

**Adopted Levels**

Type	Author	Citation	Literature Cutoff Date
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Q( $\beta^-$ )=10663.88 10; S(n)=2535 8; S(p)=2.48×10<sup>4</sup> *sys* 2012Wa38

Note: Current evaluation has used the following Q record 10651. 7 2574 18

2003Au02.

<sup>8</sup>He Levels

Cross Reference (XREF) Flags

A	<sup>1</sup> H( <sup>8</sup> He, <sup>8</sup> He)	F	<sup>10</sup> Be( <sup>12</sup> C, <sup>14</sup> O)
B	<sup>9</sup> Be( $\pi^-$ ,p)	G	<sup>11</sup> B( $\pi^-$ ,pd)
C	<sup>9</sup> Be( <sup>7</sup> Li, <sup>8</sup> B)	H	<sup>11</sup> B( <sup>7</sup> Li, <sup>10</sup> C)
D	<sup>9</sup> Be( <sup>9</sup> Be, <sup>10</sup> C)	I	<sup>12</sup> C( <sup>8</sup> He, <sup>6</sup> He2n)
E	<sup>9</sup> Be( <sup>13</sup> C, <sup>14</sup> O)		

E(level)	J <sup><math>\pi</math></sup>	T <sub>1/2</sub>	XREF	Comments
0.0	0 <sup>+</sup>	119.1 ms 12	ABCDEF GH	<p><math>\% \beta^- = 100</math>; <math>\% \beta^- n = 16</math> 1 T=2 T<sub>1/2</sub>: from weighted average of T<sub>1/2</sub>=117.5 ms 15 (1981Bj03), and T<sub>1/2</sub>=122 ms 2 (1965Po06). These values are averaged to obtain T<sub>1/2</sub>=119 ms 1 (1981Bj01) and T<sub>1/2</sub>=119.0 ms 1.5 (2004Ti06,2003Au02). Other values are T<sub>1/2</sub>=841 ms 4 (1954Kl36), T<sub>1/2</sub>=848 ms 5 (1960Ja12), T<sub>1/2</sub>=844.0 ms 7 (1966Cl02), T<sub>1/2</sub>=854 ms 8 (1968Da12) and T<sub>1/2</sub>=838 ms 6 (1971Wi05). <math>\% \beta^- n</math>: From (1981Bj01), other value <math>\% \beta^- n = 12</math> 1 (1965Po06). 32 3% of <math>\beta^- n</math> neutrons populate <sup>7</sup>Li*(478) (1981Bj01). <math>\% \beta^-</math> <sup>3</sup>H=0.9 1 (2003Au02, 1986Bo41). <math>\% n \approx 100</math>; <math>\% \alpha \leq 5</math> T=2</p>
3.1×10 <sup>3</sup> 5	2 <sup>+</sup>	0.6 MeV 2	A CDEF HI	<p>E(level): values in the literature are discrepant. Five independent values are E=3.55 MeV 15 <sup>1</sup>H(<sup>8</sup>He,<sup>8</sup>He) (1995Ko27), 2.80 MeV 20 <sup>9</sup>Be(<sup>7</sup>Li,<sup>8</sup>B) (1985Al29), 2.70 MeV 30 <sup>9</sup>Be(<sup>9</sup>Be,<sup>10</sup>C) and <sup>11</sup>B(<sup>7</sup>Li,<sup>10</sup>C) (1988Be34), 3.59 MeV <sup>9</sup>Be(<sup>13</sup>C,<sup>14</sup>O) (1995Vo05), 2.90MeV 20 <sup>12</sup>C(<sup>8</sup>He,6he2n) (2001Ma05). The value E=3.1 MeV is obtained from the average of the measured values. The uncertainty is assigned by the evaluator. <math>\Gamma</math>: The <math>\Gamma</math> is obtained from the weighted average of <math>\Gamma=0.50</math> MeV 35 <sup>1</sup>H(<sup>8</sup>He,<sup>8</sup>He) (1995Ko27), 0.5 MeV 3 <sup>9</sup>Be(<sup>9</sup>Be,<sup>10</sup>C) (1988Be34), 0.8 MeV (3) <sup>9</sup>Be(<sup>13</sup>C,<sup>14</sup>O) (1995Vo05), 1.0 MeV 5 <sup>11</sup>B(<sup>7</sup>Li,<sup>10</sup>C) (1988BeYJ), 0.3 MeV 3 <sup>12</sup>C(<sup>8</sup>He,6he2n) (2001Ma05). <math>\% n \approx 100</math></p>
4.36×10 <sup>3</sup> 20	(1 <sup>-</sup> )	1.3 MeV 5	B D FGHI	<p>E(level): independent values in the literature are E=4.40 MeV 20 <sup>9</sup>Be(<math>\pi^-</math>,p) (1998Go30), 4.00 MeV 30 <sup>9</sup>Be(<sup>9</sup>Be,<sup>10</sup>C) and <sup>11</sup>B(<sup>7</sup>Li,<sup>10</sup>C) (1988Be34), 4.54 MeV 15 <sup>10</sup>Be(<sup>12</sup>C,<sup>14</sup>O) (1999Bo26), 4.40 MeV 40 <sup>11</sup>B(<math>\pi^-</math>,p+D) (1998Go30), 4.15 MeV 20 <sup>12</sup>C(<sup>8</sup>He,6he2n) (2001Ma05). The energy is obtained from the weighted average of these values. However, the uncertainty is obtained by doubling the value obtained in the weighting formula. This state may represent a group of levels. A broad resonance is observed at 4.4 MeV in <sup>9</sup>Be(<math>\pi^-</math>,p), <sup>11</sup>B(<math>\pi^-</math>p) and <sup>12</sup>C(<sup>8</sup>He,6he2n); a narrow resonance is observed at 4 MeV in <sup>9</sup>Be(<sup>9</sup>Be,<sup>10</sup>C) and <sup>11</sup>B(<sup>7</sup>Li,<sup>10</sup>C) and a narrow resonance is observed at 4.54 MeV in <sup>10</sup>Be(<sup>12</sup>C,<sup>14</sup>O). <math>\Gamma</math>: The <math>\Gamma</math> is obtained from the weighted average of <math>\Gamma=1.8</math> MeV 2 <sup>9</sup>Be(<math>\pi^-</math>,p) (1998Go30), 0.5 MeV 3 <sup>9</sup>Be(<sup>9</sup>Be,<sup>10</sup>C) and <sup>11</sup>B(<sup>7</sup>Li,<sup>10</sup>C)</p>

