

Table 9.13 from (2004TI06): Energy levels of  ${}^9\text{B}$ 

$E_x$ <sup>a</sup> (MeV $\pm$ keV)	$J^\pi; T$	$\Gamma_{\text{c.m.}}$ (keV)	Decay	Reactions
g.s.	$\frac{3}{2}^-; \frac{1}{2}$	$0.54 \pm 0.21$	p	1, 2, 3, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
$\approx 1.6$ <sup>b</sup>			p, ( $\alpha$ )	3, 4, 8, 13
$2.361 \pm 5$	$\frac{5}{2}^-; \frac{1}{2}$	$81 \pm 5$	p, $\alpha$	1, 2, 4, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17
$2.75 \pm 300$ <sup>c</sup>	$\frac{1}{2}^-; \frac{1}{2}$	$3130 \pm 200$	p	3, 7, 10
$2.788 \pm 30$	$\frac{5}{2}^+; \frac{1}{2}$	$550 \pm 40$	p, $\alpha$	4, 7, 10, 11, 13, 15, 16
$4.3 \pm 200$ <sup>d</sup>		$1600 \pm 200$		7
$6.97 \pm 60$	$\frac{7}{2}^-; \frac{1}{2}$	$2000 \pm 200$	p	4, 7, 11, 14, 15, 16
$11.65 \pm 60$ <sup>e</sup>	$(\frac{7}{2})^-; \frac{1}{2}$	$800 \pm 50$	p	11, 13, 15, 16
$12.19 \pm 40$ <sup>f</sup>	$\frac{5}{2}^-; \frac{1}{2}$	$450 \pm 20$	p, $\alpha$	4, 7, 10, 14
$14.01 \pm 70$	$\pi = -; \frac{1}{2}$	$390 \pm 110$	p, $\alpha$	4, 7, 10, 14
$14.6550 \pm 2.5$	$\frac{3}{2}^-; \frac{3}{2}$	$0.395 \pm 0.042$	$\gamma$ , p	4, 7, 8, 10, 14
$14.7 \pm 200$ <sup>g</sup>	$(\frac{5}{2})^-; \frac{1}{2}$	$1350 \pm 200$		11
$15.29 \pm 40$	$T = \frac{1}{2}$			14
$15.58 \pm 40$	$T = \frac{1}{2}$			14
$16.024 \pm 25$	$T = (\frac{1}{2})$	$180 \pm 16$		4, 14
$16.71 \pm 100$ <sup>h</sup>	$(\frac{5}{2}^+); (\frac{1}{2})$			7
$17.076 \pm 4$	$\frac{1}{2}^-; \frac{3}{2}$	$22 \pm 5$	$(\gamma, {}^3\text{He})$	1, 14
$17.190 \pm 25$		$120 \pm 40$	p, d, ${}^3\text{He}$	4, 5, 14
$17.54 \pm 100$ <sup>h,i</sup>	$(\frac{7}{2}^+); (\frac{1}{2})$			7
$17.637 \pm 10$ <sup>i</sup>		$71 \pm 8$	p, d, ${}^3\text{He}$ , $\alpha$	1, 4, 5, 14

<sup>a</sup> See reactions 7 and 8 for additional states and other values.

<sup>b</sup> A wide range of excitation energies and widths have been given from searches for the analog of the 1.68 MeV  $\frac{1}{2}^+$  state of  ${}^9\text{Be}$ . See (1987BA54, 1992CA31, 1995TI06, 1996BA22, 1999EF01).

<sup>c</sup> Analog to  ${}^9\text{Be}^*(2.78)$ . See (1985PU1A, 1995TI06, 2000GE09).

<sup>d</sup> See (1985PU1A). A level listed at  $E_x = 4.8$  MeV in (1988AJ01) was based on (1986AR14, 1987KA36).

<sup>e</sup> See (1974AJ01, 1985PU1A). Width from (1968KU04).

<sup>f</sup> See (1985PU1A, 2000GE09, 2001BE51).

<sup>g</sup> From (1968KU04).

<sup>h</sup> From (1985PU1A). See (1991DI03).

<sup>i</sup> These two levels may not be distinct.