rotational transitions of the ^{13}C (2) and ^{13}C (6) isotopologue of 3,5-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
A2	0	8	1	7	A1	0	8	0	8	13187.1966(0.002)	0.0000
A2	0	3	0	3	A1	0	2	0	2	6153.2213(0.002)	0.0025
A2	0	5	0	5	A1	0	4	0	4	9669.1423(0.002)	-0.0001
A1	0	6	0	6	A2	0	5	0	5	11427.1360(0.002)	-0.0008
A2	0	7	0	7	A1	0	6	0	6	13185.1294(0.002)	-0.0007
A1	0	8	0	8	A2	0	7	0	7	14943.1210(0.002)	-0.0008
A2	0	9	0	9	A1	0	8	0	8	16701.1114(0.002)	-0.0004
A1	0	10	0	10	A2	0	9	0	9	18459.0996(0.002)	-0.0002
A2	0	11	0	11	A1	0	10	0	10	20217.0855(0.002)	-0.0001
A1	0	12	0	12	A2	0	11	0	11	21975.0689(0.002)	-0.0001
A2	0	3	1	3	A1	0	2	0	2	6153.2213(0.002)	0.0016
A2	0	6	1	5	A1	0	5	1	4	13185.4415(0.002)	-0.0009
A1	0	7	1	6	A2	0	6	1	5	14943.4301(0.002)	0.0003
A2	0	8	1	7	A1	0	7	1	6	16701.4169(0.002)	-0.0001
A1	0	9	1	8	A2	0	8	1	7	18459.4020(0.002)	-0.0009
A1	0	5	2	4	A2	0	4	1	3	11427.4644(0.002)	0.0031
A2	0	3	1	3	A1	0	2	1	2	6153.0885(0.002)	-0.0009
A2	0	5	1	5	A1	0	4	1	4	9669.1423(0.002)	-0.0001
A1	0	6	1	6	A2	0	5	1	5	11427.1360(0.002)	-0.0008
A2	0	7	1	7	A1	0	6	1	6	13185.1294(0.002)	-0.0007
A1	0	8	1	8	A2	0	7	1	7	14943.1210(0.002)	-0.0008
A2	0	9	1	9	A1	0	8	1	8	16701.1114(0.002)	-0.0004
A1	0	10	1	10	A2	0	9	1	9	18459.0996(0.002)	-0.0002
A2	0	11	1	11	A1	0	10	1	10	20217.0855(0.002)	-0.0001
A1	0	12	1	12	A2	0	11	1	11	21975.0689(0.002)	-0.0001
A2	0	3	0	3	A1	0	2	1	2	6153.0885(0.002)	-0.0001
A2	0	8	2	7	A1	0	8	1	8	13187.1966(0.002)	0.0000
A2	0	5	3	3	A1	0	4	2	2	13186.9203(0.002)	-0.0007
A2	0	6	2	5	A1	0	5	2	4	13185.4415(0.002)	-0.0009
A1	0	7	2	6	A2	0	6	2	5	14943.4301(0.002)	0.0003
A2	0	8	2	7	A1	0	7	2	6	16701.4169(0.002)	-0.0001
A1	0	9	2	8	A2	0	8	2	7	18459.4020(0.002)	-0.0009
A1	0	5	1	4	A2	0	4	2	3	11427.4545(0.002)	-0.0008
A1	0	6	2	4	A2	0	5	2	3	14943.8045(0.002)	0.0008
A2	0	7	2	5	A1	0	6	2	4	16701.7461(0.002)	0.0000
A1	0	8	2	6	A2	0	7	2	5	18459.7177(0.002)	0.0002
A2	0	6	4	3	A1	0	5	3	2	16704.8618(0.002)	0.0002
A1	0	7	4	4	A2	0	6	3	3	18460.2113(0.002)	0.0003
A2	0	5	3	3	A1	0	4	3	2	13184.9686(0.002)	0.0002
A1	0	6	3	4	A2	0	5	3	3	14943.7805(0.002)	0.0006
A2	0	7	3	5	A1	0	6	3	4	16701.7461(0.002)	0.0003

