

Table 20.18 from (1978AJ03): Energy levels of ^{20}Ne ^a

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
0	$0^+; 1$	0_1^+		stable	2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 14, 19, 20, 22, 23, 25, 26, 27, 29, 30, 31, 32, 33, 34, 40, 41, 42, 43, 44, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 59, 62, 64, 65, 66, 67, 68
1.6337 ± 0.3	$2^+; 0$	0_1^+	$\tau_m = 1.05 \pm 0.06$ psec $ g = 0.54 \pm 0.04$	γ	2, 3, 7, 8, 9, 10, 12, 14, 19, 20, 22, 23, 25, 27, 29, 31, 32, 33, 34, 40, 41, 42, 43, 45, 47, 49, 50, 52, 53, 56, 57, 58, 59, 62, 64, 65, 66, 67, 68
4.2477 ± 1.1	$4^+; 0$	0_1^+	$\tau_m = 93 \pm 9$ fsec	γ	2, 3, 7, 8, 9, 14, 19, 20, 22, 23, 24, 25, 27, 29, 31, 32, 33, 40, 41, 42, 43, 49, 50, 52, 53, 56, 59, 62, 64, 65, 66, 67, 68
4.9679 ± 0.7	$2^-; 0$	2^-	4.8 ± 0.5 psec	γ	2, 3, 7, 8, 9, 14, 19, 22, 25, 31, 34, 40, 41, 42, 43, 45, 49, 59, 62, 64
5.6214 ± 1.7	$3^-; 0$	2^-	200 ± 50 fsec	γ, α	2, 3, 7, 8, 14, 19, 29, 40, 41, 42, 43, 49, 60, 62, 64, 66, 67
5.784 ± 2	$1^-; 0$	0^-		γ, α	2, 3, 7, 8, 14, 19, 20, 22, 29, 31, 32, 41, 42, 43, 49, 60, 62, 66, 67
6.724 ± 5	$0^+; 0$	0_2^+	$\Gamma = 15 \pm 7$ keV	γ, α	3, 7, 8, 14, 15, 19, 31, 40, 41, 43, 47, 49, 63
7.004 ± 3.6	$4^-; 0$	2^-	$\tau_m = 440 \pm 90$ fsec	γ	2, 3, 7, 8, 14, 19, 25, 41, 42, 49, 63
7.168 ± 5	$3^-; 0$	0^-	$\Gamma = 8$ keV	α	2, 3, 7, 8, 15, 19, 20, 25, 31, 32, 40, 41, 42, 43, 49
7.191 ± 3	$0^+; 0$	0_3^+	4	γ, α	3, 7, 14, 15, 22, 40, 42, 47, 49
7.4214 ± 1.0	$2^+; 0$	0_2^+	8	γ, α	2, 3, 5, 7, 14, 15, 19, 40, 41, 43, 47, 49, 58, 60
7.8290 ± 2.0	$2^+; 0$	0_3^+	2.4	γ, α	2, 3, 7, 14, 15, 31, 40, 41, 47, 49, 58, 60
≈ 8.3	$0^+; 0$	0_4^+	> 800	α	3, 15, 41
8.4486 ± 2.3	$5^-; 0$	2^-	0.013 ± 0.004	γ, α	2, 3, 6, 7, 14, 15, 19, 25, 41, 49
8.694 ± 6	$1^-; 0$	(1_1^-)	2.5		3, 7, 15, 40, 41, 49

