\[ B^{11} \]

24 November 1958

Fig. 17. Gamma-ray transitions in $B^{11}$: for notation, see fig. 14.

**Table 11.2**

Resonances in $Li^7 (\alpha, \gamma) B^{11}$

<table>
<thead>
<tr>
<th>$E_r$ (MeV)</th>
<th>$\Gamma_{lab}$ (keV)</th>
<th>$\mu^{11}$ (MeV)</th>
<th>Partial width $\Gamma_\gamma (\text{eV})$ to states of $B^{11}$ at 2.14</th>
<th>4.46</th>
<th>5.03</th>
<th>6.81</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.401</td>
<td>&lt; 1</td>
<td>8.925</td>
<td>0.15 $^c$</td>
<td>&lt; 0.063</td>
<td>&lt; 0.003</td>
<td>$\approx$ 0.005</td>
</tr>
<tr>
<td>0.829 ± 0.1</td>
<td>$\approx$ 4</td>
<td>9.191</td>
<td>$&lt; 0.05$</td>
<td>$&lt; 0.02$</td>
<td>2.6</td>
<td>$&lt; 0.1$</td>
</tr>
<tr>
<td>0.958 ± 0.1</td>
<td>7</td>
<td>8.280</td>
<td>3.5 $^e$</td>
<td>$&lt; 0.17$</td>
<td>8.1</td>
<td>$&lt; 0.4$</td>
</tr>
</tbody>
</table>

$^a$ (Be 51). See also (He 54b).

$^b$ (Jo 52d) and D. H. Wilkinson, private communication; compare $Be^8(He^4, p) B^{11}$ and fig. 17, (Be 51) report total gamma widths of 0.04, 0.6 and 4.7 eV for the three resonances.

$^c$ (Wa 57d) finds $\Gamma_\gamma = 2 \times 10^{-3}$ eV for the 8.9-MeV state.

$^d$ (Jo 57) find 957.2 ± 2 keV. According to (Fe 58c) the transition from $B^{11*}(0.28)$ is to the 9.76-MeV level and not that at 6.81 MeV.

$^e$ (Me 58c) report $\Gamma_\gamma = 0.8$ eV; see $B^{10}(\gamma, x)Li^7$.

V. $Be^8(d, \gamma) B^{11}$

$Q_m = 15.822$

This reaction has not been observed: at $E_d = 0.9$ MeV, $\sigma < 1.8 \mu b$; at $E_d = 1.5$ MeV, $\sigma < 20 \mu b$ (Al 55c).

VI. $Be^8(d, n) B^{10}$

$Q_m = 4.358$

$E_b = 15.822$

The cross section follows the Gamow function for $E_d = 70$ to 110 keV (Ra 55). The fast neutron and $\gamma$-ray yield rise smoothly to $E_d = 1.8$ MeV.