A1	0	8	3	6	A2	0	7	3	5	18459.7177(0.002)	0.0002
A2	0	5	2	3	A1	0	4	3	2	13184.9446(0.002)	0.0002
A1	0	7	3	4	A2	0	6	4	3	18460.1390(0.002)	0.0010
E	1	10	0	10	E	1	9	0	9	18481.5238(0.002)	0.0022
E	1	11	0	11	E	1	10	0	10	20235.0570(0.002)	0.0022
E	1	6	1	6	E	1	5	0	5	11525.6794(0.002)	0.0005
E	1	7	1	7	E	1	6	0	6	13240.3303(0.002)	0.0004
E	1	8	1	8	E	1	7	0	7	14981.6522(0.002)	0.0006
E	1	9	1	9	E	1	8	0	8	16729.9222(0.002)	0.0005
E	1	4	2	3	E	1	3	1	2	10862.4063(0.002)	0.0004
E	1	8	2	7	E	1	7	1	6	16896.0825(0.002)	-0.0027
E	1	5	0	5	E	1	4	1	4	9671.2324(0.002)	-0.0026
E	1	6	0	6	E	1	5	1	5	11498.1621(0.002)	-0.0011
E	1	7	0	7	E	1	6	1	6	13238.9102(0.002)	-0.0007
E	1	8	0	8	E	1	7	1	7	14981.6033(0.002)	0.0004
E	1	9	0	9	E	1	8	1	8	16729.9222(0.002)	0.0017
E	1	10	1	10	E	1	9	1	9	18481.5238(0.002)	0.0022
E	1	11	1	11	E	1	10	1	10	20235.0570(0.002)	0.0022
E	1	6	3	4	E	1	5	2	3	16905.7556(0.002)	-0.0007
E	1	4	2	2	E	1	3	2	2	11110.5527(0.002)	-0.0004
E	1	8	1	7	E	1	7	2	6	16880.5285(0.002)	-0.0024

Table S14. Rotational transitions of the ^{13}C (3) and ^{13}C (5) isotopologues of 3,5-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
A1	0	4	0	4	A2	0	3	0	3	7914.4425(0.002)	-0.0006
A1	0	6	0	6	A2	0	5	0	5	11431.8950(0.002)	-0.0009
A2	0	7	0	7	A1	0	6	0	6	13190.6206(0.002)	-0.0002
A1	0	8	0	8	A2	0	7	0	7	14949.3442(0.002)	0.0000
A2	0	9	0	9	A1	0	8	0	8	16708.0665(0.002)	0.0007
A1	0	10	0	10	A2	0	9	0	9	18466.7859(0.002)	0.0004
A2	0	11	0	11	A1	0	10	0	10	20225.5039(0.002)	0.0009
A1	0	12	0	12	A2	0	11	0	11	21984.2180(0.002)	-0.0001
A2	0	3	1	3	A1	0	2	0	2	6155.7679(0.010)	0.0014
A2	0	8	1	7	A1	0	8	0	8	13192.7490(0.002)	-0.0006
A1	0	9	1	8	A2	0	9	0	9	14951.7794(0.002)	0.0007
A1	0	4	1	4	A2	0	3	1	3	7914.4425(0.002)	0.0000
A1	0	6	1	6	A2	0	5	1	5	11431.8950(0.002)	-0.0009
A2	0	7	1	7	A1	0	6	1	6	13190.6206(0.002)	-0.0002
A1	0	8	1	8	A2	0	7	1	7	14949.3442(0.002)	0.0000
A2	0	9	1	9	A1	0	8	1	8	16708.0665(0.002)	0.0007
A1	0	10	1	10	A2	0	9	1	9	18466.7859(0.002)	0.0004
A2	0	11	1	11	A1	0	10	1	10	20225.5039(0.002)	0.0009
A1	0	12	1	12	A2	0	11	1	11	21984.2180(0.002)	-0.0001
A2	0	6	1	5	A1	0	5	1	4	13190.9384(0.002)	0.0003
A1	0	7	1	6	A2	0	6	1	5	14949.6576(0.002)	-0.0003
A2	0	8	1	7	A1	0	7	1	6	16708.3774(0.002)	0.0002
A1	0	9	1	8	A2	0	8	1	7	18467.0947(0.002)	-0.0002
A1	0	5	2	4	A2	0	4	1	3	11432.2202(0.002)	-0.0021
A2	0	8	2	7	A1	0	8	1	8	13192.7490(0.002)	-0.0006
A1	0	9	2	8	A2	0	9	1	9	14951.7794(0.002)	0.0007
A1	0	10	3	8	A2	0	10	1	9	14951.6555(0.002)	-0.0007
A2	0	3	0	3	A1	0	2	1	2	6155.6668(0.010)	-0.0007
A2	0	9	2	7	A1	0	9	1	8	13192.6355(0.002)	-0.0014
A1	0	5	1	4	A2	0	4	2	3	11432.2202(0.002)	0.0018
A2	0	6	2	5	A1	0	5	2	4	13190.9384(0.002)	0.0003
A1	0	7	2	6	A2	0	6	2	5	14949.6576(0.002)	-0.0003
A2	0	8	2	7	A1	0	7	2	6	16708.3774(0.002)	0.0002
A1	0	9	2	8	A2	0	8	2	7	18467.0947(0.002)	-0.0002
A1	0	6	2	4	A2	0	5	2	3	14950.0192(0.002)	-0.0009
A2	0	7	2	5	A1	0	6	2	4	16708.7059(0.002)	-0.0001
A2	0	5	3	3	A1	0	4	2	2	13192.1363(0.002)	-0.0004
A1	0	6	3	4	A2	0	5	2	3	14950.0192(0.002)	-0.0011

