

Adopted Levels

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. Kelley, C. G. Sheu	ENSDF	01-June-2014

$S(n)=27.7\times 10^3$  20;  $S(p)=-2013$  25;  $Q(\alpha)=-3.4\times 10^3$  20    [2012Wa38](#)

Evidence of the unbound  ${}^7\text{B}$  nucleus is observed in three measurements. Each of these measurements is complicated by backgrounds, which affect the extraction of ground state properties. Since  ${}^7\text{B}$  is unbound to 1p, 2p and 3p emission, the  ${}^7\text{Li}(\pi^+, \pi^-)$  measurements of ([1981SeZR](#)) are complicated by multi-body breakups that add a phase-space background component to their analyzed spectra. The  ${}^{10}\text{B}({}^3\text{He}, {}^6\text{He})$  measurements of ([1967Mc14](#)) were complicated by a rather large  ${}^{11}\text{B}({}^3\text{He}, {}^6\text{He})$  background of  ${}^8\text{B}$  states along with a multi-body breakup phase-space background component. Finally, the kinematically complete  ${}^7\text{B}$  analysis of  ${}^9\text{Be}({}^9\text{C}, {}^7\text{B})$  reactions of ([2011Ch32](#)) are "contaminated" by  ${}^9\text{Be}({}^9\text{C}, {}^8\text{C})$  events where one proton is unobserved.

The corrections applied in [2012Ch32](#) appear to be the smallest, and arguably most reliable, which perhaps explains that the [2012Wa38](#) mass evaluation has based the  ${}^7\text{B}$  mass excess on this value alone. Without further experimental information, it is agreed that this is the best decision.

Mass predictions and comparison with  $T=3/2$  isobaric analog states are found in ([1965De08](#), [1988Co15](#), [1997Po12](#), [2011Ch53](#)). See ([1974Ir04](#), [1993Po11](#), [1997Ba54](#), [1998Na17](#), [2001Co21](#), [2006Wi07](#), [2007Ma79](#)) for broad analyses of  ${}^7\text{B}$  and other p-shell nuclei, and see ([2006Ca35](#), [2007Do01](#), [2007Ca31](#), [2011My03](#), [2012My04](#)) for more specific analysis on  ${}^7\text{B}$  and nearby nuclides.

The connection between wave-function diffuseness and proton decay is analyzed in [1997Ab27](#).

 ${}^7\text{B}$  LevelsCross Reference (XREF) Flags

- A  ${}^7\text{Li}(\pi^+, \pi^-)$
- B  ${}^9\text{Be}({}^9\text{C}, {}^7\text{B})$
- C  ${}^{10}\text{B}({}^3\text{He}, {}^6\text{He})$

E(level)	$J^\pi$	$T_{1/2}$	XREF	Comments
0	(3/2 <sup>-</sup> )	801 keV 20	ABC	<p><math>\%p \approx 100</math>  <math>T=(3/2)</math>  <math>J^\pi</math>: From systematics.            All decay paths emit protons. The intensity for decay to <math>p+{}^6\text{Be}_{g.s.}</math> is <math>(81 \pm 10)\%</math>.            Proton decay to <math>{}^6\text{Be}^*(1.6 \text{ MeV})</math> is suppressed. Decay to <math>2p+{}^5\text{Li}</math> and <math>3p+{}^4\text{He}</math> are other open channels.</p>