Table 12.21 from (1975AJ02): ^{12}C levels from ^{12}C(p, p′)^{12}C* [a]

^{12}C* [b] (MeV)	^{12}C* [g] (MeV)	Multipolarity [g,i]	Γ [b,g] (MeV)
4.43 ± 0.03 [c]	4.4390 ± 0.0011 [m]	E2	[j]
7.67 ± 0.05 [d]	7.6552 ± 0.0011 [n]		
9.63 ± 0.04		E3	
10.78 ± 0.10		E3	
(11.8 ± 0.2) [e]			
12.70 ± 0.08		(M1)	[k]
14.05 ± 0.10		E4	
15.11 ± 0.05 [f]		M1	[l]
16.05 ± 0.10			
18.20 ± 0.10	18.35 ± 0.05		$0.5 - 0.8$
	18.8		
19.35 ± 0.10	[h]	M2	$0.5 - 0.8$
20.40 ± 0.15	[h]		$0.5 - 0.8$
21.4 ± 0.3	21.65 ± 0.08	E3 [o]	1.2 ± 0.2
22.1 ± 0.3	21.95 ± 0.15	E1	0.8 ± 0.1
	(22.4)	not E1	
	22.6 ± 0.1	E1	0.45 ± 0.2
23.4 ± 0.4	23.50 ± 0.05	E1	0.23 ± 0.08
	23.92 ± 0.08	(E1)	0.4 ± 0.1
	25.3 ± 0.15	(E1)	0.51 ± 0.1
	(25.8 ± 0.3)	(E1)	(0.75 ± 0.15)
	27.0 ± 0.2	(E1)	(1.4 ± 0.2)
	29.4 ± 0.3		≈ 2

[a] See also Table 12.23 in (1968AJ02).

[b] $E_{\rm p} = 185$ MeV (1965HA17, 1969SU03). See also (1969HO1J, 1970HO03: 100 MeV).

[c] $E_{\rm x} = 4442.2 \pm 1.5$ keV (1971ST22), 4439.2 ± 0.5 keV (1974NO07).

[d] $E_{\rm x} = 7655.9 \pm 2.5$ keV (1971ST22), 7656.2 ± 2.1 keV (1971AU16).

[e] (1970HO03).

[f] The branching ratio for the decay to ^{12}C*(4.4) is $2.32 \pm 0.25\%$ (1973HA1Y): see also Table 12.9.

[g] $E_{\rm p} = 45$ and 155 MeV (1974BU17) and M. Buenerd, private communication.

[h] Observed but unresolved.

[i] (1964JA03, 1969SU03).

[j] $\tau_{\rm m} = 55 \pm 7$ fsec (1968RI16): $\Gamma_\gamma = 12.0 \pm 1.5$ eV.

[k] $\Gamma_\gamma/\Gamma = 0.027 \pm 0.007$ (1962WA31).

[l] $\Gamma_\gamma/\Gamma = 1.15 \pm 0.3$ (1962WA31).

[m] (1974JO14).

[n] (1974JO15). The best value of $E_{\rm x}$ is 7655.2 ± 0.8 keV, based on this and other measurements. This sets the Q-value for the decay into 3α as 380.3 ± 1.1 keV. When this value is combined with that of (1973BA73) [379.6 ± 2.0 keV] the value 380.1 ± 1.0 keV is suggested (1974JO15).

[o] $\beta_3^2 = 0.125$ (M. Buenerd, private communication).