A2	0	10	3	7	A1	0	10	2	8	13192.4975(0.002)	0.0013
A1	0	11	3	8	A2	0	11	2	9	14951.5101(0.002)	0.0014
A1	0	10	2	8	A2	0	10	2	9	14951.6555(0.002)	-0.0007
A2	0	9	3	7	A1	0	9	2	8	13192.6355(0.002)	-0.0014
A2	0	10	4	7	A1	0	10	3	8	13192.4975(0.002)	0.0013
A1	0	11	4	8	A2	0	11	3	9	14951.5101(0.002)	0.0014
A2	0	11	4	7	A1	0	11	3	8	13192.3233(0.002)	0.0007
A1	0	6	3	4	A2	0	5	3	3	14950.0047(0.002)	0.0003
A2	0	7	3	5	A1	0	6	3	4	16708.7059(0.002)	0.0000
A1	0	6	2	4	A2	0	5	3	3	14950.0047(0.002)	0.0004
A2	0	6	4	3	A1	0	5	4	2	16707.6946(0.002)	-0.0009
A2	0	6	3	3	A1	0	5	4	2	16707.6481(0.002)	0.0001
A2	0	11	5	7	A1	0	11	4	8	13192.3233(0.002)	0.0007
E	1	6	1	6	E	1	5	0	5	11530.5876(0.002)	0.0018
E	1	7	1	7	E	1	6	0	6	13245.8748(0.002)	0.0006
E	1	8	1	8	E	1	7	0	7	14987.9075(0.002)	0.0000
E	1	9	1	9	E	1	8	0	8	16736.9005(0.002)	0.0000
E	1	10	0	10	E	1	9	0	9	18489.2285(0.002)	0.0017
E	1	6	0	6	E	1	5	1	5	11502.9366(0.002)	-0.0003
E	1	6	0	6	E	1	5	1	5	11502.9352(0.002)	-0.0017
E	1	7	0	7	E	1	6	1	6	13244.4449(0.002)	-0.0001
E	1	8	0	8	E	1	7	1	7	14987.8587(0.002)	0.0003
E	1	9	0	9	E	1	8	1	8	16736.9005(0.002)	0.0012
E	1	7	2	6	E	1	6	1	5	15371.8603(0.002)	0.0014
E	1	8	2	7	E	1	7	1	6	16903.2970(0.002)	-0.0008
E	1	10	1	10	E	1	9	1	9	18489.2285(0.002)	0.0018
E	1	5	2	3	E	1	4	2	3	14112.4503(0.002)	0.0016
E	1	8	1	7	E	1	7	2	6	16887.6304(0.002)	-0.0028
E	1	6	3	4	E	1	5	2	3	16913.0595(0.002)	-0.0021
E	1	6	3	3	E	1	5	3	3	17217.2153(0.002)	-0.0006

Table S15. Rotational transitions of the ^{13}C (4) isotopologue of 3,5-difluorotoluene.

