

Adopted Levels 1990Aj01

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	J. H. Kelley, C. G. Sheu		NP A880,88 (2012)	1-Jan-2011

$Q(\beta^-)=20551.1$ 7; $S(n)=396$ 13; $S(p)=1.573\times 10^4$ 10; $Q(\alpha)=-1.08\times 10^4$ *syst* 2012Wa38

Note: Current evaluation has used the following Q record 20551.2 11 396 13 15369 70 2011AuZZ.

$Q(\beta^-)$ Values based on mass excess (^{11}Li)=40728.4 keV 11.

The mass excess of ^{11}Li =40728.28 keV 64, based on mass=11.04372361 U 69 (2008Sm03); this corresponds to $S(2n)=369.15$ keV 65. Another precise measurement yielded $\Delta' M=40719$ keV 5 (2005Bb01,2008Ba18,2009Ga24) and $S(2n)=378$ keV 5. Earlier measurements that have no impact on the weighted average are $S(2n)=363$ keV 22 (2009Ro04), $S(2n)=295$ keV 35 (1993Yo07), $S(2n)=340$ keV 50 (see 1993Yo07), $S(2n)=320$ keV 120 (1988Wo09), $S(2n)=170$ keV 80 (1975Th08). In many cases published values of excited state energies must Be adjusted for the change in ground state mass.

 ^{11}Li LevelsCross Reference (XREF) Flags

A	$^1\text{H}(^{11}\text{Li}, ^1\text{H})$	F	$^{14}\text{C}(\pi^-, \text{pd})$
B	$^1\text{H}(^{11}\text{Li}, ^{11}\text{Li})$	G	$^{14}\text{C}(^{11}\text{B}, ^{11}\text{Li})$
C	$^{10}\text{Be}(^{14}\text{C}, ^{13}\text{N})$	H	$^{14}\text{C}(^{14}\text{C}, ^{17}\text{F})$
D	$^{11}\text{B}(\pi^-, \pi^+), (\text{K}^-, \text{K}^+)$	I	$^{208}\text{Pb}(^{11}\text{Li}, ^9\text{Li}2\text{n})$
E	$^{12}\text{C}(^{11}\text{Li}, ^{11}\text{Li}')$		

E(level)	J^π	$T_{1/2}$	XREF	Comments
0	$3/2^-$	8.75 ms 14	ABCDE GH	$\% \beta^- = 100$ $T=5/2$; $\mu=3.6673$ 25 (1987Ar22) $T_{1/2}$: lifetime from 8.99 ms 10 (1990Mo35), 8.2 ms 2 (1996Mu19), 8.4 ms 2 (see 1997Au03), 8.83 ms 12 (1981Bj01), 8.5 ms 2 (1974Ro31). Note, there is poor overlap in the uncertainties; the value 8.75 ms is from the weighted average and the uncertainty is doubled from the weighted average value (0.07). Other values that do not influence the average are 8.8 ms 12 and 9.0 ms 8 from (1974Ro31), 7.7 ms 6 from (1986Cu01) and 8.5 ms 10 from (1969Kl08).
1266 42		0.53 MeV 15	A EF HI	E(level): from weighted average of 1250 keV 150 from $^1\text{H}(^{11}\text{Li}, ^1\text{H})$, 1310 keV 50 from $^{12}\text{C}(^{11}\text{Li}, ^{11}\text{Li}')$ and 1100 keV 100 from $^{208}\text{Pb}(^{11}\text{Li}, ^9\text{Li}+\text{n})$. Also see 1090 keV 70 from $^{14}\text{C}(\pi^-, \text{p}+\text{d})$. Γ : From weighted average of $\Gamma=750$ keV 600 from $^1\text{H}(^{11}\text{Li}, ^1\text{H})$, 260 keV 240 keV from $^{12}\text{C}(^{11}\text{Li}, ^{11}\text{Li}')$ and 700 keV 200 from $^{208}\text{Pb}(^{11}\text{Li}, ^9\text{Li}+\text{n})$.
2474 54		1.26 MeV 30	A C EF HI	E(level): from weighted average of 2480 keV 70 from $^{10}\text{Be}(^{14}\text{C}, ^{13}\text{N})$, 2520 keV 270 from $^{12}\text{C}(^{11}\text{Li}, ^{11}\text{Li}')$, 2450 keV 100 from $^{14}\text{C}(^{14}\text{C}, ^{17}\text{F})$ and 2500 keV 200 from $^{208}\text{Pb}(^{11}\text{Li}, ^9\text{Li}+\text{n})$. Also see $E_x=3.0$ MeV 2 from $^1\text{H}(^{11}\text{Li}, ^1\text{H})$ and 2140 keV 120 from $^{14}\text{C}(\pi^-, \text{p}+\text{d})$ which are not included. Γ : From weighted average of $\Gamma=1.20$ MeV 20 from $^{10}\text{Be}(^{14}\text{C}, ^{13}\text{N})$, 1.20 MeV 30 from $^{14}\text{C}(^{14}\text{C}, ^{17}\text{F})$ and 2.10 MeV 60 from $^{208}\text{Pb}(^{11}\text{Li}, ^9\text{Li}+2\text{n})$. Also see $\Gamma=2.91$ MeV 72 from $^{12}\text{C}(^{11}\text{Li}, ^{11}\text{Li}')$.
3.70×10^3 13		<200 keV	F	E(level): Γ : from $^{14}\text{C}(\pi^-, \text{p}+\text{d})$. Also see $E_x=3.0$ MeV 2 from $^1\text{H}(^{11}\text{Li}, ^1\text{H})$ which is not included.
4.86×10^3 60		<100 keV	A C H	E(level): from weighted average of 4900 keV 250 from $^1\text{H}(^{11}\text{Li}, ^1\text{H})$, 4860 keV 70 from $^{10}\text{Be}(^{14}\text{C}, ^{13}\text{N})$ and 4840 keV 100 from $^{14}\text{C}(^{14}\text{C}, ^{17}\text{F})$. Γ : From $^{10}\text{Be}(^{14}\text{C}, ^{13}\text{N})$ and $^{14}\text{C}(^{14}\text{C}, ^{17}\text{F})$.

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Adopted Levels [1990Aj01](#) (continued)

 ${}^{11}\text{Li}$ Levels (continued)

<u>E(level)</u>	<u>T_{1/2}</u>	<u>XREF</u>	<u>Comments</u>
6.23×10^3 <i>60</i>	<100 keV	A C H	E(level): from weighted average of 6400 keV <i>250</i> from ${}^1\text{H}({}^{11}\text{Li}, {}^1\text{H})$, 6220 keV <i>80</i> from ${}^{10}\text{Be}({}^{14}\text{C}, {}^{13}\text{N})$ and 6220 keV <i>100</i> from ${}^{14}\text{C}({}^{14}\text{C}, {}^{17}\text{F})$. Γ: From ${}^{10}\text{Be}({}^{14}\text{C}, {}^{13}\text{N})$ and ${}^{14}\text{C}({}^{14}\text{C}, {}^{17}\text{F})$.
11.3×10^3		A	E(level): from ${}^1\text{H}({}^{11}\text{Li}, {}^1\text{H})$. In (1996Ko02), there is a suggestion that the state is also populated in ${}^{14}\text{C}({}^{14}\text{C}, {}^{17}\text{F})$.