

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
0	$\frac{1}{2}^+; \frac{1}{2}$	$\frac{1}{2}^+$	stable		2, 3, 6, 8, 12, 13, 15, 19, 20, 21, 23, 24, 26, 27, 28, 29, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66
0.109894 ± 0.0005	$\frac{1}{2}^-$	$\frac{1}{2}^-$	$\tau_m = 0.853 \pm 0.010$ nsec	γ	13, 20, 21, 26, 29, 35, 36, 41, 43, 44, 48, 58, 62, 64, 65
0.197143 ± 0.004	$\frac{5}{2}^+$	$\frac{1}{2}^+$	128.8 ± 1.5 nsec	γ	13, 15, 19, 20, 21, 26, 27, 29, 35, 36, 42, 43, 44, 45, 48, 50, 62, 64
1.34567 ± 0.13	$\frac{5}{2}^-$	$\frac{1}{2}^-$	4.4 ± 0.6 psec	γ	13, 15, 19, 20, 21, 26, 29, 35, 36, 43, 44, 45, 48
1.4587 ± 0.3	$\frac{3}{2}^-$	$\frac{1}{2}^-$	90 ± 20 fsec	γ	13, 15, 20, 21, 26, 29, 35, 41, 43, 44, 45, 48, 52, 62
1.554038 ± 0.009	$\frac{3}{2}^+$	$\frac{1}{2}^+$	5 ± 3 fsec	γ	13, 19, 20, 21, 26, 27, 29, 34, 35, 36, 42, 43, 44, 45, 48, 50, 58, 62
2.779849 ± 0.034	$\frac{9}{2}^+$	$\frac{1}{2}^+$	280 ± 30 fsec	γ	4, 5, 7, 10, 11, 13, 15, 17, 19, 20, 21, 24, 26, 27, 29, 34, 35, 42, 43, 44, 45, 48, 61, 62
3.90817 ± 0.20	$\frac{3}{2}^+$	$\frac{3}{2}^+$	9 ± 5 fsec	γ	20, 21, 26, 29, 35, 36, 41, 44, 48, 62
3.9987 ± 0.7	$\frac{7}{2}^-$	$\frac{1}{2}^-$	19 ± 7 fsec	γ	13, 20, 21, 26, 29, 34, 35, 44, 48, 62

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
4.0325 ± 1.2	$\frac{9}{2}^-$	$\frac{1}{2}^-$	67 ± 15 fsec	γ	13, 15, 17, 19, 20, 21, 26, 29, 34, 36, 44, 48, 62
4.377700 ± 0.042	$\frac{7}{2}^+$	$\frac{3}{2}^+$	< 11 fsec	γ	13, 19, 20, 21, 26, 27, 29, 34, 35, 36, 42, 44, 48, 62
4.5499 ± 0.8	$\frac{5}{2}^+$	$\frac{3}{2}^+$	< 50 fsec	γ	13, 20, 21, 26, 29, 44, 48, 62
4.5561 ± 0.5	$\frac{3}{2}^-$		17_{-8}^{+10} fsec	γ	20, 21, 34, 35, 44, 48, 62
4.648 ± 1	$\frac{13}{2}^+$	$\frac{1}{2}^+$	2.2 ± 0.3 psec	γ	13, 19, 20, 21, 24, 26, 27, 29, 42, 48, 62
4.6825 ± 0.7	$\frac{5}{2}^-$		15.4 ± 3.0 fsec	γ, α	13, 20, 29, 34, 35, 44, 48, 62
5.1066 ± 0.9	$\frac{5}{2}^+$		< 30 fsec	γ, α	13, 20, 21, 26, 29, 34, 35, 44, 48, 62
5.337 ± 2	$\frac{1}{2}^{(+)}$		≤ 0.1 fsec	γ, α	13, 20, 21, 26, 29, 35, 44, 48, 62
5.418 ± 1	$\frac{7}{2}^-$		≤ 0.9 fsec	γ, α	13, 20, 26, 29, 35, 44, 48
5.4635 ± 1.5	$\frac{7}{2}^+$	$\frac{1}{2}^+$	≤ 0.26 fsec	γ, α	13, 15, 19, 20, 21, 26, 27, 29, 42, 44, 48
5.5007 ± 1.7	$\frac{3}{2}^+$		$\Gamma = 4 \pm 1$ keV	γ, α	13, 14, 21, 29, 44, 48
5.535 ± 2	$\frac{5}{2}^+$			γ, α	13, 26, 29, 44, 48, 62
5.621 ± 1	$\frac{5}{2}^-$		$\tau_m < 1.3$ fsec	γ, α	13, 26, 29, 34, 35, 44, 48, 61, 62
5.938 ± 1	$\frac{1}{2}^+$			γ, α	13, 29, 34, 35, 44, 62
6.070 ± 1	$\frac{7}{2}^+$		$\Gamma = 1.2$	γ, α	13, 14
6.088 ± 1	$\frac{3}{2}^-$		4	γ, α	13, 14, 15, 20, 21, 29

