Adopted Levels, Gammas 2004Ti06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu and J. L. Godwin, et al.	NP A745 155 (2004)	31-Mar-2004

Q(β^-)=556.8 *4*; S(n)=6812.28 *5*; S(p)=19636.39 *20*; Q(α)=−7409.52 *10* 2012Wa38
Note: Current evaluation has used the following Q record 556.0 6 *6812.2 6* 19636.6 *19*−7413.3 *9* 2003Au03.

^{10}Be Levels

Cross Reference (XREF) Flags

A	^{6}Li(^{6}He,α^{6}He),(^{6}He,^{10}Be)	N	^{9}Be(^{11}Be,^{10}Beγ),(^{11}B,^{10}B)	Others:	
B	^{7}Li(t,γ),(t,n),(t,p),(t,t)	O	^{9}Be(^{14}N,^{13}N)	AA	^{12}C(^{6}He,^{10}Be)
C	^{7}Li(^{3}He,π^+)	P	^{10}Be(p,p′),(d,d)	AB	^{12}C(^{6}Li,^{8}B)
D	^{7}Li(α,p)	Q	^{10}B(γ,π^+)	AC	^{12}C(^{9}Be,^{11}C)
E	^{7}Li(^{7}Li,α),(^{7}Li,$\alpha\gamma$)	R	^{10}B(μ^-,ν)	AD	^{12}C(^{10}Be,X)
F	^{9}Be(n,γ) E=thermal	S	^{10}B(π^-,γ)	AE	^{12}C(^{11}B,^{13}N)
G	^{9}Be(n,n),(n,n′),(n,2n)	T	^{10}B(n,p),(d,2p)	AF	^{12}C(^{12}Be,α^{6}He)
H	^{9}Be(n,p),(n,d),(n,t)	U	^{10}B(t,^{3}He)	AG	^{12}C(^{12}C,^{10}Be)
I	^{9}Be(p,π^+)	V	^{10}B(^{7}Li,^{7}Be)	AH	^{12}C(^{15}N,^{17}F)
J	^{9}Be(d,p),(d,pγ)	W	^{11}Li β^-n decay	AI	^{13}C(t,^{6}Li)
K	^{9}Be(α,^{3}He)	X	^{11}Be(p,d)	AJ	^{14}C(^{18}O,^{22}Ne)
L	^{9}Be(^{7}Li,^{6}Li),(^{8}Li,^{7}Li)	Y	^{11}B(d,^{3}He)	AK	^{11}B(t,$\alpha\gamma$)
M	^{9}Be(^{9}Be,^{8}Be)	Z	^{11}B(^{7}Li,^{10}Beγ)	AL	^{9}Be(n,γ) res

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	0$^+$	1.51×10^6 y *4*	AB DEF IJKLMNOPQ STUVWXYZ	XREF: Others: AA, AB, AC, AE, AG, AH, AI, AJ %β^-=100 T=1 T$_{1/2}$: from weighted average of T$_{1/2}$=1.51 Ma 6 (Hofmann et al., Nucl. Instrum. Meth. Phys. Res. β 24-25 (1987) 276), T$_{1/2}$=1.53 Ma 5% (1993Mi26), and T$_{1/2}$=1.48 Ma 5% (1993Mi26).
3368.03 *3*	2$^+$	125 fs *12*	ABCDEF IJKLMNOPQRSTUVWXYZ	XREF: Others: AA, AB, AC, AE, AG, AH, AI, AJ %IT=100 T=1 B(E2)=52 e^2 fm^4 6 (1987Ra01). E(level): from ^{9}Be(n,γ) (1983Ke11). Other value: 3368.34 keV *43* (1999Bu26). Γ_γ=3.66×10^{-3} eV *35*.
5958.39 *5*	2$^+$	<55 fs	D F JKLM P R TU W Y	XREF: Others: AB, AE, AG, AH, AI %IT=100 T=1 E(level): from ^{9}Be(n,γ) (1983Ke11). Other value: 5958.3 keV *3* (1969Al17).
5959.9 *6*	1$^-$		D JKLMNO T Y	XREF: Others: AB %IT=100 T=1 E(level): from ^{9}Be(d,p) (1969Al17).
6179.3 *7*	0$^+$	0.8 ps *+3−2*	D J W	%IT≈100 T=1 Decay: may also decay by pair production. E(level): from ^{9}Be(d,p) (1969Al17). Other value: 6070 keV *130* (1973Da09).
6263.3 *50*	2$^-$		D JK NO	%IT=100