Upper level					Lower level					Measured(Unc.) o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc	
A2	0	3	0	3	A1	0	2	0	2	6154.7863(0.002) 0.0000
B2	0	5	0	5	B1	0	4	0	4	9671.6170(0.002) 0.0003
B1	0	6	0	6	B2	0	5	0	5	11430.0609(0.002) -0.0001
B2	0	7	0	7	B1	0	6	0	6	13188.5037(0.002) -0.0004
B1	0	8	0	8	B2	0	7	0	7	14946.9457(0.002) 0.0001
B2	0	9	0	9	B1	0	8	0	8	16705.3854(0.002) -0.0001
B1	0	10	0	10	B2	0	9	0	9	18463.8242(0.002) 0.0009
A1	0	4	1	4	A2	0	3	0	3	7913.1716(0.002) -0.0005
B2	0	3	1	3	B1	0	2	1	2	6154.6709(0.002) 0.0007
A2	0	5	1	5	A1	0	4	1	4	9671.6170(0.002) 0.0003
A1	0	6	1	6	A2	0	5	1	5	11430.0609(0.002) -0.0001
A2	0	7	1	7	A1	0	6	1	6	13188.5037(0.002) -0.0004
A1	0	8	1	8	A2	0	7	1	7	14946.9457(0.002) 0.0001
A2	0	9	1	9	A1	0	8	1	8	16705.3854(0.002) -0.0001
A1	0	10	1	10	A2	0	9	1	9	18463.8242(0.002) 0.0009
B1	0	5	1	4	B2	0	4	1	3	11430.3852(0.002) 0.0012
B2	0	6	1	5	B1	0	5	1	4	13188.8160(0.002) -0.0003
B1	0	7	1	6	B2	0	6	1	5	14947.2538(0.002) 0.0000
B2	0	8	1	7	B1	0	7	1	6	16705.6905(0.002) -0.0006
B1	0	9	1	8	B2	0	8	1	7	18464.1279(0.002) 0.0009
B1	0	4	0	4	B2	0	3	1	3	7913.1716(0.002) 0.0002
A2	0	5	2	3	A1	0	4	2	2	13190.1502(0.002) -0.0034
B2	0	7	2	5	B1	0	6	2	4	16706.0183(0.002) 0.0005
B1	0	8	2	6	B2	0	7	2	5	18464.4408(0.002) 0.0001
A2	0	4	2	3	A1	0	3	2	2	9671.6797(0.002) 0.0019
A1	0	5	2	4	A2	0	4	2	3	11430.3781(0.002) -0.0008
A2	0	6	2	5	A1	0	5	2	4	13188.8160(0.002) -0.0002
A1	0	7	2	6	A2	0	6	2	5	14947.2538(0.002) 0.0000
A2	0	8	2	7	A1	0	7	2	6	16705.6905(0.002) -0.0006
A1	0	9	2	8	A2	0	8	2	7	18464.1279(0.002) 0.0009
A1	0	6	3	4	A2	0	5	2	3	14947.6200(0.002) -0.0006
A2	0	7	3	5	A1	0	6	3	4	16706.0183(0.002) 0.0004
A1	0	8	3	6	A2	0	7	3	5	18464.4408(0.002) 0.0001
B1	0	6	2	4	B2	0	5	3	3	14947.5997(0.002) -0.0007
B1	0	7	3	4	B2	0	6	3	3	18464.9123(0.002) -0.0003
A2	0	6	4	3	A1	0	5	4	2	16704.7622(0.002) 0.0015
A1	0	7	4	4	A2	0	6	4	3	18464.8516(0.002) -0.0007
E2	1	6	1	6	E2	1	5	0	5	11524.4453(0.002) 0.0018
E1	1	7	1	7	E1	1	6	0	6	13242.6559(0.002) 0.0015
E2	1	8	0	8	E2	1	7	0	7	14984.9347(0.002) -0.0005
E2	1	9	0	9	E2	1	8	0	8	16733.8241(0.002) 0.0002
E2	1	10	0	10	E2	1	9	0	9	18485.9705(0.002) 0.0003