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
6.100 \pm 2	$\frac{9}{2}^-$			γ	29
6.1606 \pm 0.9	$\frac{7}{2}^-$			γ, α	13, 29, 44, 62
6.255 \pm 1	$\frac{1}{2}^+$		8	γ, α	14, 29, 34, 35, 44
6.282 \pm 2	$\frac{5}{2}^+$		2.4	γ, α	13, 14, 19, 29, 34, 44
6.330 \pm 2	$\frac{7}{2}^+$		2.4	γ, α	13, 14, 15, 44
6.429 \pm 8	$\frac{1}{2}^-$		280	α	14
6.4967 \pm 1.4	$\frac{3}{2}^+$			γ, α	13, 21, 29, 35
6.5000 \pm 0.9	$\frac{11}{2}^+$	$\frac{3}{2}^+$		γ, α	13, 21, 27, 29
6.5275 \pm 1.4	$\frac{3}{2}^+$		4	γ, α	13, 14, 19, 21, 29
6.554 \pm 2	$\frac{7}{2}^-$		1.6	γ, α	13, 14
6.592 \pm 2	$\frac{9}{2}^+$	$\frac{3}{2}^+$		γ, α	13, 19, 29, 35
6.787 \pm 2	$\frac{3}{2}^-$		2.4	γ, α	13, 14, 29, 35, 62
6.8384 \pm 0.9	$\frac{5}{2}^+$		1.2	γ, α	13, 14, 29
6.891 \pm 4	$\frac{3}{2}^-$		28	γ, α	13, 14, 21
6.9265 \pm 1.7	$\frac{7}{2}^-$		2.4	γ, α	13, 14, 15, 19, 20, 29, 35
6.989 \pm 3	$\frac{1}{2}^-$		51	α	14, 29
7.114 \pm 6	$\frac{7}{2}^+$ b		32	α	14, 35
7.1662 \pm 0.7	$\frac{11}{2}^-$			γ, α	13
7.262 \pm 2	$\frac{1}{2}^-, \frac{3}{2}^+$		$\lesssim 6$	α	14, 19, 20, 21, 29, 34, 35
7.364 \pm 4	$\frac{1}{2}^+$			α	14, 21, 34, 35
7.5396 \pm 0.9	$\frac{5}{2}^+, \frac{3}{2}^+$			γ, α	13, 15, 19, 29, 35
7.56 \pm 10	$\frac{7}{2}^+$		$\lesssim 90$	α	14
7.6606 \pm 0.9	$\frac{3}{2}^+, \frac{3}{2}^+$			γ, α	13, 29, 35, 41, 63
7.702 \pm 5	$\frac{1}{2}^-$		$\lesssim 30$	α	14, 19, 35
7.79			$\lesssim 6$	α	14
7.90			$\lesssim 200$	α	14
7.929 \pm 3	$\frac{7}{2}^+, \frac{9}{2}^+$			γ, α	13, 14, 19, 21
7.937 \pm 3	$\frac{11}{2}^+$			γ, α	13, 27
8.015 \pm 2	$\frac{5}{2}^+$				29, 35

