

Table 18.9 from (1995TI07): Energy levels of  $^{18}\text{O}$  <sup>a</sup>

$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau^b$ or $\Gamma_{\text{c.m.}}$	Decay	Reactions
0	$0^+; 1$		stable	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 15, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52
$1.98207 \pm 0.09$	$2^+$	$\tau_m = 2.80 \pm 0.07$ ps ( $g = -0.287 \pm 0.015$ ) ( $Q = -0.042 \pm 0.008$ b)	$\gamma$	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 15, 17, 19, 20, 21, 22, 25, 26, 27, 28, 29, 30, 32, 33, 39, 40, 42, 44, 45, 47, 48, 49, 50, 51, 52
$3.55484 \pm 0.40$	$4^+$	$\tau_m = 24.8 \pm 1.2$ ps ( $g = -0.62 \pm 0.10$ )	$\gamma$	3, 4, 7, 9, 10, 15, 16, 17, 19, 20, 21, 22, 25, 28, 33, 39, 40, 51, 52
$3.63376 \pm 0.11$	$0^+$	$\tau_m = 1.38 \pm 0.16$ ps	$\gamma$	3, 4, 7, 9, 10, 15, 19, 22, 25, 28, 33, 39, 40, 50, 51, 52
$3.92044 \pm 0.14$	$2^+$	$\tau_m = 26.5 \pm 2.9$ fs	$\gamma$	3, 4, 7, 9, 10, 15, 19, 22, 25, 28, 33, 39, 51
$4.45554 \pm 0.10$	$1^-$	$\tau_m = 65 \pm 15$ fs	$\gamma$	3, 4, 7, 9, 10, 15, 19, 22, 25, 28, 33, 39, 40, 50, 51
$5.09778 \pm 0.54$	$3^-$	$\tau_m = 62 \pm 25$ fs	$\gamma$	3, 4, 7, 9, 10, 15, 19, 22, 25, 26, 27, 28, 33, 39, 40, 45, 51, 52
$5.2548 \pm 0.9$	$2^+$	$\tau_m = 10.1 \pm 0.5$ fs	$\gamma$	3, 4, 7, 9, 10, 15, 17, 19, 25, 28, 33, 50, 51
$5.3364 \pm 0.6$	$0^+$	$\tau_m = 200 \pm 40$ fs	$\gamma$	3, 4, 9, 15, 19, 25, 33, 51
$5.3778 \pm 1.2$	$3^+$	$\tau_m < 30$ fs	$\gamma$	3, 4, 15, 19, 20, 51
$5.53024 \pm 0.29$	$2^-$	$\tau_m < 25$ fs $\Gamma < 50$ keV	$\gamma$	3, 4, 15, 22, 25, 28, 33, 51

