

Table 12.15 from (1990AJ01): States of ^{12}C from $^{12}\text{C}(e, e)^{12}\text{C}$ ^a

E_x (MeV)	$J^\pi; T$	Γ_{γ_0} (eV)
4.44	$2^+; 0$	$(10.8 \pm 0.6) \times 10^{-3}$
7.65 ^b	$0^+; 0$	$(6.0 \pm 0.4) \times 10^{-5}$ ^b
9.64	$3^-; 0$	$(3.1 \pm 0.4) \times 10^{-4}$
10.84	$1^-; 0$	
11.83 ^c	$2^-; 0$	
12.71 ^{c, d}	$1^+; 0$	0.35 ± 0.05 (M1)
14.08 ^e	$4^+; 0$	
15.11 ^{c, d, f}	$1^+; 1$	38.5 ± 0.8
15.44 ± 0.04 ^g		
16.11 ^c	$2^+; 1$	0.35 ± 0.04
16.57 ^{c, f}	$2^-; 1$	$(48 \pm 8) \times 10^{-3}$
17.6 ± 0.2		
18.20 ± 0.05 ^{c, h}	$(2^-; 0)$	
18.6 ± 0.1	(3^-)	
19.35 ± 0.10 ^{c, i}	$2^-; 1$	
19.59 ± 0.04 ^{c, j}	$4^-; 1$	
20.0 ± 0.1	(2^+)	
20.56 ± 0.05 ^{c, k}	$3^+; 1$	
21.6 ± 0.1	(3^-)	
22.0 ± 0.1	(1^-)	
22.7 ± 0.1 ^{c, l}	$(2^-; 1)$	
23.8 ± 0.1	(1^-) ^m	
24.9 ± 0.2		
25.5	(1^-)	
25.5	(3^-)	
26.4 ± 0.3		
27.8 ± 0.2		
30.2 ± 0.4		
32.3 ± 0.3		

- a) See also [Tables 12.18 in \(1975AJ02\)](#), [12.16 in \(1980AJ01\)](#) and [12.15 in \(1985AJ01\)](#) for additional information and for the earlier references.
- b) The matrix element is $5.48 \pm 0.22 \text{ fm}^2$ for the E0 decay by pair emission to $^{12}\text{C}_{\text{g.s.}}$: see [\(1980AJ01\)](#). The value listed under Γ_{γ_0} is actually Γ_{π} .
- c) Form factors have been studied at back angles: see [\(1984HI06; \$E_e = 50.7\$ to 338 MeV\)](#) and [\(1987HI09; \$E_e = 415\$ MeV\)](#). See also [Table 12.15 in \(1985AJ01\)](#).
- d) $\Gamma_{\text{tot}} = 14.6 \pm 2.6 \text{ eV}$.
- e) $\Gamma \approx 0.3 \text{ MeV}$.
- f) The Γ_{γ_0} shown are from [\(1983DE53\)](#).
- g) [\(1983DE53\)](#): $\Gamma = 1.5 \pm 0.2 \text{ MeV}$.
- h) $\Gamma = 300 \pm 100 \text{ keV}$ [\(1984HI06\)](#).
- i) $\Gamma = 400 \pm 100 \text{ keV}$ [\(1984HI06\)](#).
- j) $\Gamma = 550 \pm 70 \text{ keV}$ [\(1984HI06\)](#).
- k) $\Gamma = 300 \pm 50 \text{ keV}$ [\(1984HI06\)](#).
- l) $\Gamma = 450 \pm 150 \text{ keV}$ [\(1984HI06\)](#).
- m) The giant dipole resonance has an average $E_x = 23.0 \pm 0.7 \text{ MeV}$ and $\Gamma = 5.7 \pm 0.7 \text{ MeV}$. It may involve fine structure at $E_x = 22.2, 22.8, 23.4$ and 23.8 MeV . A strong and relatively narrow peak is reported at 23.6 MeV by [\(1987HI09\)](#).