Table 20.5 from (1998TI06): Energy Levels of ^{20}F [a]

E_x (MeV ± keV)	$J^\pi; T$	τ [b] or Γ	Decay	Reactions [c]
0	$2^+; 1$	$\tau_{1/2} = 11.163 \pm 0.008$ s	β^-	1, 5, 7, 8, 9, 10, 12, 13, 14, 17, 19, 24, 25, 27, 30
0.65602 ± 0.03	3^+	$\tau_m = 440 \pm 30$ fs	γ	8, 9, 10, 12, 13, 14, 17, 24, 25, 27
0.82273 ± 0.03	4^+	$\tau_m = 79 \pm 6$ ps	γ	8, 9, 10, 12, 13, 14, 17, 24, 25, 27
0.98359 ± 0.03	1^-	$\tau_m = 1.96 \pm 0.09$ ps	γ	8, 9, 10, 12, 13, 14, 17, 18, 19, 24, 25, 27
1.056848 ± 0.004	1^+	$\tau_m = 7.4 \pm 1.6$ fs	γ	9, 10, 12, 13, 14, 17, 18, 19, 24, 25, 27
1.30919 ± 0.03	2^-	$\tau_m = 1.87 \pm 0.09$ ps	γ	8, 9, 10, 12, 14, 17, 19, 24, 25, 27
1.8238 ± 1.6	5^+	$\tau_m \leq 65$ fs	γ	5, 8, 9, 10, 12, 13, 17, 25, 27
1.84380 ± 0.03	2^-	$\tau_m = 66 \pm 5$ fs	γ	5, 10, 12, 14, 17, 24
1.97083 ± 0.04	(3^-)	$\tau_m = 0.61 \pm 0.09$ ps	γ	5, 8, 9, 10, 12, 14, 17, 25, 27
2.04398 ± 0.03	2^+	$\tau_m = 3.9 \pm 0.7$ fs	γ	5, 8, 9, 10, 12, 14, 17, 24, 25, 27
2.19430 ± 0.03	3^+	$\tau_m = 4.1 \pm 1.2$ fs	γ	5, 8, 9, 10, 12, 13, 14, 17, 24, 25, 27
2.86486 ± 0.10	(3^-)	$\tau_m = 29 \pm 4$ fs	γ	8, 9, 10, 12, 14, 17, 25, 27
2.96611 ± 0.03	3^+	$\tau_m = 5.2 \pm 1.1$ fs	γ	8, 9, 10, 12, 14, 17, 22, 25, 27
2.9680 ± 1.5	(4^-)		γ	8, 9, 10, 12, 17, 25, 27
3.17169 ± 0.14	$(0^-, 1^+)$		γ	8, 9, 10, 12, 14, 17, 25, 27
3.48841 ± 0.03	1^+	$\tau_m = 11.7 \pm 0.7$ fs	γ	8, 9, 10, 12, 14, 17, 18, 25, 27
3.52631 ± 0.04	(0^+)	$\tau_m = 5.5 \pm 0.6$ fs	γ	12, 14, 17, 25
3.58654 ± 0.03	(2)	$\tau_m = 1.1 \pm 0.6$ fs	γ	8, 9, 10, 12, 14, 17, 25
3.58980 ± 0.04	(3)			8, 9, 10, 12, 14, 17, 25

Table 20.5 from (1998TI06): Energy Levels of ^{20}F [a] (continued)

E_x (MeV ± keV)	J^π; T	τ [b] or Γ	Decay	Reactions [c]
3.669 ± 3	(4^+)		γ	8, 9, 12
3.68017 ± 0.04	(2)	$\tau_m = 22.1 \pm 2.3$ fs	γ	9, 10, 12, 14, 17, 25, 27
3.7610 ± 2.0	(≥ 3)		γ	8, 9, 10, 12, 17, 25, 27
3.96507 ± 0.04	(1^+)	$\tau_m = 6.9 \pm 2.1$ fs	γ	8, 9, 10, 12, 14, 17, 25, 27
4.08217 ± 0.04	(1^+)	$\tau_m = 3.6 \pm 0.7$ fs	γ	8, 9, 10, 11, 12, 14, 17, 25, 27
4.1993 ± 2.7	≥ 3		(γ)	8, 9, 17
4.2081 ± 2.6	≥ 3		(γ)	10, 12, 17, 27
4.27709 ± 0.04	$(1^+, 2^+)$	$\tau_m = 7 \pm 4$ fs	γ	8, 9, 10, 12, 14, 17, 27
4.3120 ± 2.6	(0^+)	$\tau_m = 5.1 \pm 0.6$ fs	(γ)	17
4.37147 ± 0.11		$\tau_m < 4$ fs	γ	9, 10, 14, 17, 27
4.509 ± 3			(γ)	8, 9, 10, 17
4.518 ± 4			(γ)	9, 10, 12, 27
4.5846 ± 3.0			(γ)	8, 9, 10, 17
4.59172 ± 0.07			γ	12, 14, 17, 27
4.722 ± 12			(γ)	12
4.7312 ± 2.9			(γ)	9, 10, 17, 27
4.744 ± 12			(γ)	8, 12
4.7648 ± 2.7			(γ)	9, 10, 12, 17, 27
4.89276 ± 0.17			γ	8, 9, 14, 17, 27
4.8994 ± 2.8			(γ)	10, 12, 17
5.0415 ± 3.1			(γ)	9, 10, 12, 17, 27
5.0668 ± 3.1			(γ)	8, 9, 10, 17
5.130 ± 3			(γ)	8, 9, 10, 12, 17, 27
5.2261 ± 0.4		$\tau_m = 1.4 \pm 1.1$ fs	(γ)	9, 10, 12, 14, 17, 27
5.255 ± 15			(γ)	8
5.28279 ± 0.17		$\tau_m = 3.3 \pm 1.3$ fs	γ	9, 12, 14, 17, 27
5.31917 ± 0.04		$\tau_m = 4.9 \pm 1.1$ fs	γ	8, 9, 10, 12, 14, 17, 27
5.3461 ± 3.3			(γ)	10, 12, 17
5.352 ± 3			(γ)	9, 17

