Table 20.19 from (1983AJ01): Excited states of ^{20}Ne from ^{12}C(^{12}C, α)^{20}Ne [a]

E_x [c] (MeV $\pm$ keV)	J^π [b]	$\Gamma_{c.m.}$ (keV)	K^π [b]	θ^2_α
1.6329 ± 1.0	2^+		0^+_1	
4.2456 ± 2.5	4^+		0^+_1	
4.9663 ± 2.5	2^-		2^-	
5.618 ± 4	3^-		2^-	
5.774 ± 6	1^-		0^-	
6.725 ± 6	0^+		0^+_2	
7.004 ± 4	4^-		2^-	
7.169 ± 6	3^-		0^-	
7.196 ± 6	0^+		0^+_3	0.026 [p]
7.435 ± 6	2^+		0^+_2	
7.835 ± 6	2^+		0^+_3	0.015 [p]
8.449 ± 6	5^-		2^-	$(1.6 \pm 0.5) \times 10^{-3}$ [q]
8.694 ± 6	1^-		(1^-_2)	0.0027 [p]
8.779 ± 6	6^+		0^+_1	
8.85	1^-		(1^-_1)	0.0179 [p]
9.033 ± 6	4^+		0^+_3 [a]	0.033 [p], 0.022 [q]
9.110 ± 6	[a]			
9.318 ± 6	[a]			
9.533 ± 6				
9.872 ± 6	$1^+, 2^-, 3^+$ [a]			
9.950 ± 6	$1^+, 2^-, 3^+$ [a]			
10.024 ± 6				
10.264 ± 6	5^-		0^-	
10.407 ± 6	(3^-)		(1^-_1)	0.078 [p]
10.545 ± 6				
10.609 ± 5	6^-		2^-	
10.694 ± 6	$4^-, 3^+$ [a]			
10.840 ± 6	(3^-)		(1^-_2)	0.0099 [p]
10.917 ± 6	3^+ [a]			
11.013 ± 6				

Table 20.19 from (1983AJ01): Excited states of ^{20}Ne from ^{12}C(^{12}C, α)^{20}Ne [a] (continued)

E_x [c] (MeV $\pm$ keV)	J^π [b]	$\Gamma_{c.m.}$ (keV)	K^π [b]	θ^2_α
11.528 ± 6				
11.555 ± 6	$1^+, 2^-, 3^+$ [a]			
11.656 ± 6	(3^+) [a]			
11.871 ± 6	[a]			
11.949 ± 6	8^+		0^+_1	$(7.6 \pm 2.2) \times 10^{-3}$ [q]
12.135 ± 5 [d]	6^+		0^+_3	$(4.9 \pm 2.6) \times 10^{-4}$ [q,s]
12.381 ± 6				
12.436 ± 5 [e]	0^+ [r]	15 ± 1	[r]	[q,r]
12.600 ± 10 [aa]	6^+	50 ± 10		0.09 ± 0.02
12.730 ± 6	(5^-)		(1^-)	0.129 [p]
12.919 ± 6				
13.010 ± 6				
13.049 ± 6				
13.190 ± 6				
13.277 ± 6				
13.335 ± 6	7^-		2^-	$(2.4 \pm 1.0) \times 10^{-4}$ [q,t]
13.441 ± 6	(5^-)		(1^-_2)	≤ 0.023 [p]
13.569 ± 15				
13.631 ± 15				
13.679 ± 15				
13.845 ± 15				
13.886 ± 15				
13.927 ± 5	6^+	113 ± 7	0^+_2	0.10 ± 0.01 [q]
14.144 ± 15				
14.311 ± 15 [bb]	6^+	< 50		$\lesssim 0.45$
14.60				
14.812 ± 15				
15.034 ± 15	[a]			
15.159 ± 5 [e]	6^+	60 ± 15	(0^+_6)	$< 8 \times 10^{-4}$ [q,u]
15.359 ± 15 [f]	7^-	410 ± 30	0^-	

Table 20.19 from (1983AJ01): Excited states of ^{20}Ne from ^{12}C(^{12}C, α)^{20}Ne [a] (continued)

E_x [c] (MeV ± keV)	J^π [b]	$\Gamma_{c.m.}$ (keV)	K^π [b]	θ^2_α
15.438 ± 10 [g]		100 ± 20		
15.691 ± 15				
15.874 ± 9 [h]	8^+	100 ± 15	0^+_3	0.047 ± 0.013 [q,v]
16.139 ± 15				
16.600 ± 15 [cc]	7^-	160 ± 30		[cc]
16.717 ± 10		37 ± 10		
17.259 ± 11 [k]	7^- (9^-)	162 ± 20	2^-	0.019 ± 0.004 [q,x]
18.153 ± 10 [l,q]	7^-			
18.538 ± 7 [m]	8^+	138 ± 13	0^+_6	$(3.2 \pm 1.5) \times 10^{-3}$ [q,y]
20.478 ± 11 [n]	8^+	250 ± 30	0^+_2	0.11 ± 0.04 [q,z]
20.704 ± 11 [o]	8^+ (10^+)	≈ 120		[q]
20.89 ± 30				
21.05 ± 20		140 ± 50		
21.65 ± 100	$(7^-, 9^-)$	240 ± 50		
22.03 ± 100	(8^+)	630 ± 80		
22.7 ± 100		500 ± 150		
23.2 ± 100		300 ± 100		
23.74 ± 100		230 ± 100		
24.374 ± 30	7^- (5^-)	200 ± 50		

