Table 20.16 from (1987AJ02): Excited states of ^{20}Ne from ^{12}C(^{12}C, α)^{20}Ne [a]

E_x (MeV ± keV) [b]	J^{π} [c]	Γ_{γ}/Γ [d]	$\Gamma_{c.m.}$ (keV)	θ^2_{α} [e]
1.6329 ± 1.0	2^+			
4.2456 ± 2.5	4^+			
4.9663 ± 2.5	2^-			
5.618 ± 4	3^-			
5.774 ± 6	1^-			
6.725 ± 6	0^+			
7.004 ± 4	4^-			
7.169 ± 6	3^-			
7.196 ± 6	0^+			0.026 [q]
7.435 ± 6	2^+			
7.835 ± 6	2^+			0.015 [q]
8.449 ± 6	5^-			$(1.6 \pm 0.5) \times 10^{-3}$ [r]
8.694 ± 6	1^-			0.0027 [q]
8.779 ± 6	6^+			
8.85	1^-			0.0179 [q]
9.033 ± 6	4^+			0.033 [q], 0.022 [r]
9.110 ± 6				
9.318 ± 6	2^-	> 0.90		
9.533 ± 6				
9.872 ± 6	$1^+, 2^-, 3^+$	> 0.8		
9.948 ± 5 [d]	$1^+, 2^-, 3^+$	> 0.7		
10.024 ± 6				
10.264 ± 6	5^-			
10.407 ± 6	(3^-)			0.078 [q]
10.545 ± 6				
10.609 ± 5	6^-	$\equiv 1$		
10.693 ± 5	$4^-, 3^+$	> 0.95		
10.840 ± 6	(3^-)			0.0099 [q]
10.917 ± 6	$3^+; T = 0$	> 0.7		
11.013 ± 6				
11.528 ± 5 [d]	$(3^+, 4^-)$	> 0.90		
11.568 ± 10 [d]	$(3^+; T = 0)$	0.75 ± 0.10		

Table 20.16 from (1987AJ02): Excited states of ^{20}Ne from ^{12}C(^{12}C, α)^{20}Ne [a] (continued)

E_x (MeV ± keV) [b]	J^π [c]	Γ_γ/Γ [d]	$\Gamma_{c.m.}$ (keV)	θ^2_α [e]
11.653 ± 5 [d]	(3^+)	> 0.90		
11.892 ± 8 [d]		0.16 ± 0.02		
11.949 ± 6	8^+			$(7.6 \pm 2.2) \times 10^{-3}$ [r]
12.014 ± 10 [d]		> 0.10		
12.097 ± 8 [d]		> 0.20		
12.135 ± 5 [f]	6^+			$(4.9 \pm 2.6) \times 10^{-4}$ [r,t]
12.172 ± 8 [d]		> 0.45		
12.219 ± 10 [d]	$2^+; T = 1$	> 0.45		
12.379 ± 8 [d]		0.005 ± 0.001		
12.436 ± 5	0^+ [s]		24 ± 1	[r,s]
12.596 ± 5	6^+		50 ± 10	0.09 ± 0.02 [r]
12.730 ± 6	(5^-)			0.129 [q]
12.919 ± 6				
13.010 ± 6				
13.049 ± 6				
13.190 ± 6				
13.277 ± 6				
13.335 ± 6	7^-			$(2.4 \pm 1.0) \times 10^{-4}$ [r,u]
13.441 ± 6	(5^-)			≤ 0.023 [q]
13.569 ± 15				
13.631 ± 15				
13.679 ± 15				
13.845 ± 15				
13.886 ± 15				
13.927 ± 5	6^+		113 ± 7	0.10 ± 0.01 [r]
14.144 ± 15				
14.308 ± 10	6^+		< 50 [r]	< 0.45 [r]
14.60				
14.812 ± 15				
15.034 ± 15	[a]			
15.159 ± 5 [g]	6^+		60 ± 15	$< 8 \times 10^{-4}$ [r,v]
15.364 ± 14 [h]	7^-		410 ± 130	

Table 20.16 from (1987AJ02): Excited states of ^{20}Ne from ^{12}C(^{12}C, α)^{20}Ne [a] (continued)

E_x (MeV ± keV) [b]	J^π [c]	Γ_γ/Γ [d]	$\Gamma_{c.m.}$ (keV)	θ^2_α [e]
15.438 ± 10 [i]			100 ± 20	
15.691 ± 15				
15.874 ± 8 [j]	8^+		100 ± 15	0.047 ± 0.013 [r,w]
16.139 ± 15				
16.600 ± 15 [k]	7^-		160 ± 30	0.10 ± 0.02 [r,x]
16.717 ± 10			37 ± 10	
17.259 ± 11 [l]	$7^-(9^-)$		162 ± 20	0.019 ± 0.004 [r,y]
18.153 ± 10 [m]	7^-			
18.538 ± 7 [n]	8^+		138 ± 33	$(3.2 \pm 1.5) \times 10^{-3}$ [r,z]
20.478 ± 11 [o]	(8^+)		250 ± 30	0.11 ± 0.04 [r,aa]
20.704 ± 11 [p]	(9^-)		≈ 120	[r]
20.89 ± 30				
21.05 ± 20			140 ± 50	
21.65 ± 100	$(7^-, 9^-)$		240 ± 50	
22.03 ± 70	(8^+)		630 ± 80	
22.7 ± 70			490 ± 110	
23.2 ± 100			300 ± 100	
23.74 ± 100			230 ± 100	
24.374 ± 30	$7^-(5^-)$		210 ± 50	

[a] For complete references see Table 20.21 in (1978AJ03). Table 20.19 in (1983AJ01) has a number of errors.