Table 20.5 from (1998TI06): Energy Levels of ^{20}F [a] (continued)

E_x (MeV ± keV)	$J^\pi; T$	τ [b] or Γ	Decay	Reactions [c]
5.407 ± 3			(γ)	8, 9, 10, 12, 17, 27
5.4521 ± 3.8			(γ)	8, 9, 10, 12, 17, 27
5.4572 ± 3.2			(γ)	10, 17
5.46589 ± 0.17			γ	10, 14, 17
5.55534 ± 0.04		$\tau_m = 6.0 \pm 1.5$ fs	γ	10, 12, 14, 17, 27
5.574 ± 6			(γ)	9, 10, 12, 27
5.588 ± 2			(γ)	17
5.62313 ± 0.06			γ	9, 10, 12, 14, 17, 27
5.645 ± 12			(γ)	12
5.661 ± 12			(γ)	12
5.710 ± 6			(γ)	12, 17, 27
5.725 ± 10			(γ)	9
5.7649 ± 3.4			(γ)	8, 9, 10, 12, 17, 27
5.795 ± 14			(γ)	10, 12
5.8101 ± 0.4			(γ)	9, 14, 17, 27
5.93613 ± 0.03	2^-	$\tau_m < 2$ fs	γ	8, 12, 14, 17, 27
5.93910 ± 0.10			γ	8, 12, 14, 17, 27
5.951 ± 4			(γ)	10
6.007 ± 14			(γ)	8, 12
6.01778 ± 0.03	2^-	$\tau_m = 3.3 \pm 1.2$ fs	γ	9, 10, 14, 17
6.04498 ± 0.08			γ	10, 12, 14, 17, 27
6.065 ± 14			(γ)	12
6.079 ± 14			(γ)	12
6.095 ± 14			(γ)	12
6.111 ± 14			(γ)	12
6.136 ± 14			(γ)	12
6.154 ± 14			(γ)	8, 9, 12, 27
6.189 ± 14			(γ)	9, 10, 12
6.213 ± 14			(γ)	10, 12, 27
6.251 ± 14			(γ)	12, 27
6.287 ± 14			(γ)	12

Table 20.5 from (1998TI06): Energy Levels of ^{20}F [a] (continued)