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$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau^b$ or $\Gamma_{\text{c.m.}}$	Decay	Reactions
6.19822 $\pm$ 0.40	1 <sup>-</sup>	$\tau_m = 3.7 \pm 0.6$ fs	$\gamma$	3, 4, 9, 15, 19, 22, 24, 25, 33, 51
6.3513 $\pm$ 0.6	(2 <sup>-</sup> )	$\tau_m < 35$ fs $\Gamma < 50$ keV	$\gamma$	3, 4, 15, 19, 22, 25, 33, 51, 52
6.4044 $\pm$ 1.2	3 <sup>-</sup>	$\tau_m = 30 \pm 15$ fs	$\gamma$	3, 4, 15, 33, 51
6.88045 $\pm$ 0.27	0 <sup>-</sup>	$\tau_m < 25$ fs	$\gamma$	3, 4, 15, 22, 33, 50, 51
7.1169 $\pm$ 1.2	4 <sup>+</sup>	$\tau_m < 25$ fs	$\gamma, \alpha$	3, 4, 7, 9, 10, 15, 17, 19, 20, 25, 28, 33, 37, 39, 40, 51
7.6159 $\pm$ 0.7	1 <sup>-</sup>	$\Gamma < 2.5$ keV	$\gamma, \alpha$	3, 4, 7, 9, 15, 22, 25, 33, 37, 39, 40, 51
7.77107 $\pm$ 0.50	2 <sup>-</sup>	$\Gamma < 50$ keV	$\gamma$	3, 4, 15, 22, 25, 51
7.864 $\pm$ 5	5 <sup>-</sup>		$\gamma$	3, 4, 7, 9, 10, 15, 19, 20, 25, 33, 37, 39, 40, 51, 52
7.977 $\pm$ 4	(3 <sup>+</sup> , 4 <sup>-</sup> )		$\gamma$	3, 4, 15, 19, 51
8.0378 $\pm$ 0.7	1 <sup>-</sup>	$\Gamma < 2.5$ keV	$\gamma, \alpha$	3, 4, 7, 8, 15, 16, 17, 22, 25, 37, 39, 40, 51
8.125 $\pm$ 2	5 <sup>-</sup>		$\gamma, \alpha$	3, 4, 7, 9, 10, 15, 25, 51
8.213 $\pm$ 4	2 <sup>+</sup>	$\Gamma = 1.0 \pm 0.8$ keV	$\gamma, n, \alpha$	3, 4, 7, 8, 15, 25, 28, 33, 37, 39, 40, 51
8.282 $\pm$ 3	3 <sup>-</sup>	$\Gamma = 8 \pm 1$ keV	$\gamma, n, \alpha$	3, 4, 7, 8, 9, 10, 15, 25, 33, 51
8.410 $\pm$ 8	(2 <sup>-</sup> )	$\Gamma = 8 \pm 6$ keV	$\gamma, n, \alpha$	8, 15, 25, 51
8.521 $\pm$ 6	(4 <sup>-</sup> )	$\Gamma < 50$ keV	$\gamma$	15, 25, 51
8.660 $\pm$ 6				15, 51
8.817 $\pm$ 12	(1 <sup>+</sup> )	$\Gamma = 70 \pm 12$ keV	$n, \alpha$	8, 20, 28, 33
8.955 $\pm$ 4	(4 <sup>+</sup> )	$\Gamma = 43 \pm 3$ keV	$\gamma, n, \alpha$	8, 15, 25, 33
(9.0 $\pm$ 200) <sup>d</sup>	(1 <sup>-</sup> )		$\alpha$	22
9.03				15, 19, 33
(9.10)				33

Table 18.9 from (1995TI07): Energy levels of  $^{18}\text{O}$  <sup>a</sup> (continued)

$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau^b$ or $\Gamma_{\text{c.m.}}$	Decay	Reactions
$9.27 \pm 20^d$	$(0, 1, 2)^-$		n	22
$9.361 \pm 6$	$2^+$	$\Gamma = 27 \pm 15$ keV	$\gamma, n, \alpha$	8, 10, 15, 25, 33, 37, 39, 40
$9.414 \pm 18$		$\Gamma \approx 120$ keV	n, $\alpha$	8, 10, 15, 33
$9.48 \pm 24$		$\Gamma \approx 65$ keV	n, $\alpha$	8, 15
$9.672 \pm 7$	$(3^-)$	$\Gamma = 60 \pm 30$ keV	n, $\alpha$	8, 15, 33, 37, 39, 40
$9.713 \pm 7$	$(5^-)$	$\Gamma < 50$ keV	$\gamma$	15, 25, 33
$9.890 \pm 11$		$\Gamma \approx 150$ keV	n, $\alpha$	8, 15, 33
$10.118 \pm 10$	$3^-$	$\Gamma = 16 \pm 4$ keV	n, $\alpha$	8, 9, 15, 33
$10.24 \pm 20^d$	$(0, 1, 2)^-$		n	22
$10.295 \pm 14$	$4^+$	$\Gamma < 50$ keV	$\gamma, n, \alpha$	8, 9, 10, 15, 16, 25, 33, 37, 39, 40
$10.396 \pm 9$	$3^-$		n, $\alpha$	8, 15, 33
$10.43 \pm 40$	$(2^-)$	$\Gamma < 50$ keV	$\gamma$	25
$10.595 \pm 15$			n, $\alpha$	8, 15
$10.67 \pm 20$	$(2^-)$	$\Gamma < 50$ keV	$\gamma$	25
$10.82 \pm 20$			n, $\alpha$	8
$10.91 \pm 20$			n, $\alpha$	8, 10
$10.99 \pm 20$	$(2^-)$	$\Gamma < 50$ keV	$\gamma, n, \alpha$	8, 25
11.06	$(6^-)$			20
$11.13 \pm 20$			n, $\alpha$	8, 10, 50
$11.39 \pm 20$	$(2^+)$		n, $\alpha$	8, 9
$11.41 \pm 20$	$(4^+)$		n, $\alpha$	8, 9
$11.49 \pm 30^d$	$(0, 1, 2)^-$		n	22
$11.52 \pm 50$	$(2^-)$	$\Gamma < 50$ keV	$\gamma$	25
$11.62 \pm 20$	$5^-$		n, $\alpha$	8, 9, 10, 33, 37, 39, 40
$11.67 \pm 20$	$(3^-)$	$\Gamma = 112 \pm 0.02$ keV		25
$11.69 \pm 20$	$6^+$		n, $\alpha$	8, 9, 10, 33
$11.82 \pm 20$	$(3^-)$		n, $\alpha$	8
$11.90 \pm 30$	$(2^-)$	$\Gamma < 50$ keV	$\gamma$	25

