Table 12.16 from (2017KE05): ^{12}C states from ^{10}B(^{3}He, p)^{12}C

E_x [a] (MeV ± keV)	Γ_{cm} [c] (keV)	Γ_γ/Γ [e]	α-decay [d,j]		Parity [d,k]	$J^\pi; T$
			^{8}Be$_{g.s.}$	^{8}Be*(2.9)		
4.44						
7.655 ± 6		3×10^{-4} [m]	yes		natural	0^+
9.645 ± 6	36 ± 6		yes	yes	natural	
10.849 ± 25	320 ± 30		strong	yes	natural	
11.841 ± 25	245 ± 30		no	yes	unnatural	
12.713 ± 6	≈ 350 [o]	0.025 ± 0.01 [f]	no	yes	unnatural	1^+
13.29 ± 30	430 ± 100		no	yes	unnatural	≥ 1 [d]
	290 ± 70 [d]					
14.083 ± 15	252 ± 15		yes	yes	natural	≤ 2 [g]
	320 ± 50 [d]					
15.108 ± 6		> 0.95 [h,i]				1^+; 1
16.108 ± 6		$(2.6 \pm 0.5) \times 10^{-3}$ [l]	weak	strong	natural	2^+
16.58			yes	yes	natural [n]	
≈ 18.5 [p]	broad		(yes)			
≈ 19.5 [p]	broad			(yes)		
20.5 ± 100 [b]				yes [p]		(3$^+$) [b]
22 [p,q]			(yes)			

[a] (1962BR10): excitation energies based on $Q_0 = 19.693$ MeV.
[b] A (^{3}He, pn) study suggests $J^\pi = 3^+$; $T = 1$ for this state (1970BO39).
[c] (1962BR10).
[d] (1966WA16).
[e] See also Table 12.14.
[f] Branching ratios to ^{12}C*(0, 4.4) are $(85 \pm 4)\%$ and $(15 \pm 4)\%$, respectively (1972AL03). See also Table 12.14.
[g] From proton-α correlations (1966WA16).
[h] (1965AL1B): $\Gamma_\alpha/\Gamma < 0.05$.
[i] Branching ratios to ^{12}C*(0, 4.4, 7.7, 12.7) are, respectively, $(92 \pm 2)\%$, $(2.3 \pm 0.9)\%$, $(2.6 \pm 0.7)\%$, $(1.4 \pm 0.4)\%$ (1972AL03): see earlier results in (1959AL96).
[j] (1968KR02).
[k] (1965AL1B).
[l] (1977AD02): see, however, Table 12.14.
[m] (1961AL23): The cascade decay (via 4.44) is $(3.3 \pm 0.9) \times 10^{-4}$ of the total decay. This is 50 times stronger than the direct g.s. decay (via e$^+$+e$^-$-pairs). $\Gamma_{rad}/\Gamma = (3.5 \pm 1.2) \times 10^{-4}$ (1964HA23): see Table 12.14.
[n] Inconsistent with $J^\pi = 2^-$.
[o] $\Gamma \approx 350$ for ^{12}C*(12.713) appears in (1985AJ01), but the value is untraceable. It may be associated with (1982KA1M).
[p] (1982KA1M: private communication) $E(^3\text{He}) = 19$ MeV. The p_0-decay of ^{12}C*(18.3, 20.6) and the p_2 [to ^{11}B*(4.45)] decay of ^{12}C*(20.6, 22) are reported.
[q] The α_0-decay of states with $20 < E_x < 25$ MeV is very unlikely, consistent with the population of $T = 1$ states in this region: see reaction 21 in (1980AJ01).