[b] Uncertainties shown for $E_x > 5.7$ MeV are approximate, except for states flagged (d): see footnote [c] in Table 20.21 in (1978AJ03).

[c] See discussions in (1975ME04), (1983HI06), (1984LE19) and (1987FI01). See also Table 20.14 here.

[d] (1987FI01). ^{20}Ne*(11.89, 12.38) also decay via α_2.

[e] See also (1984LE19).

[f] Alpha decay is by α_2 to ^{16}O*(6.13): $\Gamma'_\alpha/\Gamma = (6.0 \pm 0.15)$%: assuming $\Gamma_\alpha \Gamma'_\alpha/\Gamma = 7.7 \pm 3.8$ eV this leads to $\Gamma_\alpha = 0.128 \pm 0.072$ keV for this 6^+ state: see (1978AJ03). (1983HI06) report an α_0 branching ratio of (90 ± 6)%.

[g] Alpha decay is (2 ± 2)% by α_0, (46 ± 2)% via α_{1+2} (mainly α_2) and (52 ± 2)% via α_{3+4} (mainly α_3) (1979YO04).

[h] Alpha decay is (32 ± 2)% by α_0, (58 ± 2)% via α_{1+2} (mainly α_2) and (10 ± 2)% via α_{3+4} (mainly α_3); $\Gamma_{\alpha_0}/\Gamma = 0.3 \pm 0.02$, assuming a single state. The state may correspond to a doublet (1979YO04). See also (1983HI06).

[i] Alpha decay is (20 ± 5)% by α_0, (57 ± 7)% by α_{1+2} and (23 ± 4)% by α_{3+4} (1983HI06).

[j] Alpha decay is (9 ± 2)% by α_0, (79 ± 2)% via α_{1+2} (mainly α_2) and (12 ± 4)% via α_{3+4} (mainly α_3) (1979YO04); (24 ± 5)% via α_0, (51 ± 7)% via α_{1+2}, (25 ± 5)% via α_{3+4} (1983HI06).

[k] Alpha decay is (72 ± 3)% via α_0, (20 ± 3)% via α_{1+2} (mainly α_2) and (8 ± 3)% via α_{3+4} (mainly α_3) (1979YO04); (60 ± 5)% via α_0, (20 ± 5)% via α_{1+2} and (20 ± 5)% via α_{3+4} (1983HI06).

[l] Alpha decay is (15 ± 2)% via α_0, (50 ± 6)% via α_{1+2} and (35 ± 7)% via α_{3+4} (1983HI06). See also (1979YO04).

[m] Alpha decay is (71 ± 6)% via α_0 and (29 ± 6)% via α_{1+2} (mainly α_2) (1979YO04).

[n] Alpha decay is (1.8 ± 0.9)% via α_0, (60 ± 8)% via α_{1+2} and (26 ± 4)% via α_{3+4}. Decay to ^{12}C$_{\rm g.s.}$ + ^{8}Be$_{\rm g.s.}$ is also observed: the branching ratio is (12 ± 1.2)%. This state may be a member of an excited 8p-4h $(K^\pi = 0^+_6)$ band of which ^{20}Ne*(12.44) is the 0^+ band head (1983HI06).

[o] Deacy is (66 ± 26)% via α_0, (14 ± 7)% via α_{1+2}, (13.2 ± 2.5)% via ^{12}C + ^{8}Be (1983HI06).

[p] Decay is $\lesssim 14$% via α_0, (25 ± 15)% via α_{1+2}, (46 ± 22)% via α_{3+4} and (4.5 ± 0.9)% via ^{12}C + ^{8}Be (1983HI06). See also (1979YO04).

[q] (1979YO04).

[r] θ^2_α shown are $\theta^2_{\alpha_0}$ (1983HI06). See also (1987FI01).

[s] See footnote [f] in Table 20.21 in (1978AJ03).

[t] $\theta^2_{\alpha_2} = 0.66 \pm 0.36$ (1983HI06).

[u] $\theta^2_{\alpha_2} = 0.025 \pm 0.010$ (1983HI06).

[v] $\theta^2_{\alpha_2} = 0.05 \pm 0.013$, $\theta^2_{\alpha_3} = 0.91 \pm 0.23$ (1983HI06).

[w] $\theta^2_{\alpha_2} = 0.94 \pm 0.14$, $\theta^2_{\alpha_3} = 4.2 \pm 0.9$ (1983HI06).

[x] $\theta^2_{\alpha_2} = 0.048 \pm 0.013$, $\theta^2_{\alpha_3} = 0.44 \pm 0.12$ (1983HI06).

[y] $\theta^2_{\alpha_2} = 0.071 \pm 0.013$, $\theta^2_{\alpha_3} = 0.32 \pm 0.08$ [all θ^2_α assume $J^\pi = 7^-$] (1983HI06).

[z] $\theta^2_{\alpha_2} = 0.085 \pm 0.014$, $\theta^2_{\alpha_3} = 0.24 \pm 0.04$, $\theta^2(^{12}\mathrm{C}) = 1.50 \pm 0.21$ (1983HI06).

[aa] $\theta^2_{\alpha_2} = 0.016 \pm 0.008$, $\theta^2(^{12}\mathrm{C}) = 0.24 \pm 0.05$ (1983HI06).