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E1  1   8   1   8    E1  1   7   1   7    14984.9068(0.002) -0.0016
E1  1   9   1   9    E1  1   8   1   8    16733.8241(0.002) -0.0003
E1  1  10   1  10    E1  1   9   1   9    18485.9705(0.002)  0.0003

E2  1   4   2   3    E2  1   3   1   2    10848.1099(0.002)  0.0041
E2  1   8   2   7    E2  1   7   1   6    16893.6937(0.002) -0.0003

E1  1   6   0   6    E1  1   5   1   5    11502.1428(0.002) -0.0013
E2  1   7   0   7    E2  1   6   1   6    13241.6734(0.002) -0.0004

E1  1   8   1   7    E1  1   7   2   6    16882.9112(0.002) -0.0016

E1  1   4   2   2    E1  1   3   2   2    11086.8810(0.002)  0.0052
E2  1   5   2   3    E2  1   4   2   3    14112.6284(0.002) -0.0008

E2  1   4   3   2    E2  1   3   2   1    11204.2460(0.002)  0.0017
E2  1   6   3   4    E2  1   5   2   3    16894.8808(0.002)  0.0019

E2  1   5   3   2    E2  1   4   3   2    14183.4562(0.002)  0.0007

E1  1   5   4   2    E1  1   4   3   1    14267.1507(0.002) -0.0043
E2  1   6   4   3    E2  1   5   3   2    17229.7887(0.002) -0.0026
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Table S16. Rotational transitions of the ^{13}C (7) isotopologue of 3,5-difluorotoluene.

Upper level					Lower level					Measured(Unc.)	o.-c.(MHz)
Sym'	m'	J'	Ka'	Kc'	Sym	m	J	Ka	Kc		
A1	0	4	0	4	A2	0	3	0	3	7819.5593(0.002)	0.0012
B1	0	6	0	6	B2	0	5	0	5	11294.7554(0.002)	-0.0008
B2	0	7	0	7	B1	0	6	0	6	13032.3756(0.002)	-0.0023
B1	0	8	0	8	B2	0	7	0	7	14769.9988(0.002)	-0.0007
B1	0	10	0	10	B2	0	9	0	9	18245.2385(0.002)	-0.0004
B2	0	11	0	11	B1	0	10	0	10	19982.8561(0.002)	0.0003
B1	0	12	0	12	B2	0	11	0	11	21720.4709(0.002)	0.0005
B1	0	4	1	4	B2	0	3	1	3	7819.4935(0.002)	0.0008
A1	0	6	1	6	A2	0	5	1	5	11294.7554(0.002)	-0.0008
A2	0	7	1	7	A1	0	6	1	6	13032.3756(0.002)	-0.0023
A1	0	8	1	8	A2	0	7	1	7	14769.9988(0.002)	-0.0007
A1	0	10	1	10	A2	0	9	1	9	18245.2385(0.002)	-0.0004
A2	0	11	1	11	A1	0	10	1	10	19982.8561(0.002)	0.0003
A1	0	12	1	12	A2	0	11	1	11	21720.4709(0.002)	0.0005
B1	0	5	1	4	B2	0	4	1	3	11295.5862(0.002)	0.0002
B2	0	6	1	5	B1	0	5	1	4	13032.8384(0.002)	-0.0026
B1	0	7	1	6	B2	0	6	1	5	14770.3970(0.002)	-0.0002
A1	0	5	2	4	A2	0	4	2	3	11295.1334(0.002)	0.0010
A2	0	6	2	5	A1	0	5	2	4	13032.8294(0.002)	0.0022
A1	0	7	2	6	A2	0	6	2	5	14770.3970(0.002)	0.0001
A1	0	4	2	2	A2	0	3	2	1	11419.6888(0.002)	-0.0010
A1	0	6	2	4	A2	0	5	2	3	14772.7029(0.002)	0.0008
B1	0	6	3	4	B2	0	5	3	3	14770.9076(0.002)	0.0014
E2	1	8	0	8	E2	1	7	0	7	14806.2779(0.002)	-0.0012
E2	1	9	0	9	E2	1	8	0	8	16534.8410(0.002)	0.0001
E2	1	10	0	10	E2	1	9	0	9	18266.4664(0.002)	0.0012
E2	1	6	1	6	E2	1	5	0	5	11379.6033(0.002)	0.0008
E1	1	7	1	7	E1	1	6	0	6	13083.6264(0.002)	-0.0001
E1	1	8	1	8	E1	1	7	1	7	14806.2779(0.002)	0.0024
E1	1	9	1	9	E1	1	8	1	8	16534.8410(0.002)	0.0001
E1	1	10	1	10	E1	1	9	1	9	18266.4664(0.002)	0.0012
E1	1	7	2	6	E1	1	6	1	5	15098.9608(0.002)	-0.0011
E2	1	8	2	7	E2	1	7	1	6	16680.6163(0.002)	-0.0003
E1	1	6	0	6	E1	1	5	1	5	11367.2708(0.002)	0.0006
E2	1	7	0	7	E2	1	6	1	6	13083.3024(0.002)	-0.0011
E1	1	6	1	5	E1	1	5	2	4	12995.5886(0.002)	0.0000
E1	1	6	3	3	E1	1	5	3	3	16959.0156(0.002)	-0.0006