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
8.0838 \pm 2.6			≤ 3	p, α	33, 35
8.1368 \pm 1.0	$\frac{1}{2}^+$		≤ 0.3	γ , p, α	14, 29, 33, 34, 35
(8.16)			$\lesssim 50$	α	14
8.1980 \pm 0.8	$(\frac{5}{2}^+)$		≤ 1	γ , p, α	29, 33, 35
8.2535 \pm 2.6	$(\frac{5}{2}^+)$		≤ 1.5	γ , p	29, 35
8.288 \pm 2	$\frac{13}{2}^-$	$(\frac{1}{2}^-)$	< 1	γ , α	13, 15, 16, 17, 19, 20, 29
8.310 \pm 1	$\frac{5}{2}^+$		0.047 \pm 0.019	γ , p, α	13, 29, 33, 35
8.370 \pm 4	$\frac{7}{2}, \frac{5}{2}^+$		7.5 \pm 1.5	γ , α	13
8.581 \pm 2	$\frac{5}{2}^+$		≤ 0.5	γ , p, α	13, 29
8.5891 \pm 1.0	$\frac{3}{2}^-$		2.0 \pm 0.1	γ , p, α	13, 19, 29, 31, 33, 35
8.629 \pm 4	$\frac{7}{2}^-$		< 1	γ , α	13
8.65	$\frac{1}{2}^+$		≈ 300	γ , p, α	29, 31, 33
8.793 \pm 2	$\frac{1}{2}^+; \frac{3}{2}$		46 \pm 2	γ , p	29, 35
8.864 \pm 4	$< \frac{9}{2}$		≈ 1	γ , α	13
8.919 \pm 2	$\frac{3}{2}$		10 \pm 2	γ , p	29
8.9280 \pm 0.8	$\frac{3}{2}^-$		3.6 \pm 0.2	p, α	31, 33
8.953 \pm 3	$\frac{11}{2}^-$		4.2 \pm 1	γ , α	13, 15, 16, 17, 19, 20, 31, 33
9.030 \pm 5	$\frac{5}{2}, \frac{7}{2}$			γ , α	13
9.0988 \pm 0.6	$\frac{7}{2}^-$		0.57 \pm 0.03	γ , p, α	13, 29, 31, 33
9.101 \pm 4	$\frac{7}{2}^+, \frac{9}{2}^+$		≈ 1	γ , α	13, 35
9.167 \pm 1.1	$\frac{1}{2}^+$		6.2 \pm 0.5	γ , p, α	13, 31, 33, 35
9.204 \pm 7	$\frac{3}{2}$		10.2 \pm 1.5	γ , α	13
9.267 \pm 4	$\frac{11}{2}^+, \frac{9}{2}^+$		2 \pm 1	γ , α	13
9.280 \pm 5	$\frac{7}{2}, \frac{9}{2}$		< 1.5	γ , α	13
9.318 \pm 2	$\frac{3}{2}^+$		3.4 \pm 0.7	γ , p, α	13, 19, 29
9.321 \pm 1.1	$\frac{1}{2}^+$		5.0 \pm 0.2	p, α	31, 33
9.329 \pm 4	$< \frac{5}{2}$		≈ 6	γ , α	13
9.509 \pm 4	$\frac{5}{2}^+, \frac{7}{2}^+$		< 1	γ , α	13
9.527 \pm 6	$(\frac{5}{2})$		28	p, α	31, 33

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
9.537 \pm 2	$\frac{5}{2}^+$		6.3 \pm 1.5	γ, α	13, 21, 29, 31, 33
9.565 \pm 3	$\frac{3}{2}^-$		26 \pm 3	γ, p	29
9.574 \pm 4	$\frac{3}{2}^-$		67 \pm 3	γ, p, α	29, 31, 33
9.586 \pm 3	$\frac{7}{2}$		8.9 \pm 1.2	γ, p, α	13, 29, 35
9.642 \pm 6	$\frac{3}{2}, \frac{5}{2}$		\approx 8	γ, α	13
9.654 \pm 6	$\frac{3}{2}, \frac{5}{2}$		\approx 6	γ, α	13
9.6676 \pm 1.3	$\frac{3}{2}^+$		3.6 \pm 0.4	γ, p, α	13, 29, 31, 32, 35
9.710 \pm 4	$\frac{9}{2}^+, \frac{11}{2}^-$		< 1	γ, α	13, 19
9.819 \pm 0.8	$\frac{5}{2}^-$		0.3 \pm 0.05	γ, p, α	13, 29, 31, 33
9.834 \pm 3	$\frac{11}{2} \rightarrow \frac{15}{2}$		< 1	γ, α	13
9.8734 \pm 1.7	$\frac{11}{2}^-$		\lesssim 1.5	γ, p, α	13, 19, 20, 29
9.886 \pm 3	$\frac{1}{2}^+$		25 \pm 2	γ, p, α	29, 31, 33
9.926 \pm 3	$\frac{9}{2}^+$		\approx 1	γ, α	13, 15
10.088 \pm 5	$\frac{5}{2}^-, \frac{7}{2}^-$		< 1.5	γ, α	13
10.136 \pm 0.8	$\frac{3}{2}^-$		4.3 \pm 0.6	γ, p, α	13, 29, 33
10.161 \pm 3	$\frac{1}{2}^+$		31	p, α	31, 33
10.231 \pm 3	$\frac{1}{2}^+$		< 1	p, α	14, 31, 33
10.253 \pm 3	$\frac{1}{2}^+$		22	p, α	31, 33
10.308 \pm 3	$\frac{3}{2}^+$		9.2	p, α	14, 21, 31, 33
10.365 \pm 4	$\frac{7}{2} \rightarrow \frac{11}{2}$		3 \pm 1.5	γ, α	13, 35
10.411 \pm 3	$\frac{13}{2}^+$	$\frac{3}{2}^+$	< 1.5	γ, α	13, 15, 19, 21, 29, 61
10.469 \pm 4			11.0 \pm 1.2	p, α	14
10.488 \pm 4			4.8 \pm 0.8	p, α	14
10.4964 \pm 1.0	$\frac{3}{2}^+$		5.7 \pm 0.6	n, p, α	14, 30, 31, 33
10.521 \pm 4			14 \pm 2	p, α	14, 35
10.5423 \pm 1.1			2.5 \pm 0.2	n, p, α	14, 30
10.555 \pm 3	$\frac{3}{2}^+; (\frac{3}{2})$		4.0 \pm 1.2	p, α	14, 31, 33
10.5656 \pm 1.1			4.6 \pm 0.7	n, p, α	14, 30
10.580 \pm 4	$(\frac{5}{2}^+)$		22 \pm 3	p, α	31, 33
10.613 \pm 1.6	$\frac{5}{2}^+; \frac{3}{2}$		4.7 \pm 0.5	n, p, α	30, 31, 33