E_x (MeV ± keV)	$J^\pi; T$	τ [b] or Γ	Decay	Reactions [c]
6.2991 ± 0.3			(γ)	9, 14, 27
6.335 ± 14			(γ)	9, 12, 27
6.355 ± 14			(γ)	8, 9, 12, 27
6.391 ± 14			(γ)	9, 12, 27
6.413 ± 14			(γ)	9, 12, 27
6.444 ± 14			(γ)	12, 27
6.458 ± 14			(γ)	8, 12
6.481 ± 14			(γ)	9, 12, 27
6.509 ± 14			(γ)	12
6.519 ± 3	$0^+; T = 2$		γ	12, 26
6.578 ± 14			(γ)	9, 12, 27
6.6270 ± 0.3	2^-	$\Gamma_{cm} = 0.31 \pm 0.02$ keV	γ, n	14, 15
6.6426 ± 0.3	(3, 4)	$\Gamma_{cm} < 0.08$ keV	γ, n	14
6.6475 ± 0.4	1^-	$\Gamma_{cm} = 1.59 \pm 0.10$ keV	γ, n	14, 15
6.6934 ± 0.6	1^-	$\Gamma_{cm} = 13.8 \pm 0.8$ keV	γ, n	9, 14, 15
6.7661 ± 0.9	$(2^-, 3, 4^+)$	$\Gamma_{cm} \leq 0.6$ keV	γ, n	9, 14, 22, 27
6.825 ± 5			n	9, 15, 27
6.8567 ± 1.0	2	$\Gamma_{cm} = 10 \pm 2$ keV	γ, n	14
6.905 ± 8				27
6.936 ± 4				9
6.9678 ± 1.0	1^-	$\Gamma_{cm} = 5 \pm 1$ keV	γ, n	9, 14, 15
(7.0670 ± 1.2)	0^-	$(\Gamma_{cm} = 2.4 \pm 0.6$ keV)	γ, n	14, 15
7.08	(1^+)	$\Gamma_{cm} = 24$ keV	n	9, 15
7.166 ± 2	$2^{(+)}$	$\Gamma_{cm} = 8 \pm 1$ keV	γ, n	9, 14, 15, 16
7.232 ± 7				9
7.283 ± 4				9
7.319 ± 8	(1)	$\Gamma_{cm} = 33$ keV	γ, n	9, 14, 15
7.37 ± 20	(1)	$\Gamma_{cm} = 19$ keV	n	9, 15
7.42 ± 20	(2^+)	$\Gamma_{cm} = 10$ keV	γ, n	9, 14, 15
7.495 ± 5	(2)	$\Gamma_{cm} = 80$ keV	γ, n	9, 14, 15
7.655 ± 5	(2^+)	$\Gamma_{cm} = 65$ keV	γ, n	9, 14, 15

Table 20.5 from (1998TI06): Energy Levels of ^{20}F [a] (continued)

E_x (MeV ± keV)	$J^\pi; T$	τ [b] or Γ	Decay	Reactions [c]
7.734 ± 6		$\Gamma_{cm} = 140$ keV	n	9, 15
7.843 ± 11	1^-	$(\Gamma_{cm} = 50 \pm 10$ keV)	γ, n	9, 14
7.985 ± 4	1	$\Gamma_{cm} = 14 \pm 2$ keV	γ, n	9, 14
8.05 ± 100	$2^+; T = 2$			26
8.062 ± 8				9
8.113 ± 4		$\Gamma_{cm} = 195$ keV	γ, n	9, 14, 15
8.147 ± 6		$\Gamma_{cm} = 15$ keV	n	9, 15
8.268 ± 12				9
8.349 ± 4				9
8.421		$\Gamma_{cm} = 27$ keV	n	15
8.50		$\Gamma_{cm} = 140$ keV	n	15
8.72		$\Gamma_{cm} \leq 30$ keV	n	9, 15
8.77		$\Gamma_{cm} = 76$ keV	n	9, 15
8.94		$\Gamma_{cm} = 73$ keV	n	9, 15
9.01				9
9.2			n	13, 15
9.52		$\Gamma_{cm} = 110$ keV	n	15
9.65		$\Gamma_{cm} = 100$ keV	n	15
9.83		$\Gamma_{cm} = 33$ keV	n	15
9.85		$\Gamma_{cm} = 120$ keV	n	15
(9.886 ± 10)			n	15
9.90		$\Gamma_{cm} \leq 30$ keV	n	15
(9.929 ± 10)			n	15
(9.981 ± 10)			n	15
10.024 ± 10		$\Gamma_{cm} = 150$ keV	n, α	15, 16
10.10 ± 50			n, α	16
10.228 ± 10	0^-, 1	$\Gamma_{cm} \approx 200$ keV	n, α	15, 16
10.480 ± 10		$\Gamma_{cm} \approx 10$ keV	n, α	15, 16
10.641 ± 10	1, 2	$\Gamma_{cm} = 70$ keV	n	15
10.807 ± 10	0^-, 1	$\Gamma_{cm} \approx 310$ keV	n, α	15, 16
10.99		$\Gamma_{cm} = 190$ keV	n	15

Table 20.5 from (1998TI06): Energy Levels of ^{20}F [a] (continued)

E_x (MeV $\pm$ keV)	$J^\pi; T$	τ [b] or Γ	Decay	Reactions [c]
(11.045 ± 10)		$\Gamma_{cm} \approx 30$ keV	n	15
(11.130 ± 10)		$\Gamma_{cm} < 25$ keV	n	15
(11.244 ± 10)		$\Gamma_{cm} < 25$ keV	n	15
(11.287 ± 10)			n	15
11.49 ± 50			n, α	16
12.0			n, α	16
12.2 ± 100			n, α	16
12.4			n, α	16
12.7			n, α	13, 16
13.2			n, α	16
13.7			n, α	15, 16
14.0				16

[a] See also Tables 20.6, 20.7. 20.8, 20.9, 20.10, 20.11, 20.12, 20.13, 20.14, and 20.15.

[b] Lifetimes quoted here are those adopted by (1996RA04); see Table VII of that work.

[c] Reaction numbers are underlined in cases where the resolution of the experiment was inadequate for unequivocal identification of the level observed.