

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, J. E. Purcell and C. G. Sheu		NP A968,71 (2017)	1-Jan-2017

$Q(\beta^-)=11708.4$ 23; $S(n)=3170.7$ 19; $S(p)=22939.5$ 20; $Q(\alpha)=-8956.8$ 19 **2017Wa10**

^{12}Be Levels

Cross Reference (XREF) Flags

A	$^1\text{H}(^{12}\text{Be},^{12}\text{Be}),(^{12}\text{Be},^{12}\text{Be}')$	H	$^9\text{Be}(^{15}\text{N},^{12}\text{N})$	O	$^{12}\text{C}(^{14}\text{C},^{14}\text{O}),^{14}\text{C}(^{12}\text{C},^{14}\text{O})$
B	$^2\text{H}(^{11}\text{Be},p\gamma)$	I	$^9\text{Be}(^{18}\text{O},^{12}\text{Be}\gamma)$	P	$^{14}\text{C}(^{14}\text{C},^{16}\text{O})$
C	$^4\text{He}(^8\text{He},^{12}\text{Be})$	J	$^{10}\text{Be}(t,p)$	Q	Ta(p,X)
D	$^4\text{He}(^{12}\text{Be},^{12}\text{Be}'\gamma)$	K	$^{10}\text{Be}(^{14}\text{N},^{12}\text{N})$	R	Ta($^{12}\text{Be},^{12}\text{Be}'\gamma$)
E	$^7\text{Li}(^{12}\text{B},^7\text{Be})$	L	$^{12}\text{C}(\pi^-, \pi^+)$	S	$^{197}\text{Au}(^{12}\text{Be},\gamma^{12}\text{Be})$
F	$^9\text{Be}(^{12}\text{C},^9\text{C})$	M	$^{12}\text{C}(^{12}\text{Be},^{12}\text{Be}')$	T	$^{208}\text{Pb}(^{12}\text{Be},\gamma^{12}\text{Be})$
G	$^9\text{Be}(^{13}\text{B},^{12}\text{Be})$	N	$^{12}\text{C}(^{14}\text{Be},^{12}\text{Be})$	U	$^{238}\text{U}(p,^{12}\text{Be})$

E(level)	J^π	$T_{1/2}$	XREF	Comments
0	0^+	21.46 ms 5	AB DEF IJKLM OPQRSTU	$\% \beta^- = 100$; $\% \beta^- n = 0.50$ 3 (1999Be53) T=2 T _{1/2} : From weighted average of T _{1/2} =21.49 ms 3 (2001Be53,2002Be53), 26.1 ms 24 (1994Ke06), 21.32 ms 6 (Reeder et al., Int. Conf. on Nucl. Data for Science and Technology, May 9-13, 1994, Gatlinburg, Tennessee: see also (1991Re02)), 21.3 ms 22 (1986Cu01), 24.0 ms 10 (1984Du15), and 24.4 ms 30 (1978Al10).
2109 1	2^+	0.957 ps 19	AB D F IJKL OP RST	$\%IT=100$ T=2 E(level): From (2018Mo12); see also (1994Fo08,2009Im01) whose average is 2109 keV 2. T _{1/2} : From $\tau=1.38$ ps 20(stat) 19(syst) (2018Mo12); see also T _{1/2} =1.73 ps 53 in (2009Im01).
2251 1	0^+	230 ns 8	B E IJ O	$\%IT=100$ $\% \pi(\text{pair emission})=82.3$ 15 (2003Sh06,2007Sh34). E(level): From (2007Sh34). T _{1/2} : From average of 247 ns 15 (2013Jo06) and 229 ns 8 (2007Sh34). J ^π : From (2003Sh06).
2715 15	1^-	1.3 fs 4	AB D J L OP RST	$\%IT=100$ E(level): From (1978Al29, 1994Fo08, 2000Iw03, 2009Im01). T _{1/2} : From B(E1) given in (2000Iw03). J ^π : From (2000Iw03).
4412? 16	(2^-)	634 keV 60	G	$\%n>0$ E(level),Γ: From (2014Sm03).
4580 † 5	$(2^+,3^-)$	101 keV 17	A F JK OP	E(level),Γ,J ^π : From (1994Fo08). See also (1978Al29).
5724 † 6	$(4^+,2^+,3^-)$	85 keV 15	A F H JK OP	E(level),Γ: From (1994Fo08). See also (1978Al29).
6275 † 50			F H K	E(level): From (2003Bo24,2004Bo23,2008Bo37).
7.2×10^3 † 1	(2^+)		F H O	E(level): From (1995Vo05,2002Bo16). J ^π : From systematics (2002Bo16).
8230? †			F	E(level): From (2004Bo23,2008Bo37).

