Table 12.17 from (2017KE05): ^{12}C states observed in complete kinematics studies of both ^{10}B(^{3}He, p3α) and ^{11}B(^{3}He, d3α) reactions

E_x (MeV $\pm$ keV) [a]	Γ (keV) [a]	J^π [b]	Γ_{α_0}/Γ [a]
7.65			1.0000 ± 0.0001 [c]
9.64	43 ± 4	3^-	1.000 ± 0.004
10.847 ± 4	272 ± 5	1^-	1.00 ± 0.03
11.837 ± 4	229 ± 8	2^-	
(12.4) [d]	broad [d]	Unnatural [d]	
12.71	[e]	1^+	
13.305 ± 9	510 ± 40	4^- [f]	
14.078 ± 5	273 ± 5		0.25 ± 0.03; $\Gamma_{\alpha_0} = 68 \pm 8$ keV
15.1	[g]		
16.1			0.072 ± 0.009 [h]; $\Gamma_{\alpha_0} = 0.38 \pm 0.05$ keV
16.58			
18.38			
20.553 ± 5			

[a] From (2012AL22): for Γ, Γ_{α_0}/Γ the values are corrected for contributions from the "ghost" of the ^{8}Be ground state. Neglecting these corrections yields $\Gamma_{\alpha_0}/\Gamma = 0.980 \pm 0.004$, 0.943 ± 0.009, 0.22 ± 0.03 and 0.058 ± 0.009 for ^{12}C*(9.64, 10.84, 14.08, 16.11) respectively.

[b] From Dalitz plot analysis in (2010KI08).

[c] Decay is consistent with 100% decay to $\alpha + {}^{8}\mathrm{Be}_{\mathrm{g.s.}}$ (2012KI07). Limits on: direct breakup into 3 equal energy α particles was $< 0.9 \times 10^{-3}$, direct breakup with one α particle at rest and two equal energy α's was $< 0.9 \times 10^{-3}$, and decay into 3-body phase space was $< 5 \times 10^{-3}$.

[d] Previously unobserved state with Γ = 300-900 keV, and $J^\pi = 4^-, 5^+, 6^-, 7^+$ (5^+ is preferred: 2013KI07).

[e] $\Gamma_\alpha/\Gamma = 0.974 \pm 0.003$ and $\Gamma_\gamma/\Gamma = 0.026 \pm 0.004$ (2009KI13). The γ-decay branching ratios are (84 ± 12)%, (12.7 ± 2.4)%, $(2.6^{+1.6}_{-1.2})$% and $(0.9^{+0.6}_{-0.5})$% to ^{12}C*(0, 4.4, 7.65, 10.3), respectively. In (2009KI13) the γ-decay energies are deduced by taking the difference in excitation energy, deduced from the p- or d-ejectile and the reconstructed 3α-decay energy.

[f] See also (2007BO49).

[g] $\Gamma_\alpha/\Gamma = 0.028 \pm 0.012$ (2009KI13). The γ-decay branching ratios are (90.4 ± 1.0)%, (2.3 ± 0.3)%, (4.4 ± 0.8)%, (1.4 ± 0.2)%, < 0.13%, (0.32 ± 0.12)% and (1.2 ± 0.2)% to ^{12}C*(0, 4.4, 7.65, 10.3, 10.84, 11.83, 12.71), respectively. In addition, the charge dependent matrix element between ^{12}C*(12.71, 15.11) is determined as 260 ± 60 keV.

[h] See also (2016LA24).