[a] For complete references see Table 20.21 in (1978AJ03).

[b] See discussion in (1975ME04).

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

[d] 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 (1972BA97). See also (1982HI1K).

[e] 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).

[f] 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).

[g] Alpha decay is (20 ± 5)% by α_0, (57 ± 7)% by α_{1+2} and (23 ± 4)% by α_{3+4} (1982HI1K).

[h] 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} (1982HI1K).

[i] Alpha decay is $(72 \pm 3)\%$ via α_0, $(20 \pm 3)\%$ via α_{1+2} (mainly α_2) and $(8 \pm 3)\%$ via α_{3+4} (mainly α_3) (1979YO04).

[j] Alpha decay is $(5 \pm 2)\%$ via α_0, $(52 \pm 2)\%$ via α_{1+2} (mainly α_2) and $(43 \pm 2)\%$ via α_{3+4} (mainly α_3) (1979YO04); $(60 \pm 5)\%$ via α_0, $(20 \pm 5)\%$ via α_{1+2}, $(20 \pm 5)\%$ via α_{3+4} (1982HI1K).

[k] Alpha decay is $(15 \pm 2)\%$ via α_0, $(50 \pm 6)\%$ via α_{1+2} and $(35 \pm 7)\%$ via α_{3+4} (1982HI1K). See also (1979YO04).

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

[m] Alpha decay is $(1.8 \pm 0.9)\%$ via α_0, $(60 \pm 8)\%$ via α_{1+2} and $(26 \pm 4)\%$ via α_{3+4}. Decay to $^{12}C_{g.s.} + {}^{8}Be_{g.s.}$ is also observed: the branching ratio is 12%. 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 (1981HI02, 1982HI1K).

[n] Decay is $(66 \pm 26)\%$ via α_0, $(14 \pm 7)\%$ via α_{1+2} and $(13.2 \pm 2.5)\%$ via $^{12}C + {}^{8}Be$ (1982HI1K).

[o] Decay is $\lesssim 14\%$ via α_0, $(25 \pm 15)\%$ via α_{1+2}, $(46 \pm 22)\%$ via α_{3+4} and $(4.5 \pm 0.9)\%$ via $^{12}C + {}^{8}Be$ (1982HI1K). See also (1979YO04).

[p] (1979YO04).

[q] (1981HI02, 1982HI1K). θ^2_α shown are $\theta^2_{\alpha_0}$ (1982HI1K) and P.D. Parker, private communication.

[r] See footnote [f] in Table 20.21 (1981GA35).

[s] $\theta^2_{\alpha_2} = 0.66 \pm 0.36$ (1982HI1K).

[t] $\theta^2_{\alpha_2} = 0.025 \pm 0.010$ (1982HI1K).

[u] $\theta^2_{\alpha_2} = 0.05 \pm 0.013$, $\theta^2_{\alpha_3} = 0.91 \pm 0.23$ (1982HI1K).

[v] $\theta^2_{\alpha_2} = 0.94 \pm 0.14$, $\theta^2_{\alpha_3} = 4.2 \pm 0.9$ (1982HI1K).

[w] $\theta^2_{\alpha_2} = 0.048 \pm 0.013$, $\theta^2_{\alpha_3} = 0.44 \pm 0.12$ (1982HI1K).

[x] $\theta^2_{\alpha_2} = 0.071 \pm 0.013$, $\theta^2_{\alpha_3} = 0.32 \pm 0.08$ [all θ^2_α assume $J^\pi = 7^-$] (1982HI1K).

[y] $\theta^2_{\alpha_2} = 0.085 \pm 0.014$, $\theta^2_{\alpha_3} = 0.24 \pm 0.04$, $\theta^2_{^{12}C} = 1.50 \pm 0.21$ (1982HI1K).

[z] $\theta^2_{\alpha_2} = 0.016 \pm 0.008$, $\theta^2_{^{12}C} = 0.24 \pm 0.05$ (1982HI1K).

[aa] For the new level at 12.600 ± 10 see (1983HI06).

[bb] For the new level at 14.311 ± 15 see (1983HI06).

[cc] For the new level at 16.600 ± 15 see (1983HI06).