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Adopted Levels, Gammas 2004Ti06 (continued)

^{10}Be Levels (continued)

E(level)	J^{π}	$T_{1/2}$	XREF	Comments
7371 *1*	3^-	15.7 keV *5*	DE G IJKLM T	T=1 E(level): from ^{9}Be(d,p) (1969Al17). XREF: Others: AH, AL %IT>0; %n>0
7542 *1*	2^+	6.3 keV *8*	DE G JKL ST	T=1 E(level): from ^{9}Be(n,n). XREF: Others: AB, AG %n>0; %α=3.5 *12*
9270	(4^-)	150 keV *20*	DE G JK M O T	T=1 E(level): from ^{9}Be(n,n). %n>0
9560 *20*	2^+	141† keV *10*	DE G JKLM STU Y	T=1 XREF: Others: AB, AD, AE, AG, AH %n>0; %α=0.16 *4*
10150 *20*	3^-	296† keV *15*	A E L	T=1 E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (1997Cu03, 2001Cu06). Other Γ: 291 keV *20* from ^{9}Be(d,p). XREF: Others: AD %α>0
10570 *30*	≥1		DE G J	E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2001Cu06). Other value: 10200 *100* (2004Ah02, 2004As02). XREF: Others: AH %n>0; %α>0
11230 *50*		200† keV *80*	E	T=1 E(level): from ^{9}Be(d,p) (1974An27). %α>0
11760 *20*	(4^+)	121 keV *10*	DE IJKLM	E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2001Cu06, 2003Fl02). XREF: Others: AB, AH %α>0
11.93×10^3? *10*	(5^-)	200† keV *80*	E	E(level): Γ: from ^{9}Be(d,p) (1974An27). Other value: 11790 *60* (2003As04). XREF: Others: AF %α>0
13.05×10^3 *10*		290† keV *130*	E	E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2001Cu06, 2003Fl02). %α>0
13850 *50*		330† keV *150*	E M	E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2001Cu06). %α>0
14.68×10^3 *10*		310† keV *140*	E	E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2001Cu06). Other values: 13780 keV *60* from ^{9}Be(^{9}Be,^{8}Be), and 13600 keV *100* from ^{12}C(^{15}N,^{17}F). XREF: Others: AF %α>0
15.30×10^3 *20*	(6^-)	800 keV *200*		E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2001Cu06). XREF: Others: AH E(level): Γ: from ^{12}C(^{15}N,^{17}F) (2001Bo35).
17.12×10^3 *20*	(2^-)	≈150 keV	D	XREF: Others: AF E(level): Γ: from ^{7}Li(α,p) (1994Ha16).

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Adopted Levels, Gammas 2004Ti06 (continued)

^{10}Be Levels (continued)