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**Adopted Levels (continued)** ${}^8\text{He}$  Levels (continued)

<u>E(level)</u>	<u>J<sup>π</sup></u>	<u>T<sub>1/2</sub></u>	<u>XREF</u>	<u>Comments</u>
				%n≈100
				E(level): independent values in the literature are E=4.40 MeV 20 ${}^9\text{Be}(\pi^-,p)$ (1998Go30), 4.00 MeV 30 ${}^9\text{Be}({}^9\text{Be},{}^{10}\text{C})$ and ${}^{11}\text{B}({}^7\text{Li},{}^{10}\text{C})$ (1988Be34), 4.54 MeV 15 ${}^{10}\text{Be}({}^{12}\text{C},{}^{14}\text{O})$ (1999Bo26), 4.40 MeV 40 ${}^{11}\text{B}(\pi^-,p+D)$ (1998Go30), 4.15 MeV 20 ${}^{12}\text{C}({}^8\text{He},6\text{he}2n)$ (2001Ma05). The energy is obtained from the weighted average of these values. However, the uncertainty is obtained by doubling the value obtained in the weighting formula.
				This state may represent a group of levels. A broad resonance is observed at 4.4 MeV in ${}^9\text{Be}(\pi^-,p)$ , ${}^{11}\text{B}(\pi^-,p)$ and ${}^{12}\text{C}({}^8\text{He},6\text{he}2n)$ ; a narrow resonance is observed at 4 MeV in ${}^9\text{Be}({}^9\text{Be},{}^{10}\text{C})$ and ${}^{11}\text{B}({}^7\text{Li},{}^{10}\text{C})$ and a narrow resonance is observed at 4.54 MeV in ${}^{10}\text{Be}({}^{12}\text{C},{}^{14}\text{O})$ .
				Γ: The Γ is obtained from the weighted average of Γ=1.8 MeV 2 ${}^9\text{Be}(\pi^-,p)$ (1998Go30), 0.5 MeV 3 ${}^9\text{Be}({}^9\text{Be},{}^{10}\text{C})$ and ${}^{11}\text{B}({}^7\text{Li},{}^{10}\text{C})$ (1988Be34), 0.70 MeV 25 ${}^{10}\text{Be}({}^{12}\text{C},{}^{14}\text{O})$ (1999Bo26), 1.2 MeV 2 ${}^{11}\text{B}(\pi^-,p)$ (1998Go30), 0.5 MeV 3 ${}^{11}\text{B}({}^7\text{Li},{}^{10}\text{C})$ (Belousov et al., Sov.Phys. Lebedev Inst. Rept. No. 9 (1987) 203) and 1.6 MeV 2 ${}^{12}\text{C}({}^8\text{He},6\text{he}2n)$ (2001Ma05). The uncertainty is estimated by the evaluator.
6.03×10 <sup>3</sup> ? 10		0.15 MeV 15	F	
7.16×10 <sup>3</sup> 4	(3 <sup>-</sup> )	0.1 MeV 1	C F	E(level): see reactions: ${}^9\text{Be}({}^9\text{Be},{}^{10}\text{C})$ , ${}^{11}\text{B}({}^7\text{Li},{}^{10}\text{C})$ in 1988Aj01 for possible evidence of other states in ${}^8\text{He}$ and the results of nuclear model calculations.