

Adopted Levels, Gammas 1988Aj01,2002Ti10

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Hu, Tilley, Kelley, Godwin et al.		NP A708,3 (2002)	23-Aug-2001

$Q(\beta^-) = -861.89$ 8; $S(n) = 7251$; $S(p) = 9973.96$ 5; $Q(\alpha) = -2468$ 2012Wa38

Note: Current evaluation has used the following Q record -861.8 7 7249.9 7 9975.4 11 -2467.0 5 1995Au04.

See 1984Aj01 for ${}^6\text{Li}+n$ resonance parameters.

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

A	${}^7\text{Be}$ ε decay	K	${}^7\text{Li}(n,n)$	U	${}^{10}\text{B}(n,\alpha)$
B	${}^3\text{H}(\alpha,n)$	L	${}^7\text{Li}(p,p)$	V	${}^{11}\text{B}(\alpha, {}^8\text{Be})$
C	${}^3\text{H}(\alpha,\alpha)$	M	${}^7\text{Li}({}^3\text{He}, {}^3\text{He}), ({}^3\text{He}, \text{pd})$	W	${}^{14}\text{N}(n,2\alpha)$
D	${}^4\text{He}({}^3\text{He}, \pi^+)$	N	${}^7\text{Li}(\alpha, \alpha'), (\alpha, \alpha')$	X	${}^6\text{Li}(n, \gamma)$ E=thermal
E	${}^6\text{Li}(n,n)$	O	${}^7\text{Li}(\alpha, 2\alpha)$	Y	${}^7\text{Li}(\gamma, \gamma')$
F	${}^6\text{Li}(p, \pi^+)$	P	${}^7\text{Li}({}^{12}\text{C}, {}^{12}\text{C})$	Z	${}^7\text{Be}(n,p)$
G	${}^6\text{Li}(d,p)$	Q	${}^9\text{Be}(\pi^-, 2n)$	Others:	
H	${}^7\text{Li}(\gamma, n), (\gamma, 2n)$	R	${}^9\text{Be}(p, {}^3\text{He}), (p, \text{pd})$	AA	${}^{11}\text{Be}$ $\beta^- \alpha$ decay
I	${}^7\text{Li}(e, e'), (e, \text{ep})$	S	${}^9\text{Be}(d, \alpha)$		
J	${}^7\text{Li}(\pi^+, \pi^+'), (\pi^-, \pi^-')$	T	${}^9\text{Be}(d, t\alpha)$		

E(level)	J^π	$T_{1/2}$	XREF	Comments
0.0	$3/2^-$	stable	AB D FGHIJKLMN PQRS UVWXYZ	XREF: Others: AA T=1/2; $\mu = +3.2564268$ 17 (1996FiZY); Q=-0.0406 8
477.612 3	$1/2^-$	73 fs 2	A D FG IJKLMN PQRS UVWXYZ	XREF: Others: AA T=1/2; B(E2) $\uparrow = 8.3 \times 10^{-4}$ 5 T _{1/2} : see table 7.2: energy levels of ${}^7\text{Li}$ (1979Aj01), and table 7.5: levels of ${}^7\text{Li}$ from ${}^7\text{Li}(e, e')$ (1988Aj01) and the reaction: ${}^9\text{Be}(d, \alpha)$, (d, 2 α). $\%{}^3\text{H}=?$; $\% \alpha=?$
4630 9	$7/2^-$	93 keV 8	CD FG IJKLMNOP RSTUVW	T=1/2 A R-matrix fit to ${}^6\text{Li}(n,n), (n,t)$, ${}^4\text{He}(t,n), (t,t)$ data indicates $E_x = 4652 \pm \approx 5\%$ and $\Gamma = 69$ keV (2002Ti10). $\%{}^3\text{H}=?$; $\% \alpha=?$
6680 50	$5/2^-$	0.88 MeV +20-10	C FG IJK NO T VW	T=1/2 A R-matrix fit to ${}^6\text{Li}(n,n), (n,t)$, ${}^4\text{He}(t,n), (t,t)$ data indicates $E_x = 6604 \pm \approx 5\%$ and $\Gamma = 918$ keV (2002Ti10). $\%n=?$; $\%{}^3\text{H}=?$; $\% \alpha=?$
7459.5 10	$5/2^-$	89 keV 7	BC EFGHIJKL NO QRST V	T=1/2 A R-matrix fit to ${}^6\text{Li}(n,n), (n,t)$, ${}^4\text{He}(t,n), (t,t)$ data indicates $E_x = 7454 \pm \approx 5\%$ and $\Gamma = 80$ keV (2002Ti10). $\%n=?$; $\%{}^3\text{H}=?$; $\% \alpha=?$
9.67×10^3 10	$7/2^-$	≈ 400 keV	BC G J L N T	T=1/2 A R-matrix fit to ${}^6\text{Li}(n,n), (n,t)$, ${}^4\text{He}(t,n), (t,t)$ data indicates $E_x = 9.57\text{E}3 \pm \approx 5\%$ and $\Gamma = 437$ (2002Ti10). $\%n=?$; $\% \alpha=?$
9850	$3/2^-$	≈ 1200 keV	E Q	T=1/2

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas 1988Aj01,2002Ti10 (continued) ${}^7\text{Li}$ Levels (continued)

<u>E(level)</u>	<u>J^π</u>	<u>$T_{1/2}$</u>	<u>XREF</u>			<u>Comments</u>
11240 30	$3/2^-$	260 keV 35	E	I	R	A R-matrix fit to ${}^6\text{Li}(n,n), (n,t)$, ${}^4\text{He}(t,n), (t,t)$ data indicates $E_x=8750 \pm 5\%$ and $\Gamma=4712$ keV (2002Ti10). In addition, this R-matrix fit suggests a level at $E_x=9.09$ MeV with $J^\pi=1/2^-$, $T=1/2$ and $\Gamma=2752$ keV. $\%n=?$; $\%p=?$ $T=3/2$ $\%n=?$ $\%n=?$ E(level): see also reactions: ${}^6\text{Li}(n,n)$; ${}^6\text{Li}(n,\alpha)$; ${}^7\text{Li}(\gamma,n)$, $(\gamma,2n)$, (γ,p) , (γ,pn) , (γ,d) , (γ,t) ; ${}^7\text{Li}({}^3\text{He}, {}^3\text{He})$, $({}^3\text{He},pd)$; and ${}^9\text{Be}(n,t)$ for additional states.
13700		≈ 500 keV		H		
14700		≈ 700 keV		H		

 $\gamma({}^7\text{Li})$

<u>$E_i(\text{level})$</u>	<u>J^π_i</u>	<u>$E_\gamma^\dagger$</u>	<u>E_f</u>	<u>J^π_f</u>	<u>Mult.</u>	<u>Comments</u>
477.612	$1/2^-$	477.595	0.0	$3/2^-$	M1(+E2)	$\Gamma_\gamma=6.30 \times 10^{-3}$ eV 3I; B(M1)(W.u.)=2.75 14; B(E2)(W.u.)=19.7 12
4630	$7/2^-$	4628	0.0	$3/2^-$	E2	$\Gamma_\gamma=6 \times 10^{-3}$ eV; B(E2)(W.u.)=4.3

† From E(level) difference; recoil correction applied.

Adopted Levels, Gammas 1988Aj01,2002Ti10Level Scheme