Table S17. Stark effect measurements on several rotational transitions of 2,6-difluorotoluene. For each electric field (V cm^{-1}) the Table presents the observed (Obs.), calculated (Calc.) and observed minus calculated (Obs.-Calc.) frequencies (MHz).

$J' - J''$	Electric field	Obs.	Calc.	Obs.-Calc.
$2_{0,2} - 1_{1,1}$	0.0	4556.32700	4556.3261	0.0009
$M_{F'} - M_{F''}$=2 - 1	33.6504	4556.30987	4556.3118	-0.0019
	37.0090	4556.30744	4556.3088	-0.0014
	42.0469	4556.30297	4556.3038	-0.0008
	50.4433	4556.29244	4556.2940	-0.0016
$2_{2,1} - 1_{1,0}$	0.0	7803.16250	7803.1616	0.00090
$M_{F'} - M_{F''}$=2 - 1	16.8575	7803.15403	7803.1522	0.00185
	33.6504	7803.12560	7803.1241	0.00151
	42.0469	7803.10199	7803.1030	-0.00105
	50.4433	7803.07728	7803.0773	-0.00004
	58.8396	7803.04852	7803.0469	0.00159
	67.2361	7803.01066	7803.0119	-0.00122
$3_{0,3} - 2_{1,2}$	0.0	6833.59115	6833.5914	-0.0003
$M_{F'} - M_{F''}$=3 - 2	16.8575	6833.59133	6833.5917	-0.0004
	33.6504	6833.59258	6833.5927	-0.0001
	50.4433	6833.59376	6833.5943	-0.0005
	67.2361	6833.59574	6833.5965	-0.0007
	75.6325	6833.59707	6833.5978	-0.0007
	84.0290	6833.59855	6833.5993	-0.0007
	92.4253	6833.60022	6833.6010	-0.0007
	100.8219	6833.60211	6833.6028	-0.0007
	109.2182	6833.60401	6833.6048	-0.0007
	117.6147	6833.60632	6833.6069	-0.0006
	126.0111	6833.60820	6833.6092	-0.0010
	134.4076	6833.61098	6833.6116	-0.0007
$3_{3,0} - 2_{2,1}$	0.0000	13151.15224	13151.1513	0.00094
$M_{F'} - M_{F''}$=3 - 2	16.8575	13151.15292	13151.1534	-0.00049
	50.4433	13151.17130	13151.1702	0.00105
	67.2361	13151.18333	13151.1850	-0.00164
	84.0290	13151.20291	13151.2039	-0.00098
	92.4253	13151.21580	13151.2149	0.00088
$4_{0,4} - 3_{1,3}$	0.0	8904.61834	8904.6175	0.0008
$M_{F'} - M_{F''}$=4 - 3	50.4433	8904.62216	8904.6228	-0.0006
	84.0290	8904.63111	8904.6321	-0.0009
	92.4353	8904.63531	8904.6351	0.0002
	100.8219	8904.63882	8904.6384	0.0004
	109.2182	8904.64245	8904.6421	0.0004
	117.6147	8904.64600	8904.6460	0.0001
	126.0111	8904.65015	8904.6502	-0.0000
$4_{0,4} - 3_{1,3}$	0.0	8904.61834	8904.6175	0.0008
$M_{F'} - M_{F''}$=3 - 2	50.4433	8904.61720	8904.6176	-0.00044
	84.0290	8904.61882	8904.6178	-0.001
	92.4353	8904.61779	8904.6179	-0.0001
	100.8219	8904.61699	8904.6180	-0.001
	109.2182	8904.61681	8904.6181	-0.001
	117.6147	8904.61845	8904.6181	0.0003
	126.0111	8904.61869	8904.6182	0.0004