E(level)	J^{π}	$T_{1/2}$	XREF	Comments
17790		112 keV *35*	B DE	%IT>0; %n>0; %^{3}H>0; %α>0 E(level): from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02), ^{7}Li(t,γ) (1978Su02), ^{7}Li(α,p) (1994Ha16). Γ: from (2002Li15).
18150 *50*	(0^{-})	90† keV *30*	E	%^{3}H>0 E(level): from ^{7}Li(^{7}Li,t+^{7}Li) (2002Li15, 2003Fl02). Γ: from (2002Li15).
18550		310† keV	B DE H	%n>0; %^{3}H>0 E(level): from ^{7}Li(^{7}Li,t+^{7}Li) (2002Li15). Γ: from (2003Fl02).
19800?			E	%p>0 E(level): from ^{7}Li(^{7}Li,p+^{9}Li) (2003Fl02).
20.80×10^{3} *10*			E	%α>0 E(level): from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
21216 *23*	(2^{-})		B H	%n>0; %p>0; %^{3}H>0 T=(2). E(level): Γ: from ^{7}Li(t,p) (1990Gu36). Γ: sharp.
21.80×10^{3} *10*		≈200† keV	E	%p=0; %d>0 E(level): Γ: from ^{7}Li(^{7}Li,p+^{9}Li) (2003Fl02).
22.40×10^{3} *10*		≈250† keV	E H	%n>0; %p>0; %^{3}H>0 E(level): Γ: from ^{7}Li(^{7}Li,p+^{9}Li) (2003Fl02).
23.00×10^{3} *10*			E	%p>0 E(level): from ^{7}Li(^{7}Li,p+^{9}Li) (2003Fl02). Also see ^{7}Li(t,X) (1990Gu36).
23350 *50*			E	%n>0; %p>0; %d>0; %^{3}H>0; %α>0 E(level): from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
23650 *50*			E	%p>0; %^{3}H>0; %α>0 E(level): from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
24.00×10^{3} *10*		≈150† keV	E	%d>0; %^{3}H>0; %α>0 E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
24250 *50*		≈200† keV	E	%p>0; %d>0; %^{3}H>0; %α>0 E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
24.60×10^{3} *10*		≈150† keV	E	%p>0; %d>0 E(level): Γ: from ^{7}Li(^{7}Li,p+^{9}Li) (2003Fl02).
24.80×10^{3} *10*		≈100† keV	E	%p>0; %d>0 E(level): Γ: from ^{7}Li(^{7}Li,p+^{9}Li) (2003Fl02).
25.05×10^{3} *10*		≈150† keV	E	%d>0; %α>0 E(level): Γ: from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
25.60×10^{3} *10*			E	%p>0; %d>0; %α>0 E(level): from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
25950 *50*		≈300† keV	E	%d>0 E(level): Γ: from ^{7}Li(^{7}Li,d+^{8}Li) (2003Fl02).
26.30×10^{3} *10*		≈100† keV	E	%d>0; %^{3}H>0 E(level): Γ: from ^{7}Li(d+^{8}Li) (2003Fl02).
26.80×10^{3} *10*			E	%p>0; %d>0; %α>0 E(level): from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).
27.20×10^{3} *20*			E	%p>0; %d>0; %^{3}H>0; %α>0 E(level): from ^{7}Li(^{7}Li,α+^{6}He) (2003Fl02).

† Not corrected for experimental system resolution and therefore upper limits.

Adopted Levels, Gammas 2004Ti06 (continued)