Table 18.9 from (1995TI07): Energy levels of  $^{18}\text{O}$  <sup>a</sup> (continued)

$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau^b$ or $\Gamma_{\text{c.m.}}$	Decay	Reactions
12.04 $\pm$ 20	(2 <sup>+</sup> )		n, $\alpha$	8, 9
12.09 $\pm$ 20	(1 <sup>-</sup> , 2 <sup>+</sup> )	$\Gamma < 50$ keV		25
12.25 $\pm$ 20	(1 <sup>-</sup> )		n, $\alpha$	8, 9
12.33 $\pm$ 20	5 <sup>-</sup>		n, $\alpha$	8, 9, 10
12.41 $\pm$ 20	(3 <sup>-</sup> )	$\Gamma = 143 \pm 24$ keV	$\gamma$	25
12.50 $\pm$ 20	4 <sup>+</sup>		n, $\alpha$	8, 37, 39, 40
12.52 $\pm$ 20		$\Gamma < 50$ keV	$\gamma$	25
12.53 $\pm$ 20	6 <sup>+</sup>		n, $\alpha$	8, 9, 10, 37, 39, 40
12.66 $\pm$ 20	(2 <sup>-</sup> )	$\Gamma < 50$ keV	$\gamma$	25
12.99 $\pm$ 20	(4 <sup>-</sup> )	$\Gamma = 68 \pm 18$ keV	$\gamma$	25
13.1 <sup>c</sup>	1 <sup>-</sup>	$\Gamma = 700$ keV	$\gamma$ , n	23
13.40 $\pm$ 20	(2 <sup>-</sup> )	$\Gamma = 108 \pm 20$ keV	$\gamma$	25
13.8	1 <sup>-</sup>	$\Gamma = 600$ keV	$\gamma$ , n	23
13.85 $\pm$ 13	(6 <sup>-</sup> )	$\Gamma \approx 200$ keV	$\gamma$	20, 25
14.17 $\pm$ 40	(6 <sup>-</sup> )	$\Gamma = 140 \pm 50$ keV	$\gamma$	20, 25
14.45 $\pm$ 50		$\Gamma \approx 1070$ keV	$\gamma$	25
14.7	1 <sup>-</sup>	$\Gamma = 800$ keV	$\gamma$ , n	23
15.23 $\pm$ 40		$\Gamma \approx 300$ keV	$\gamma$	25
15.8	1 <sup>-</sup>	$\Gamma = 700$ keV	$\gamma$ , n	23
15.95 $\pm$ 30		$\Gamma < 50$ keV	$\gamma$	25
16.210 $\pm$ 10	1 <sup>(-)</sup>		$\gamma$	25
16.315 $\pm$ 10	(3, 2) <sup>-</sup>		$\gamma$	25
16.399 $\pm$ 5	2 <sup>-</sup> ; 2	$\Gamma < 20$ keV	$\gamma$	25, 28
16.88 $\pm$ 30	(4 <sup>-</sup> , 2 <sup>-</sup> ); (1)	$\Gamma < 50$ keV	$\gamma$	25
16.948 $\pm$ 10	(3, 2) <sup>-</sup>		$\gamma$	25
17.025 $\pm$ 10	(3 <sup>-</sup> ); 2	$\Gamma = 20 \pm 6$ keV	$\gamma$	25
17.05	(7 <sup>-</sup> )	$\Gamma \approx 350$ keV		9
17.398 $\pm$ 10	1 <sup>-</sup> ; (2)	$\Gamma = 600$ keV	$\gamma$ , n, p	23, 25
17.450 $\pm$ 10	(2, 1, 3) <sup>-</sup>		$\gamma$	25
17.46 $\pm$ 30	(4 <sup>-</sup> ); 1	$\Gamma \approx 600$ keV	$\gamma$	25