Table 20.18 from (1978AJ03): Energy levels of ^{20}Ne ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
8.7767 ± 2.3	$6^+; 0$	0_1^+	0.11 ± 0.02	γ, α	2, 3, 6, 7, 9, 14, 15, 19, 20, 22, 23, 24, 25, 31, 41, 49
≈ 8.8	$2^+; 0$	0_4^+	> 800	α	15, 41, 58
8.848 ± 5	$1^-; 0$	(1_1^-)	19	α	7, 15, 32, 41, 60
9.030 ± 5	$4^+; 0$	0_3^+	3.2	γ, α	2, 3, 6, 7, 14, 15, 31, 41, 49, 60
9.115 ± 4	$3^-; 0$		3.2	α	2, 7, 15, 40, 41, 49
9.318 ± 6					5, 7, 41, 49, 60
9.508 ± 12	$2^+; 0$		29 ± 15	γ, α	3, 7, 14, 15, 40, 41, 49, 58
9.873 ± 4	$3^+; 0$			γ	7, 41, 58
9.92 ± 20	$(1^+); 0$		$\tau_m < 35$ fsec	γ	3, 31, 41, 60
9.99 ± 20	$4^+; 0$	0_2^+	$\Gamma = 155 \pm 30$	γ, α	2, 7, 14, 15, 41
10.261 ± 4	$5^-; 0$	0^-	145 ± 40	α	2, 3, 7, 15, 19, 20, 22, 23, 25, 32
10.2724 ± 2.0	$2^+; 1$		0.4 ± 0.2	γ, α	2, 3, 14, 15, 31, 41, 58, 60, 62
10.403 ± 5	$3^-; 0$		80	α	7, 15, 32, 41, 60
10.548 ± 5	$4^+; 0$		16	α	3, 7, 15, 19, 41
10.583 ± 6	$2^+; 0$		24	α	15, 41, 58
10.609 ± 6	$6^-; 0$	2^-	$\tau_m = 23 \pm 7$ fsec	γ	2, 3, 6, 7
10.694 ± 6	$4^-, 3^+; 0$			γ	6, 7
10.79 ± 100	$4^+; 0$	0_4^+	$\Gamma = 350$	α	15, 24
10.838	3^-		45	α	7, 15, 60
10.840 ± 5	$2^+; 0$		13	α	7, 15, 41, 58
10.89 ± 10	$3^+; 1$		$\tau_m < 30$ fsec	γ	6, 7, 41, 58, 60
10.97	$0^+; 0$		$\Gamma = 580$	α	15
11.015 ± 6	$4^+; 0$		24	α	6, 7, 10
11.073 ± 8	$4^+; 1$		≤ 0.5	γ, α	14, 15, 41, 60
11.23 ± 30	$1^-; 0$		170	α	15
11.23 ± 10	$1^+; 1$			γ	34, 47, 58, 60
11.256 ± 8	$1^-; 1$		≤ 0.3	γ, α	14, 15
11.322 ± 7	$2^+; 0$		40 ± 10	α	15, 41, 58
11.528 ± 6	$3^+, 4^-; 0$		$\tau_m \leq 30$ fsec	γ	7, 31
11.552 ± 8	$(2^+, 0^+)$		$\Gamma = 1.0 \pm 0.5$ keV	γ, α	14, 15, 31, 40, 41
11.555 ± 6	$1^+, 2^-, 3^+$			γ	7, 31
11.601 ± 10	$2^-; 1$				31, 60
11.656	$(3^+); 0$			γ	6, 7
11.866 ± 9	$2^+; 0$		60	α	7, 15, 41, 58
11.926 ± 5	$4^+; 0$		0.44 ± 0.15	$(\gamma), \alpha$	14, 15, 40