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Adopted Levels, Gammas (continued)

^{12}Be Levels (continued)

E(level)	J^π	$T_{1/2}$	XREF			Comments
$8.60 \times 10^3 \dagger$	15	<500 keV	A	F		E(level), Γ : From (1995Ko10,1995Ko27).
9300 \dagger		2.0 MeV		H	O	E(level), Γ : From (1995Vo05,2002Bo16).
$10.0 \times 10^3 \ddagger$		1.5 MeV	A	D F	M	E(level), Γ : From (1995Ko10,1995Ko27).
$10.8 \times 10^3 \#$	0^+			D F H		E(level): From (2004Bo23,2004Sa32,2008Bo37).
$11.3 \times 10^3 \dagger$	2^+			D F	K	E(level): From (2003Bo24, 2004Bo23, 2004Sa32, 2008Bo37).
$11.8 \times 10^3 \#$	$(0,2^+)$	≈ 1 MeV		D	MN	E(level): From (2002Sa65,2004Sa32,2015Ya05). J^π : From (2002Sa65,2015Ya05).
$12.1 \times 10^3 \ddagger$	$(2^+,4)$			F	M	E(level): From (1999Fr04,2001Fr02,2015Ya05). J^π : From (1999Fr04,2015Ya05).
$13.2 \times 10^3 @$	5 (4^+)	≈ 1 MeV	A C		MN	E(level): From (1999Fr04, 2001Fr02, 2002Sa65, 2007Ch81, 2015Ya05). Likely doublet. Γ : From (2015Ya05). J^π : From (2001Fr02).
$14.0 \times 10^3 @$			A C		M	E(level): From (1999Fr04, 2001Fr02, 2007Ch81, 2015Ya05).
$14.9 \times 10^3 @$	5 6^+		A C	F H	MN	E(level): From (1999Fr04,2001Fr02).
$15.5 \times 10^3 @$		≈ 1.5 MeV	A C		MN	E(level): From (2001Fr02,2002Sa65,2007Ch81). Γ : From (2007Ch81).
$16.1 \times 10^3 \ddagger$	5 6		A	F		E(level), J^π : From (1999Fr04,2001Fr02).
$17.8 \times 10^3 @$	5 6	≈ 350 keV	A		M	E(level), J^π : From (1999Fr04,2001Fr02). Γ : From (2007Ch81).
$18.6 \times 10^3 @$	5 6		A		M	E(level), J^π : From (1999Fr04,2001Fr02).
$19.3 \times 10^3 @$	5 6		A	H	M O	E(level), J^π : From (1999Fr04,2001Fr02).
$20.9 \times 10^3 @$	5 8^+			H	M	E(level): From (1999Fr04,2001Fr02). J^π : From (2001Fr02,2008Bo37).
$22.8 \times 10^3 @$			A			E(level): From (1999Fr04,2001Fr02).
$24 \times 10^3 ? @$			A			E(level): From (1999Fr04,2001Fr02).
25×10^3		≈ 370 keV	A			$\%p > 0$ $T=(3)$ E(level), Γ : From (2007Ch81).
28×10^3		≈ 2.7 MeV	A			$\%p > 0$ E(level), Γ : From (2007Ch81).

\dagger Decay mode not specified.

\ddagger Decays via $\alpha+^8\text{He}$.

$\#$ Decays via $^6\text{He}+^6\text{He}$.

$@$ Decays via $\alpha+^8\text{He}$ and $^6\text{He}+^6\text{He}$.

$\gamma(^{12}\text{Be})$

$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	$I_{(\gamma+ce)}$	Comments
2109	2^+	2109	1	100	0	0^+	E2	$\Gamma_\gamma=4.77 \times 10^{-4}$ eV 97; B(E2)(W.u.)=8.5 17 B(E2) $\downarrow=14.2 \times 10^{-4}$ 28
2251	0^+	142	2	17.7	2109	2^+	E2	$\Gamma_\gamma=3.27 \times 10^{-10}$ eV 34; B(E2)(W.u.)=4.21 44
		2251		0	0^+	E0	82.3	E0 matrix element (0^+ to 0^+)=0.87 fm ² 3 (2007Sh34). This value corresponds to about 0.25 Wilkinson unit (2007Sh34).
2715	1^-	2715	2	100	0	0^+	E1	$\Gamma_\gamma=3.5 \times 10^{-2}$ eV 9; B(E1)(W.u.)=4.9 $\times 10^{-3}$ 13

Adopted Levels, Gammas**Level Scheme**

Intensities: % photon branching from each level