Table 18.9 from (1995TI07): Energy levels of  $^{18}\text{O}$  <sup>a</sup> (continued)

$E_x$ (MeV $\pm$ keV)	$J^\pi; T$	$\tau^b$ or $\Gamma_{\text{c.m.}}$	Decay	Reactions
17.5		$\Gamma \approx 150$ keV	$\gamma$	25
17.502 $\pm$ 10	(1, 2, 3) <sup>-</sup>		$\gamma$	25
(17.6 $\pm$ 200)	(8 <sup>+</sup> )			9
17.635 $\pm$ 10			$\gamma$	25
18.049 $\pm$ 10			$\gamma$	25
18.2		$\Gamma \approx 150$ keV	$\gamma$	25
18.45 $\pm$ 20	(3 <sup>-</sup> ); (1)	$\Gamma = 75 \pm 27$ keV	$\gamma$	25
18.5		$\Gamma \approx 4300$ keV	$\gamma$	25
18.70 $\pm$ 20	(4 <sup>-</sup> ); 2	$\Gamma < 20$ keV	$\gamma$	25
18.871 $\pm$ 5	1 <sup>+</sup> ; 2		$\gamma$	25
18.927 $\pm$ 10	(1, 2 <sup>+</sup> )		$\gamma$	25
18.95	(7 <sup>-</sup> )	$\Gamma \approx 350$ keV		9
19.027 $\pm$ 10	(1, 3) <sup>-</sup>		$\gamma$	25
19.150 $\pm$ 10	(1 <sup>-</sup> , 2 <sup>+</sup> , 3 <sup>-</sup> )		$\gamma$	25
19.24 $\pm$ 20	(> 2); 2	$\Gamma < 20$ keV	$\gamma$	25
19.4	1 <sup>-</sup> ; (2)	$\Gamma = 900$ keV	$\gamma, p$	23
19.7		$\Gamma \approx 200$ keV	$\gamma$	25
20.2		$\Gamma \approx 180$ keV	$\gamma$	25
20.36 $\pm$ 20	(4 <sup>-</sup> ); 2	$\Gamma < 20$ keV	$\gamma$	25
20.86 $\pm$ 20		$\Gamma = 97 \pm 41$ keV	$\gamma$	25
21.0	1 <sup>-</sup> ; (1)	$\Gamma \approx 150$ keV	$\gamma, n, p$	23, 25
21.42 $\pm$ 20	(4 <sup>-</sup> ); (2)	$\Gamma < 50$ keV	$\gamma$	25
22.40 $\pm$ 20	4 <sup>-</sup> ; 2	$\Gamma = 91 \pm 8$ keV	$\gamma$	25
22.7	1 <sup>-</sup>		$\gamma, n, p$	23
23.10 $\pm$ 20		$\Gamma = 49 \pm 24$ keV	$\gamma$	25
23.8	1 <sup>-</sup> ; (1)	$\Gamma \approx 1500$ keV	$\gamma, n, p$	23, 25
27	1 <sup>-</sup> ; (2)		$\gamma, n, p$	23
30			$\gamma, n$	23
36			$\gamma$	23

- <sup>a</sup> See also Tables [18.10](#) and [18.21](#) here and [18.12 in \(1983AJ01\)](#).
- <sup>b</sup> See [Table 18.14 in \(1978AJ03\)](#) for a display of  $\tau_m$  measurements.
- <sup>c</sup> For additional states with  $12.9 \leq E_x \leq 23.1$  MeV see [\(1983CU03\)](#) [[reaction 9](#)].
- <sup>c</sup> See [reaction 22 in <sup>18</sup>O](#) and [Table 18.18](#) for discussion of this level.