Table S18. Stark effect measurements on several rotational transitions of 3,5-difluorotoluene. For each electric field (V cm^{-1}) the Table presents the observed (Obs.), calculated (Calc.) and observed minus calculated (Obs.-Calc.) frequencies (MHz).

$J' - J''$	Electric field	Obs.	Calc.	Obs.-Calc.
$3_{0,3} - 2_{1,2}$	0.0	6174.64400	6174.6419	0.0021
$M_{F'} - M_{F''}$=3 - 2	16.8575	6174.65011	6174.6505	-0.0003
	33.6504	6174.67665	6174.6761	0.0005
	42.0468	6174.69567	6174.6953	0.0004
	50.4433	6174.71940	6174.7188	0.0006
	58.8396	6174.74740	6174.7465	0.0009
	67.2361	6174.77970	6174.7784	0.0013
	75.6325	6174.81581	6174.8147	0.0011
	84.0290	6174.85491	6174.8552	-0.0002
	92.4253	6174.90086	6174.8999	0.0009
	100.8219	6174.94958	6174.9489	0.0007
$3_{0,3} - 2_{1,2}$	33.6504	6174.63820	6174.6380	0.0002
$M_{F'} - M_{F''}$=2 - 1	42.0468	6174.63548	6174.6358	-0.0003
	50.4433	6174.63351	6174.6331	0.0004
	58.8396	6174.63078	6174.6300	0.0008
	67.2361	6174.62793	6174.6263	0.0016
	75.6325	6174.62291	6174.6222	0.00074
	84.0290	6174.61847	6174.6176	0.00092
	100.8219	6174.60837	6174.6069	0.00015
$3_{0,3} - 2_{1,2}$	58.8396	6174.61513	6174.6132	0.0020
$M_{F'} - M_{F''}$=1 - 0	67.2361	6174.60510	6174.6044	0.00072
	75.6325	6174.59830	6174.5944	0.0039
	84.0290	6174.58567	6174.5833	0.00236
	100.8219	6174.55995	6174.5576	0.00238
$4_{1,4} - 3_{0,3}$	0.0	7938.78039	7938.7790	0.0014
$M_{F'} - M_{F''}$=4 - 3	16.8575	7938.78096	7938.7827	-0.0018
	33.6504	7938.79291	7938.7939	-0.0010
	42.0468	7938.80211	7938.8022	-0.00013
	50.4433	7938.81164	7938.8124	-0.00081
	58.8396	7938.82512	7938.8245	0.00061
	67.2361	7938.83746	7938.8384	-0.0010
	75.6325	7938.85237	7938.8542	-0.0018
	84.0290	7938.87196	7938.8718	0.000120
$4_{1,4} - 3_{0,3}$	0.0000	7938.78039	7938.7790	0.0014
$M_{F'} - M_{F''}$=3 – 2	33.6504	7938.78274	7938.7806	0.0021
	42.0468	7938.78194	7938.7815	0.0004
	50.4433	7938.78257	7938.7826	-0.0000
	58.8396	7938.78371	7938.7839	-0.0002
	67.2361	7938.78643	7938.7854	0.0010
	75.6325	7938.78796	7938.7871	0.0009
	84.0290	7938.78941	7938.7890	0.00041
$4_{1,4} - 3_{0,3}$	50.4433	7938.77058	7938.7682	0.0023
$M_{F'} - M_{F''}$=2 – 1	58.8396	7938.76526	7938.7643	0.00093