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
10.762 \pm 3	$\frac{1}{2}^-$		6 \pm 3	n, p, α	19, 30, 31, 33
10.8588 \pm 1.8	$\frac{5}{2}^+$		24.0 \pm 1.5	n, p, α	30, 31, 33
10.974 \pm 3	$(\frac{3}{2}, \frac{5}{2})^+$		14 \pm 2	n, p, α	30, 31, 33
10.989 \pm 2.5			7 \pm 2	n, p	30
11.071 \pm 2.5	$\frac{1}{2}^+$		35 \pm 4	n, p, α	30, 31, 33
11.187 \pm 4	$(\frac{1}{2}^-)$		17 \pm 4	n, p, α	30, 31, 33
11.272 \pm 3			7 \pm 2	n, p	30
11.285 \pm 8	$\frac{5}{2}^+$		22 \pm 5	n, p, α	30, 31, 33
11.35 \pm 25	$\frac{1}{2}^+$		272 \pm 31	p	31
11.451 \pm 4	$\frac{1}{2}^-$		38 \pm 7	n, p, (α)	19, 30, 31, 33
11.478 \pm 5			7 \pm 3	n, p	30
11.502 \pm 5	$(\frac{3}{2}^-)$		4 \pm 2	n, p, α	30, 31, 33
11.540 \pm 8	$\frac{5}{2}^+$		22 \pm 5	n, p, α	30, 31, 33
11.568 \pm 7	$(T = \frac{3}{2})$		15 \pm 10	n, p	30
11.602 \pm 12	$\frac{3}{2}^-$		63 \pm 7	n, p	30, 31
11.652 \pm 4	$\frac{3}{2}^+; (\frac{3}{2})$		33 \pm 6	n, p, (α)	15, 19, 30, 31, 33
11.84 \pm 10			< 50	n, p	30
11.93 \pm 10			90	n, p	30
12.04 \pm 21	$\frac{1}{2}^-$		71 \pm 24	p, α	15, 31, 33
12.14 \pm 10	$\frac{3}{2}^-; \frac{3}{2}$		105 \pm 14	n, p, (α)	30, 31, 33
12.221 \pm 12	$\frac{3}{2}^+$		74 \pm 1	n, p, α	16, 17, 30, 31, 33
12.521 \pm 7	$\frac{1}{2}^-$		15 \pm 4	p	31
12.576 \pm 10	$\frac{5}{2}^+$		48 \pm 10	p, α	31, 33
12.58 \pm 25	$\frac{1}{2}^-; \frac{3}{2}$		285 \pm 48	p	31
12.78 \pm 10	$\frac{5}{2}^+; \frac{3}{2}$		95 \pm 38	n, p, (α)	19, 30, 31, 33
12.86 \pm 30	$\frac{3}{2}^+; \frac{3}{2}$		276 \pm 38	p	31
12.94 \pm 25	$\frac{5}{2}^+$		71 \pm 24	p, α	31, 33
12.98 \pm 50	$\frac{1}{2}^-$		124 \pm 38	p	31
13.068 \pm 4	$\frac{1}{2}^+$		\leq 10	n, p, t	18, 20
13.09 \pm 75	$\frac{3}{2}^-$		285 \pm 71	p	31
13.17 \pm 15			70	n, p	30

