

Table 12.18 from (1980AJ01):  $^{12}\text{C}$  levels from  $^{12}\text{C}(p, p')^{12}\text{C}^*$  <sup>a</sup>

$E_x$ (MeV $\pm$ keV)	$\Gamma$ (MeV)	$J^\pi; T$	Refs.
$4.4390 \pm 1.1$ <sup>b</sup>	<sup>c</sup>	$2^+; 0$	(1974JO14)
$7.65400 \pm 0.13$ <sup>d</sup>	<sup>e</sup>	$0^+; 0$	(1976NO02)
$9.63 \pm 40$	<sup>e</sup>	$3^-; 0$	(1969SU03, 1965HA17)
$10.78 \pm 100$		$1^-; 0$	(1969SU03, 1965HA17)
$12.70 \pm 80$	<sup>e</sup>		(1969SU03, 1965HA17)
$14.05 \pm 100$		$4^+; 0$	(1969SU03, 1965HA17)
$15.11 \pm 50$	<sup>e</sup>	$1^+; 1$	(1969SU03, 1965HA17)
$15.3 \pm 200$ <sup>f</sup>	$2.0 \pm 0.2$	$2^+; 0$	A
$18.35 \pm 30$	$0.35 \pm 0.1$	$2^+, 3^-$	A
$19.4 \pm 50$	$0.53 \pm 0.1$	$2^-; 1$	A
$19.65 \pm 50$	$0.44 \pm 0.1$	$4^+; 0$	A
$20.27 \pm 50$ <sup>g</sup>	$0.14 \pm 0.05$		A
$20.57 \pm 50$	$0.35 \pm 0.1$	$3^-; 1$	A
$21.65 \pm 100$	$1.20 \pm 0.15$	$3^-; 0$	A
$21.95 \pm 150$	$0.8 \pm 0.1$	$1^-; 1$	A
$22.36 \pm 50$ <sup>g</sup>	$0.3 \pm 0.05$		A
$22.6 \pm 100$	$0.9 \pm 0.1$	$1^-; 1$	A
$23.50 \pm 50$	$0.23 \pm 0.1$	$1^-; 1$	A
$23.92 \pm 80$	$0.4 \pm 0.1$	$1^-; 1$	A
$25.3 \pm 150$	$0.51 \pm 0.1$	$1^-; 1$	A
$(25.8 \pm 300)$	$0.75 \pm 0.15$	$(1^-; 1)$	A
$27.0 \pm 300$	$1.4 \pm 0.2$	$1^-; 1$	A
$29.4 \pm 300$ <sup>h</sup>		$(2^+; 1)$	A

A: (1977BU19):  $E_p = 45$  and  $155$  MeV. See also (1975BU1F).

<sup>a</sup> See also Tables 12.23 in (1968AJ02) and 12.21 in (1975AJ02).

<sup>b</sup>  $4442.2 \pm 1.5$  keV (1971ST22),  $4439.2 \pm 0.5$  keV (1974NO07).

<sup>c</sup>  $\tau_m = 55 \pm 7$  fsec (1968RI16):  $\Gamma_\gamma = 12.0 \pm 1.5$  eV.

<sup>d</sup> The  $Q$  for the decay of this state into  $3\alpha$  is  $379.31 \pm 0.21$  keV (1976NO02). See also (1975AJ02).

<sup>e</sup> See Table 12.8.

<sup>f</sup> This state is also reported in  $(\alpha, \alpha')$  at  $E_\alpha = 60$  MeV (1977BU19).

<sup>g</sup> Only at  $45$  MeV (1977BU19).

<sup>h</sup> Only at  $155$  MeV (1977BU19).