$\gamma(^{10}Be)$

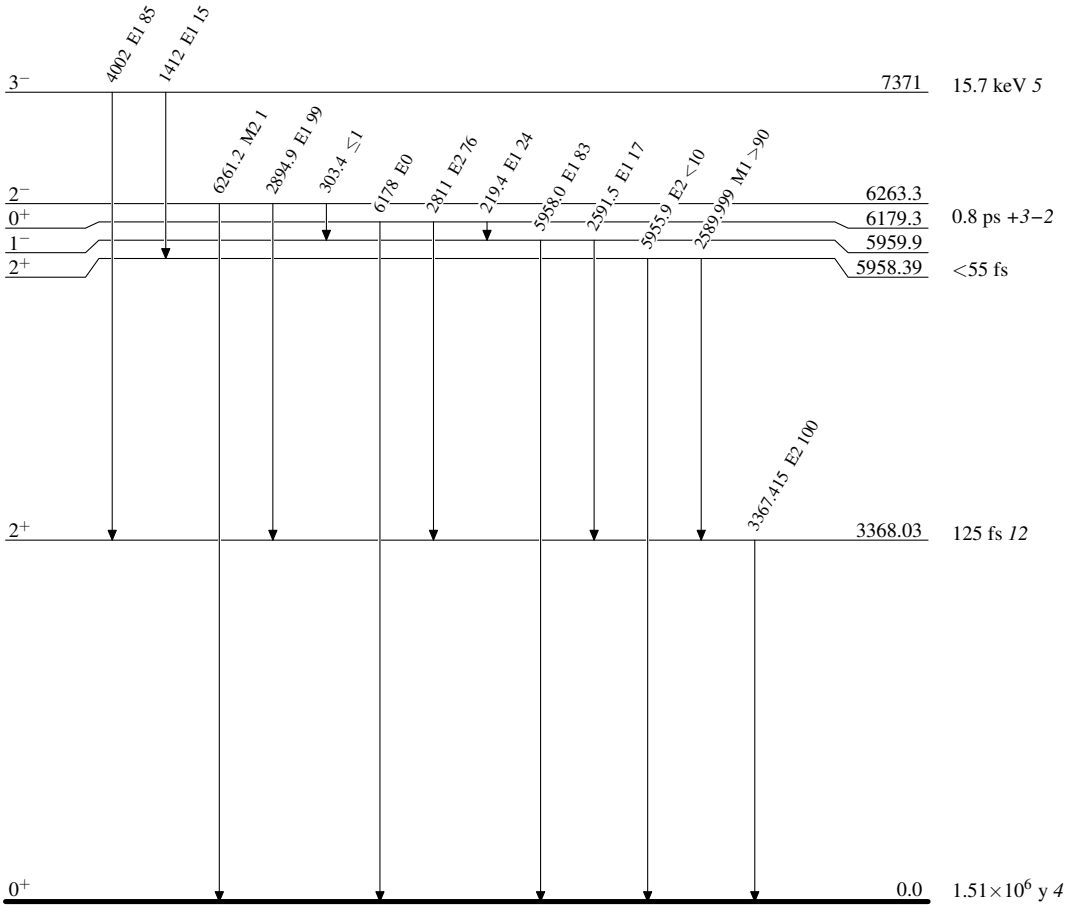
E_i(level)	J_i^π	E_γ †	I_γ	E_f	J_f^π	Mult.	Comments
3368.03	2^+	3367.415 *30*	100	0.0	0^+	E2	$\Gamma_\gamma=3.66\times10^{-3}$ eV *35*; B(E2)(W.u.)=8.00 *76*
5958.39	2^+	2589.999 *60*	>90	3368.03	2^+	M1	
		5955.9 *5*	<10	0.0	0^+	E2	
5959.9	1^-	2591.5 *6*	17 *8*	3368.03	2^+	E1	
		5958.0 *6*	83 *8*	0.0	0^+	E1	Uncertanties in branching ratios are asymmetric: 17 *+6−10* and 83 *+10−6*; from (d,p).
6179.3	0^+	219.4 *3*	24 *2*	5959.9	1^-	E1	$\Gamma_\gamma=1.44\times10^{-4}$ eV *53*; B(E1)(W.u.)=4.3×10^{-2} *16*
		2811 *7*	76 *2*	3368.03	2^+	E2	$\Gamma_\gamma=4.5\times10^{-4}$ eV *17*; B(E2)(W.u.)=2.5 *9*
		6178		0.0	0^+	E0	
6263.3	2^-	303.4 *50*	≤1	5959.9	1^-		
		2894.9 *50*	99 *1*	3368.03	2^+	E1	
		6261.2 *50*	1 *1*	0.0	0^+	M2	
7371	3^-	1412	15 *11*	5958.39	2^+	E1	$\Gamma_\gamma=0.11$ eV *8*; B(E2)(W.u.)=1.2×10^{-1} *9* Γ_γ from (1994Ki09).
		4002	85 *8*	3368.03	2^+	E1	$\Gamma_\gamma=0.62$ eV *6*; B(E2)(W.u.)=3.1×10^{-2} *3* Γ_γ from (1994Ki09).

† From level energy difference; recoil correction applied.

Adopted Levels, Gammas 2004Ti06

Level Scheme

Intensities: % photon branching from each level



$^{10}_{4}Be_{6}$