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
13.245 \pm 10	$\frac{1}{2}^-$		7	t	18
13.270 \pm 10	$\frac{1}{2}^+$		4.5	t	18
13.317 \pm 8	$\frac{7}{2}^-; (\frac{3}{2})$		28 \pm 6	n, p, α	30, 31, 33
13.36 \pm 25	$\frac{3}{2}^-$		38 \pm 19	p	21, 31
13.532 \pm 10	$\frac{1}{2}^+$		22	t	18
13.731 \pm 11	$\frac{7}{2}^-; \frac{3}{2}$		52 \pm 10	n, p, (α)	15, 20, 30, 31, 33
13.878 \pm 15	$\frac{1}{2}^+$		101	t	18
14.04 \pm 20	$\frac{5}{2}^+$		141 \pm 28	p	31
14.10 \pm 21	$\frac{3}{2}^-$		84 \pm 28	p	15, 20, 31
14.147 \pm 20	$\frac{1}{2}^+$		21	t	18
14.24 \pm 15			350	n, p	30
14.255 \pm 15	$\frac{3}{2}^+$		51	t	18
14.32 \pm 20	$\frac{3}{2}^-$		76 \pm 28	p	21, 31
14.352 \pm 10	$\frac{1}{2}^+$		154	t	18
14.46 \pm 25	$\frac{3}{2}^+$		179	t	18
14.46 \pm 25	$\frac{5}{2}^+$		46	t	18
14.70 \pm 20	$\frac{3}{2}^-$		124 \pm 38	p	31
14.72 \pm 70	$\frac{1}{2}^-$		257 \pm 67	α	33
14.74 \pm 50	$\frac{1}{2}^+$		361 \pm 67	p, α	31, 33
14.78 \pm 20	$\frac{5}{2}^+$			n, p	30, 31
14.92 \pm 30	$\frac{7}{2}^-$			p	15, 16, 20, 31
15.00 \pm 20				n, p	30
15.35 \pm 20	$\frac{1}{2}^-$			p	31
15.40 \pm 30	$\frac{5}{2}^+$			p	31
15.56 \pm 30					20
15.77 \pm 21	$\frac{3}{2}^-$		150	n, p	30, 31
16.09 \pm 50					15
16.20 \pm 40	$\frac{3}{2}^+$			p	30
16.23 \pm 30	$\frac{7}{2}^-$			p	31
16.27 \pm 20	$\frac{3}{2}^-$		200	n, p	31
16.45 \pm 50					15

Table 19.6 from (1983AJ01): Energy levels of ^{19}F ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
16.80 \pm 30				n, p	30
17.05 \pm 40	$\frac{3}{2}^-$		331 \pm 67	p	31
17.16 \pm 40	$\frac{7}{2}^-$		323 \pm 67	p	31
17.45 \pm 30	$\frac{3}{2}^-$		32 \pm 19	p	15, 16, 31
17.65 \pm 60	$\frac{7}{2}^-$		95 \pm 57	p	31
17.93 \pm 40	$\frac{3}{2}^-$		255 \pm 57	p	31
18.02 \pm 60	$\frac{7}{2}^-$		365 \pm 57	p	31
18.2 \pm 50					15
18.92 \pm 30					15, 20
19.07 \pm 60	$\frac{3}{2}^-$		555 \pm 143	p	31
19.83 \pm 150	$\frac{5}{2}^-$		369 \pm 57	p	31
19.87 \pm 40	$\frac{3}{2}^-$		473 \pm 57	p	31
19.93 \pm 50					15
20.81 \pm 50	$\frac{1}{2}^-$		412 \pm 57	p	31
20.93 \pm 50	$\frac{3}{2}^-$		317 \pm 48	p	31
21.05 \pm 40	$\frac{7}{2}^-$		448 \pm 29	p	31

^a See also Tables 19.7 and 19.8.

^b See also (1979FO03).