Table 20.18 from (1978AJ03): Energy levels of ^{20}Ne ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
11.949 \pm 5	8 ⁺ ; 0	0 ₁ ⁺	0.035 \pm 0.010	γ, α	6, 7, 8, 9, 14, 15, 19, 20, 22, 23, 41
11.962 \pm 8	1 ⁻ ; 0		30 \pm 5	α	15
12.100 \pm 10	2 ⁻ ; 1				60
12.134 \pm 10	6 ⁺ ; 0	0 ₃ ⁺	0.13 \pm 0.07	(γ), α	6, 7, 8, 14, 19
12.215 \pm 5	2 ⁺ ; 1		< 0.1	γ, α	14, 34, 41, 62
12.24 \pm 30	4 ⁺ ; 0		148 \pm 20	α	15
12.254 \pm 6	3 ⁻ , 2 ⁺		\approx 5	γ, α	14, 40
(12.35 \pm 100)	(2 ⁺)		\approx 500	α	15
12.39 \pm 10	3 ⁻ ; (1)		33 \pm 4	γ, α	6, 7, 14, 15, 40, 41
12.412 \pm 5	(0 ⁺); 0		\leq 8	α	7, 15, 31, 41
12.49 \pm 30				γ, α	14, 41
12.591 \pm 10	6 ⁺ ; 0	0 ₄ ⁺	88 \pm 10	α	6, 7, 15, 19, 20, 22
12.683 \pm 15	5 ⁻ ; 0		97	α	15
12.730 \pm 10	4 ⁺ ; 0		100	α	6, 7, 15
12.83 \pm 30			55	α	15, 31, 41
12.919 \pm 10				γ	7
13.010 \pm 10	(4 ⁺ ; 0)		60	α	7, 15
13.049 \pm 10	(4 ⁺ ; 0)		70	α	6, 7, 15
13.060 \pm 3.5	2 ⁻		1.0	p, α	37, 40, 41
13.1680 \pm 0.6	1 ⁺ ; (1)		2.3 \pm 0.2	γ, p, α	34, 35, 37, 40, 41
13.190 \pm 10	(4 ⁺ ; 0)		60	α	6, 7, 15
13.225	1 ⁻		95	p, α	37
13.225	0 ⁺		95	p, α	37
13.3038 \pm 0.7	1 ⁺		0.9 \pm 0.1	γ, p, α	7, 34, 35, 37, 41
13.334 \pm 6	7 ⁻ ; 0	2 ⁻	(8 \pm 3) \times 10 ⁻⁴	α	6, 7, 8, 15, 31
13.343 \pm 6	4 ⁺ ; 0		20 \pm 5	α	15, 31
13.412 \pm 1	2 ⁻		29 \pm 3	γ, p, α	15, 34, 35
(13.42 \pm 140)	(4 ⁺ ; 0)		110	α	15
13.462 \pm 20	1 ⁻		190	p, α	37
13.482 \pm 1	1 ⁺ ; 1		5.7 \pm 0.7	γ, p, α	31, 34, 35, 40
13.519	(1 ⁻)		33	p, α	37
13.569 \pm 15	2 ⁺		63	p, α	7, 31, 35, 37
13.583	2 ⁺		\approx 10	p, α	37
13.64 \pm 15	0 ⁺ ; 1		22	p, α	7, 31, 35, 37, 40
(13.66)	(1 ⁻)		110	p, α	37
13.6729 \pm 0.7	2 ⁻		4.5 \pm 0.2	γ, p, α	6, 7, 34, 35, 37
13.7 \pm 400	(3, 7) ⁻		320	α	15

Table 20.18 from (1978AJ03): Energy levels of ^{20}Ne ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
(13.73)	(0 ⁺)		≈ 170	p, α	37
13.733 \pm 1.4	1 ⁺		7.7 \pm 0.5	γ , p, α	34, 35, 37
13.845 \pm 15	(1 ⁻)		≈ 190	p, α	7, 37
13.886 \pm 15	2 ⁻		0.8	γ , p	6, 7, 8, 31, 34, 35, 40
13.904	2 ⁺		47	p, α	37
13.904 \pm 20	6 ⁺		≈ 100	α	15, 19, 20
13.946	0 ⁺		≈ 70	p, α	37
14.017	1 ⁻		≈ 70	p, α	37
14.03	2 ⁺		≈ 140	p, α	37
14.124 \pm 1.2	2 ⁻		4.7 \pm 0.7	γ , p, α	34, 35, 37
14.144 \pm 15	2 ⁺		50	p, α	7, 15, 37
14.148 \pm 1.2	2 ⁻		11.8 \pm 1.0	γ , p, α	34, 35, 37
14.195	1 ⁺		14 \pm 1	γ , p	34, 35
14.307 \pm 10	6 ⁺		< 100		6, 7, 19, 20, 24
14.44 \pm 20	0 ⁺		110	p, α	6, 7, 35, 37
14.453 \pm 1.8			33 \pm 3	p, α	37
14.6 \pm 300	(4 ⁺)		240	α	15
14.60 \pm 20	1 ⁻		140	p, α	7, 35, 37
14.695 \pm 2.6			36 \pm 10	p, α	37
14.772 \pm 3.0			110 \pm 20	p, α	37
14.812 \pm 15	(2 ⁺ , 4 ⁺)		≈ 100	p, α	6, 7, 15, 37
15.034 \pm 15	(2 ⁺)		≈ 100	p, α	7, 15, 37
15.16 \pm 15	6 ⁺			α	6, 7
15.23			28	p, α	37
15.27	(1 ⁻)		285	p, α	37
15.30	(0 ⁺)		285	p, α	37
15.336 \pm 15	7 ⁻	0 ⁻	380 \pm 60	α	6, 7, 15, 19, 20, 22, 32
15.39			85	p, α	37
15.47			55	p, α	37
b					
15.50 \pm 20	(8 ⁻)	(2 ⁻)			7, 32
15.70 \pm 15	(6 ⁺)			α	6, 7, 15
15.879 \pm 15	(8 ⁺)		< 250	α	6, 7, 19
(15.97)	(6 ⁺)			α	15
16.01 \pm 25	(2 ⁺ ; 1)		100	p, α	31, 37
16.139 \pm 15			38	p, α	6, 7, 15, 37
16.25				α	6, 15
16.326 \pm 15	4 ⁺		43	p, α	15, 37

