

Table 15.2 from (1986AJ01): Proton groups from  ${}^9\text{Be}({}^7\text{Li}, \text{p}){}^{15}\text{C}$  and  ${}^{14}\text{C}(\text{d}, \text{p}){}^{15}\text{C}$  <sup>a</sup>

${}^9\text{Be}({}^7\text{Li}, \text{p}){}^{15}\text{C}$ <sup>b</sup>			${}^{14}\text{C}(\text{d}, \text{p}){}^{15}\text{C}$ <sup>c</sup>		
$E_x$ (keV)	$\Gamma_{\text{c.m.}}$ (keV)	$J^\pi$ <sup>d</sup>	$E_x$ (keV)	$\Gamma_{\text{c.m.}}$ (keV)	$J^\pi$ <sup>e</sup>
g.s. $\equiv 740$ <sup>f</sup>	bound bound		g.s. $744.1 \pm 2$ <sup>j</sup>	bound bound	$\frac{1}{2}^+$ <sup>n</sup> $\frac{5}{2}^+$ <sup>o</sup>
$3100 \pm 30$	$< 40$	$(\frac{1}{2}^-)$ <sup>h</sup>	$3105.3 \pm 5$	$\approx 42$	$(\frac{1}{2}^-)$
$4223 \pm 15$	$< 15$	$(\frac{5}{2}^-)$	$4221.1 \pm 3$	$< 14$	$(\frac{7}{2}^+, \frac{5}{2}^-)$
$(4550 \pm 30)$			k		
$5833 \pm 20$		i	k		
$5858 \pm 20$		i	k		
$6370 \pm 15$	$< 20$	$(\frac{5}{2})$	l	$< 14$	$(\frac{7}{2}, \frac{9}{2})^+$
$6436 \pm 20$			$6428.1 \pm 7$	$\approx 50$	$(\frac{3}{2}, \frac{5}{2}, \frac{7}{2})$
$6461 \pm 20$			l	$< 14$	$(\frac{9}{2}^-, \frac{11}{2})$
$6542 \pm 15$	$< 20$	$(\frac{3}{2})$	$6539.8 \pm 5$	$< 14$	$(\frac{9}{2}^-, \frac{11}{2})$
$6639 \pm 15$	$20 \pm 10$	$(\frac{3}{2})$			
$6847 \pm 15$	$< 20$	$(\frac{11}{2}, \frac{13}{2})$	$6844.9 \pm 5$	$< 14$	$(\frac{13}{2}, \frac{11}{2})^+$
$6894 \pm 15$	$< 20$	$(\frac{7}{2}, \frac{9}{2})$	$6822.4 \pm 5$		$((\frac{9}{2}^+, \frac{11}{2}^+, \frac{13}{2}^+))$
$7100 \pm 15$	$< 15$	$(\frac{3}{2})$	$7097.2 \pm 6$		
$7354 \pm 15$	$20 \pm 10$	$(\frac{9}{2}, \frac{11}{2})$	$7351.3 \pm 6$		
$7414 \pm 20$					
$7750 \pm 30$ <sup>g</sup>			$7.81 \pm 10$ <sup>m</sup>		
$8010 \pm 30$					
$8130 \pm 30$ <sup>g</sup>			$8.10 \pm 10$ <sup>m</sup>		
$8491 \pm 15$	$40 \pm 15$	$(\frac{9}{2}, \frac{11}{2}, \frac{13}{2})$	$8.46 \pm 10$ <sup>m</sup>		
$8559 \pm 15$	$40 \pm 15$	$(\frac{7}{2} \rightarrow \frac{13}{2})$			
$9000 \pm 30$					
$(9730 \pm 30)$					
$9789 \pm 20$	$20 \pm 15$	$(\frac{9}{2} \rightarrow \frac{15}{2})$			
$10248 \pm 20$	$20 \pm 15$	$(\frac{5}{2}, \frac{7}{2}, \frac{9}{2})$			
$11015 \pm 25$					
$11123 \pm 20$	$30 \pm 20$	$(\frac{11}{2} \rightarrow \frac{19}{2})$			
$(11680 \pm 30)$					
$11825 \pm 20$	$70 \pm 30$	$(\frac{13}{2} \rightarrow \frac{31}{2})$			

- <sup>a</sup> For references see [Table 15.2 in \(1981AJ01\)](#).
- <sup>b</sup>  $E(^7\text{Li}) = 20 \text{ MeV}$ .  $E_x$  based on 740 keV for first excited state.
- <sup>c</sup>  $E_d = 12 - 14 \text{ MeV}$ .
- <sup>d</sup> Suggested  $J^\pi$  assignments based on angular distributions (and  $2J_f + 1$  dependence) and  $l_{\text{max}}$  from  $\Gamma_n$ .
- <sup>e</sup> Analysis of the two bound states is done using DWUCK. For the unbound states DOXY was used.
- <sup>f</sup>  $E_x = 739 \pm 1 \text{ keV}$  [from  $E_\gamma$ ];  $\tau_m = 3.77 \pm 0.11 \text{ nsec}$ .
- <sup>g</sup> Broad or unresolved states.
- <sup>h</sup>  $\theta_n^2 = 0.0075 \pm 0.0015$ .
- <sup>i</sup> Sum of the  $J$  for these two states is 2 [based on  $(2J + 1)$  dependence of cross section].
- <sup>j</sup>  $\tau_m = 3.73 \pm 0.23 \text{ nsec}$ .
- <sup>k</sup> Not observed.
- <sup>l</sup> Observed but  $E_x$  not determined.
- <sup>m</sup> Observed at  $E_d = 27 \text{ MeV}$ .
- <sup>n</sup>  $S = 0.88$ .
- <sup>o</sup>  $S = 0.69$  or  $0.55$ .  $g = -0.77 \pm 0.06$ .