

Table 13.6 from (1986AJ01): Parameters of the first  $T = \frac{3}{2}$  states in  $^{13}\text{C}$  and  $^{13}\text{N}$  <sup>a</sup>

	$^{13}\text{C}^*(15.11)$	$^{13}\text{N}^*(15.06)$
$E_x$ (MeV)	$15.1082 \pm 0.0012$	$15.06457 \pm 0.0004$
$J^\pi$	$\frac{3}{2}^-$	$\frac{3}{2}^-$
$\Gamma_{\text{c.m.}}$ (keV)	$5.49 \pm 0.25$	$0.932 \pm 0.028$
$\Gamma_{\gamma_0}$ (eV)	$22.4 \pm 1.5$ (M1), $0.6 \pm 0.1$ (E2)	$24.2 \pm 1.5$ (M1) <sup>e</sup> , $0.32 \pm 0.12$ (E2) <sup>f</sup>
$\Gamma_{\gamma_1}$ (eV)	$4.12 \pm 0.74$	$\leq 2.82 \pm 0.30$ <sup>g</sup>
$\Gamma_{\gamma_{2+3}}$ (eV)	$18.2 \pm 2.4$	$19.6 \pm 1.4$ <sup>h</sup>
$\Gamma_{\gamma_0}/\Gamma$ (%)	$0.396 \pm 0.030$ b	
$\Gamma_{p_0}\Gamma_{\gamma_0}/\Gamma$ (eV)		$5.79 \pm 0.20$
$\Gamma_{\gamma_0}/\Gamma_{p_0}$ (%)		$12.1 \pm 1.1$
$\Gamma_{n_0}$ or $\Gamma_{p_0}$ (keV) <sup>c</sup>	$0.38 \pm 0.10$	$0.228 \pm 0.016$ <sup>i</sup>
$\Gamma_{n_1}$ or $\Gamma_{p_1}$ (keV) <sup>c</sup>	$1.43 \pm 0.18$	$0.140 \pm 0.014$ <sup>i</sup>
$\Gamma_{n_2}$ or $\Gamma_{p_2}$ (keV) <sup>c</sup>	$0.14 \pm 0.10$	$0.049 \pm 0.015$ <sup>i</sup>
$\Gamma_{p_3}$ (keV) <sup>c</sup>		$0.089 \pm 0.014$ <sup>i</sup>
$\Gamma_{p_5}$ (keV) <sup>c</sup>		$0.15 \pm 0.04$ <sup>i</sup> j
$\Gamma_{\alpha_0}$ (keV) <sup>d</sup>	$0.104 \pm 0.028$	$0.046 \pm 0.026$ <sup>i</sup>
$\Gamma_{\alpha_1}$ (keV) <sup>d</sup>		$0.036 \pm 0.036$ <sup>i</sup>
$\Gamma_{\alpha_2}$ (keV) <sup>d</sup>		$0.067 \pm 0.042$ <sup>i</sup>

<sup>a</sup> For references see [Table 13.7 in \(1981AJ01\)](#).

<sup>b</sup> The decay width to  $^{13}\text{C}^*(7.55)$  is  $< 0.9$  eV.

<sup>c</sup> Widths for  $^{13}\text{C}^*(15.11) \rightarrow ^{12}\text{C}_{\text{g.s.}} + n_0$  or  $^{13}\text{N}^*(15.06) \rightarrow ^{12}\text{C}_{\text{g.s.}} + p_0$  [ $n_1, p_1; n_2, p_2$ ; and  $p_3$  and  $p_5$  refer to the decays to  $^{12}\text{C}^*(4.4, 7.7, 9.6, 10.8)$  respectively].

<sup>d</sup> Widths for  $^{13}\text{C}^*(15.11) \rightarrow ^9\text{Be}_{\text{g.s.}} + \alpha_0$  or  $^{13}\text{N}^*(15.06) \rightarrow ^9\text{B}_{\text{g.s.}} + \alpha_0$  [ $\alpha_1$  and  $\alpha_2$  refer to the decays to  $^9\text{B}^*((1.6), 2.4)$ ].

<sup>e</sup>  $\delta = -0.15 \pm 0.07$  (1978HI06). Here  $\delta = B(^{13}\text{C})/B(^{13}\text{N}) - 1$ .

<sup>f</sup>  $\delta = 1.0 \pm 0.6$  (1978HI06).

<sup>g</sup>  $\delta \geq 0.83 \pm 0.29$ .

<sup>h</sup>  $\delta = -0.04 \pm 0.14$ .

<sup>i</sup> Based on measured branching ratios and on  $\Gamma_{\text{c.m.}} = 0.932 \pm 0.028$  keV. See also [footnote <sup>d</sup> in Table 13.18](#).

<sup>j</sup> The decay width to  $^{12}\text{C}^*(12.71)$  is  $< 0.13$  keV. It is expected to be  $\approx 0.03$  keV. The sum of the branching ratios for all measured decays of  $^{13}\text{N}^*(15.06)$  is  $(92 \pm 8)\%$ . It is apparent from the character of the decay modes of this state that  $2s1d$  shell isospin admixtures are important.