Table 20.18 from (1978AJ03): Energy levels of ^{20}Ne ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
16.434 \pm 15	(0, 2, 4) ⁺		34	p, α	15, 37
16.510 \pm 10	(2, 4, 6) ⁺		23	α	6, 7, 15
16.52	7 ⁻			α	7
16.63 \pm 20	7 ⁻		190 \pm 40	α	7, 15, 19, 20, 22
16.719 \pm 15	(1, 3, 7) ⁻		10	α	15
16.730 \pm 3	0 ⁺ ; 2		2.0 \pm 0.5	γ , p, α	6, 31, 34, 35, 37, 62
16.8	7 ⁻			α	7
16.854 \pm 15	5 ⁻		10	α	15
16.98			100	p, α	37
17.162 \pm 15	5 ⁻ , (7 ⁻)		37	α	15
17.30 \pm 20	8 ⁺		220 \pm 40	α	15, 19, 20, 22
17.38 \pm 15	9 ⁻	2 ⁻	< 10	α	6, 7, 8, 15, 23
17.542 \pm 15	6 ⁺		136	α	15
17.55 \pm 10	(2 ⁺ ; 1)		19	n, p, α	31, 36, 37
17.752 \pm 15	4 ⁺ , (0 ⁺)		50	p, α	15, 37
17.91 \pm 20	(0 ⁺)			n, p	31, 36
18.002 \pm 15	7 ⁻		< 10	α	15
18.022 \pm 15	(2 ⁺ , 5 ⁻ , 6 ⁺)		45	α	15
18.113 \pm 15	7 ⁻		33	α	6, 7, 8, 15
18.32 \pm 20	(6 ⁺)		240	α	6, 15
18.427 \pm 7	2 ⁺ ; 2		9.5 \pm 3	γ , n, p, α	34, 35, 36, 37, 47
18.7 \pm 100	(6 ⁺ , 7 ⁻)		600	α	15, 19
19.16 \pm 250	(6 ⁺)		200	α	8, 15
19.40 \pm 350	6 ⁺		280	α	15
19.4 \pm 100	7 ⁻		400		19
19.84 \pm 350	6 ⁺		280	α	15
20.0 \pm 100	7 ⁻		300	α	15, 19
20.4 \pm 180	6 ⁺		360	α	7, 15
20.4 \pm 100	7 ⁻		200	α	7, 15
20.67 \pm 40	9 ⁻		120	α	7, 15, 20
20.8 \pm 100	7 ⁻ , (6 ⁺)			α	19
21.0 \pm 100	7 ⁻		200	α	15
21.08 \pm 30	9 ⁻		100 \pm 50	α	15, 20, 22, 23
21.3 \pm 100	7 ⁻ , 8 ⁺		300	α	15, 19
21.8 \pm 100	7 ⁻ , 8 ⁺		300	α	15, 19
22.3 \pm 100	7 ⁻ , 8 ⁺		500	α	15, 19
22.7 \pm 250	9 ⁻		500	α	15
22.87 \pm 40	9 ⁻		225 \pm 40	α	15, 20, 22

Table 20.18 from (1978AJ03): Energy levels of ^{20}Ne ^a (continued)

E_x (MeV \pm keV)	$J^\pi; T$	K^π	τ_m or $\Gamma_{c.m.}$ (keV)	Decay	Reactions
23.70 ± 30	$9^-, (8^+)$		≤ 200	α	15, 19, 20, 24
24.21 ± 25	8^+		≈ 500	α	15, 20
25.10 ± 50	8^+		≤ 200	α	15, 20
25.67 ± 50			≈ 500	α	15, 20
27.1 ± 100	(9^-)		700	α	15, 19
28	8^+		1600	α	15, 28
28.1 ± 100	(10^+)		700	α	15, 19

^a See also Tables [20.19](#) and [20.20](#).

^b For other states with $E_x > 15.5$ MeV see Tables [20.30](#), [20.31](#), [20.32](#), [20.33](#) and reactions [46](#) and [47](#). It is clear that there are many states with low angular momentum and with unnatural parity which have not been located at high E_x .