

Table 15.2 from (1991AJ01): Proton groups from ${}^9\text{Be}({}^7\text{Li}, p){}^{15}\text{C}$ and ${}^{14}\text{C}(d, p){}^{15}\text{C}$ ^a

${}^9\text{Be}({}^7\text{Li}, p){}^{15}\text{C}$ ^b			${}^{14}\text{C}(d, p){}^{15}\text{C}$ ^c		
E_x (keV)	$\Gamma_{\text{c.m.}}$ (keV)	$J\pi$ ^d	E_x (keV)	$\Gamma_{\text{c.m.}}$ (keV)	$J\pi$ ^e
g.s. $\equiv 740$ ^f	bound		g.s.	bound	$\frac{1}{2}^+$ ^o
3100 ± 30	bound		744.1 ± 2 ^j	bound	$\frac{5}{2}^+$ ^p
4223 ± 15	< 40	$(\frac{1}{2}^-)$ ^h	3105.3 ± 5 ^k	≈ 42	$(\frac{1}{2}^-)$
(4550 ± 30)	< 15	$(\frac{5}{2}^-)$	4221.1 ± 3 ^k	< 14	$(\frac{7}{2}^+, \frac{5}{2}^-)$
			4657 ^k		
5833 ± 20		i	4780 ± 100 ^l	1740 ± 400	$\frac{3}{2}^+$
5858 ± 20		i	5810 ± 20 ^l	64 ± 8	$(\frac{3}{2}^+)$ ^q
6370 ± 15	< 20	$(\frac{5}{2})$	k, m	< 14	$(\frac{7}{2}, \frac{9}{2})^+$
6436 ± 20			6428.1 ± 7	≈ 50	$(\frac{3}{2}, \frac{5}{2}, \frac{7}{2})$
6461 ± 20			m	< 14	$(\frac{9}{2}^-, \frac{11}{2})$
6542 ± 15	< 20	$(\frac{3}{2})$	6539.8 ± 5	< 14	$(\frac{9}{2}^-, \frac{11}{2})$
6639 ± 15	20 ± 10	$(\frac{3}{2})$			
6847 ± 15	< 20	$(\frac{11}{2}, \frac{13}{2})$	6844.9 ± 5	< 14	$(\frac{13}{2}, \frac{11}{2})^+$
6894 ± 15	< 20	$(\frac{7}{2}, \frac{9}{2})$	6882.4 ± 5		$((\frac{9}{2}^-, \frac{11}{2}^+, \frac{13}{2}^+))$
7100 ± 15	< 15	$(\frac{3}{2})$	7097.2 ± 6		
7354 ± 15	20 ± 10	$(\frac{9}{2}, \frac{11}{2})$	7351.3 ± 6		
7414 ± 20					
7750 ± 30 ^g			7.81 ± 10 ⁿ		
8010 ± 30					
8130 ± 30 ^g			8.10 ± 10 ⁿ		
8491 ± 15	40 ± 15	$(\frac{9}{2}, \frac{11}{2}, \frac{13}{2})$	8.46 ± 10 ⁿ		
8559 ± 15	40 ± 15	$(\frac{7}{2} \rightarrow \frac{13}{2})$			
9000 ± 30					
(9730 ± 30)					
9789 ± 20	20 ± 15	$(\frac{9}{2} \rightarrow \frac{15}{2})$			
10248 ± 20	20 ± 15	$(\frac{5}{2}, \frac{7}{2}, \frac{9}{2})$			
11015 ± 25					

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${}^9\text{Be}({}^7\text{Li}, \text{p}){}^{15}\text{C}$ ^b			${}^{14}\text{C}(\text{d}, \text{p}){}^{15}\text{C}$ ^c		
E_x (keV)	$\Gamma_{\text{c.m.}}$ (keV)	J^π ^d	E_x (keV)	$\Gamma_{\text{c.m.}}$ (keV)	J^π ^e
11123 ± 20 (11680 ± 30)	30 ± 20	$(\frac{11}{2} \rightarrow \frac{19}{2})$			
11825 ± 20	70 ± 30	$(\frac{13}{2} \rightarrow \frac{31}{2})$			

^a For references see [Table 15.2 in \(1981AJ01\)](#).

^b $E({}^7\text{Li}) = 20$ MeV. E_x based on 740 keV for the first excited state.

^c $E_d = 12 - 14$ MeV.

^d Suggested J^π assignments based on angular distributions (and $2J_f + 1$ dependence) and l_{max} from Γ_n .

^e Analysis of the two bound states is done using DWUCK. For the unbound states DOXY was used.

^f $E_x = 739 \pm 1$ keV [from E_γ]; $\tau_m = 3.77 \pm 0.11$ ns.

^g Broad or unresolved states.

^h $\theta_n^2 = 0.0075 \pm 0.0015$.

ⁱ Sum of the J for these two states is 2 [based on $(2J_f + 1)$ dependence of cross section].

^j $\tau_m = 3.73 \pm 0.23$ ns.

^k See also [\(1985DA23\)](#).

^l See text, [reaction 6 \(1985DA23\)](#).

^m Observed but E_x not determined.

ⁿ Observed at $E_d = 27$ MeV.

^o $S = 0.88$.

^p $S = 0.69$ or 0.55 . $g = -0.77 \pm 0.06$.

^q May be unresolved.