

Table 12.7 from (1968AJ02): Energy levels of  $^{12}\text{C}$ 

$E_x$ in $^{12}\text{C}$ (MeV $\pm$ keV)	$J^\pi; T$	$\Gamma$ (keV)	Decay	Reactions
0	$0^+; 0$	—	stable	3, 4, 6, 15, 16, 17, 18, 19, 23, 24, 25, 26, 27, 28, 29, 36, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 72, 73, 74, 75, 76, 77, 78
$4.4392 \pm 0.3$	$2^+; 0$	$11.7 \pm 0.5$ meV	$\gamma$	6, 15, 16, 17, 19, 23, 24, 25, 28, 29, 36, 38, 39, 40, 43, 44, 47, 48, 49, 51, 53, 54, 55, 60, 61, 63, 65, 66, 68
$7.653 \pm 3$	$0^+; 0$	$9.7 \pm 3.3$ eV	$\gamma, \pi, \alpha$	6, 15, 17, 23, 24, 28, 36, 38, 39, 40, 43, 44, 51, 54, 55, 61, 65
$9.638 \pm 5$	$3^-; 0$	$34 \pm 5$ keV	$\gamma, \alpha$	6, 15, 17, 19, 23, 24, 36, 38, 39, 40, 44, 47, 55, 61, 65
$10.3 \pm 300$	$(0^+); 0$	$3000 \pm 700$	$\alpha$	6, 24, 28, 38, 51
$10.844 \pm 16$	$1^-; 0$	$320 \pm 20$	$\alpha$	6, 15, 23, 24, 38, 39, 55, 61, 65
$11.828 \pm 16$	$2^-; 0$	$274 \pm 20$	$\alpha$	15, 17, 23, 24, 38, 39, 44
$12.713 \pm 6$	$1^+; 0$		$\gamma_0, \gamma_1, \alpha$	15, 17, 23, 24, 39, 44, 51, 53, 61
$13.352 \pm 17$	$(2^-); 0$	$400 \pm 50$	$\alpha$	15, 23, 24, 61
$14.083 \pm 15$	$(4^+); 0$	$258 \pm 15$	$\alpha$	15, 23, 39, 44, 47, 61
$14.71 \pm 10$		$< 15$		24
$15.109 \pm 4$	$1^+; 1$	$39.4 \pm 1.5$ eV	$\gamma_0, \gamma_1$	2, 6, 15, 17, 23, 30, 36, 39, 51, 53, 55, 61
$16.106 \pm 1$	$2^+; 1$	$6 \pm 0.6$ keV	$\gamma_0, \gamma_1, \gamma_3, \alpha_0, \alpha_1, p$	15, 19, 23, 29, 36, 39, 61
$16.577 \pm 20$	$2^-; (1)$	300	$\gamma_1, \alpha_1, p$	15, 19, 21, 30, 53
17.23	$1^-; 1$	1150	$\gamma_0, \gamma_1, \alpha_0, \alpha_1, p$	19, 21, 23, 29
17.77	$0^+; (1)$	100	$\alpha_0, \alpha_1, p$	19, 21
(18.1)	$(1^-)$	500	$\gamma_0, \alpha, p$	34, 36, 39
18.36	$(3^-; 0)$	310	$\gamma_1, \alpha_0, \alpha_1, p$	19, 21
18.39	$0^-$	42	p	21
18.71	$( ; 1)$	100	$\alpha_0, p$	19
18.84	$2^+; 1$	100	$\gamma_1, p, n$	19, 20, 21
19.2	$(1^-; 1)$	1100	$\gamma_0, \gamma_1, \alpha_0, \alpha_1, p, n$	19, 20, 21, 30, 36
19.2	$(2^-; 1)$	500		36, 39

Table 12.7 from (1968AJ02): Energy levels of  $^{12}\text{C}$  (continued)

$E_x$ in $^{12}\text{C}$ (MeV $\pm$ keV)	$J^\pi; T$	$\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
19.39	(2 <sup>+</sup> ; 0)	(1100)	$\gamma_1, \alpha_0, \alpha_1, \text{p}$	19, 21
(19.42)		45	p	21
(19.69)		180	p, n	20
19.88		90	p	21
20.24		150	p, n	20, 21
20.47		180	$\gamma_1, \alpha_1, \text{p}$	19, 39
20.64	(3 <sup>-</sup> ; 1)	200	$\gamma_1, \alpha_0, \text{p}, \text{n}$	15, 19, 20, 21
20.99		270	p, n	20, 39
21.49		430	$\gamma_0, \text{p}, \text{n}$	19, 20, 39
22.1			$\gamma_0, \gamma_1, \alpha_0, \text{p}, \text{n}$	19, 20, 30, 39
22.6	(1 <sup>-</sup> ; 1)	3200	$\gamma_0, \text{p}$	19, 29, 30, 31, 36, 39
22.64		330	p, n	20
23.04		60	p, n	20
23.52		350	p, n	20, 30, 39
23.6			$\gamma_0, \gamma_1, \alpha_0, \text{p}, \text{n}$	19, 20
23.89		170	p, n	20
(24.2)			p, n	20
24.44		80	p, n	15, 20
24.93		900	p, n	20
25.25	( ; 2)	115	$\gamma_1, \text{p}, \text{n}$	19, 20
25.4	(1 <sup>-</sup> ; 1)	$\approx 6500$	$\gamma_0, \gamma_1$	19, 29, 30
25.96		400	p, n, d, $\alpha$	9, 12, 20, 39
26.9		270	$\gamma_1, \text{p}, \text{n}$	19, 20
27.45			$\gamma_0, \text{p}, \text{n}, \text{d}$	10, 19, 30
28.0		350	$\gamma_0, \text{p}_1, \text{p}, \text{n}, {}^3\text{He}$	5, 19
28.45			$\gamma_1, \text{p}$	19
28.9			$\gamma_0, \text{p}, \alpha, \text{n}$	19, 29, 30, 34
32.4			$\gamma_0, \text{n}$	31
34.4	(1 <sup>-</sup> ; 1)	$\approx 4000$	$\gamma_0, \gamma_1, \text{p}$	19, 30, 36