^{125}La ε decay 2002Sh01,1989IiZZ

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	J. Katakura	NDS 112, 495 (2011)	1-Jan-2010

Parent: ^{125}La: E=0.0; $J^{\pi}=(3/2^+)$; $T_{1/2}$=64.8 s *12*; Q(ε)=5909 *28*; %ε+%$β^+$ decay=100.0

^{125}La-Q(ε) value from 1998Ko66.

2002Sh01: ^{nat}Mo(^{32}S.pxn), on-line mass, measured Eγ, Iγ, βγ, x-γ coin, γγ coin, ce, α, level lifetimes.

1998Ko66: ^{92}Mo(^{36}Ar,3pxn), on-line mass, measured Q, $β^+γ$ coin.

1992Ic02: On-line mass, semi γ, measured $T_{1/2}$.

1989IiZZ: Mo(^{32}S,pxn) E=160 MeV, on-line mass, measured Eγ, γγ-coin, βγ(t).

1978Bo32: ^{96}Ru+^{32}S, ^{98}Ru+^{32}S, E=190 MeV, on-line mass, semi γ, scin $β^+$.

1987GeZY: ^{94}Mo+^{35}Cl, ^{96}Mo+^{35}Cl, on-line mass.

The decay scheme is that proposed by 1989IiZZ on the basis of energy sums and γγ coin. The decay scheme is incomplete.

1998Ko66 measured Q value as 5.95 MeV *7* from $β^+γ$ coin.

^{125}Ba Levels

E(level)‡	J^{π}†	$T_{1/2}$	Comments
0.0	$1/2^{(+)}$	3.5 min *4*	%ε+%$β^+$=100.
0.0+x	$(5/2^+)$		Additional information 1.
			E(level): x ≈20 keV from systematics (1987GeZY).
43.6 *5*	$3/2^{(+)}$	0.7 ns *2*	$T_{1/2}$: From centroid shift (2002Sh01).
67.6+x *5*	$(7/2^-)$	2.76 μs *14*	$T_{1/2}$: From decay curve of 68-keV γ (2002Sh01).
166.3+x *9*	$(9/2^-)$		
168.5+x *9*	$(7/2^+)$		
237.2 *7*	$(5/2^+)$		
300.4+x *10*	$(11/2^-)$		
325.7 *8*	$(7/2^+)$		
384.9+x *9*	$(9/2^+)$		
651.3 *11*			
687.9+x *14*			
702.3+x *12*			
735.4+x *14*			
753.5+x *12*			
763.2 *11*			
841.8+x *10*			
910.4+x *14*			
1284.0 *9*			
1310.9 *13*			

† From Adopted Levels.

‡ From a least squares fit by evaluator to Eγ's assuming 1 keV uncertainty for γ's with no uncertainty reported.

ε,$β^+$ radiations

E(decay)	E(level)	Comments
4.63 *10*	1310.9	E(decay): From Eβ+ endpoint energy of 3.61 MeV *10* (1998Ko66).
4.67 *9*	1284.0	E(decay): From Eβ+ endpoint energy of 3.65 MeV *9* (1998Ko66).

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γ(^{125}Ba)

E_γ[†]	I_γ[&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ	α[b]	Comments
43.6[‡] *5*	26.4	43.6	3/2$^{(+)}$	0.0	1/2$^{(+)}$	M1(+E2)	<1.4	21 *11*	α(K)exp=8.9 *5* α(K)=8.8 *6*; α(L)=10 *9*; α(M)=2.2 *19*; α(N+..)=0.5 *5* α(N)=0.4 *4*; α(O)=0.06 *5*; α(P)=0.00055 *7* δ: From α(K)exp by evaluators. RUL suggests δ<0.20.
67.6[‡] *5*	208.8	67.6+x	(7/2$^-$)	0.0+x	(5/2$^+$)	E1		0.668 *17*	α(K)exp=0.9 *3* α(K)=0.567 *14*; α(L)=0.0808 *21*; α(M)=0.0166 *5*; α(N+..)=0.00403 *11* α(N)=0.00350 *9*; α(O)=0.000504 *13*; α(P)=2.79×10^{-5} *7*
88.4	9.1	325.7	(7/2$^+$)	237.2	(5/2$^+$)				
98.7	78.5	166.3+x	(9/2$^-$)	67.6+x	(7/2$^-$)	M1,E2		1.5 *5*	α(K)exp=1.0 *4* α(K)=1.07 *20*; α(L)=0.36 *24*; α(M)=0.08 *6*; α(N+..)=0.018 *13* α(N)=0.016 *11*; α(O)=0.0022 *14*; α(P)=5.79×10^{-5} *9*
111.9[#]		763.2		651.3					
134.0	25.2	300.4+x	(11/2$^-$)	166.3+x	(9/2$^-$)	M1,E2		0.56 *13*	α(K)exp=0.36 *14* α(K)=0.43 *6*; α(L)=0.10 *6*; α(M)=0.022 *12*; α(N+..)=0.005 *3* α(N)=0.0047 *25*; α(O)=0.0006 *4*; α(P)=2.41×10^{-5} *5*
168.5	61.0	168.5+x	(7/2$^+$)	0.0+x	(5/2$^+$)	(M1)		0.228	α(K)exp=0.21 *8* α(K)=0.196 *3*; α(L)=0.0260 *4*; α(M)=0.00537 *8*; α(N+..)=0.001348 *19* α(N)=0.001158 *17*; α(O)=0.0001772 *25*; α(P)=1.287×10^{-5} *18* Mult.: M1+E2 from α(K)exp, but γ(θ) in ^{116}Sn(^{12}C, 3nγ),^{100}Mo(^{29}Si,4nγ) prefers M1.
193.5	37.3	237.2	(5/2$^+$)	43.6	3/2$^{(+)}$	M1,E2		0.174 *19*	α(K)exp=0.12 *4* α(K)=0.141 *8*; α(L)=0.026 *9*; α(M)=0.0056 *19*; α(N+..)=0.0014 *5* α(N)=0.0012 *4*; α(O)=0.00017 *5*; α(P)=8.3×10^{-6} *5*
216.3	15.3	384.9+x	(9/2$^+$)	168.5+x	(7/2$^+$)	M1,E2		0.124 *9*	α(K)exp=0.13 *4* α(K)=0.101 *3*; α(L)=0.018 *5*; α(M)=0.0037 *11*; α(N+..)=0.00092 *24* α(N)=0.00080 *22*; α(O)=0.00012 *3*; α(P)=6.0×10^{-6} *5*
232.8	5.9	300.4+x	(11/2$^-$)	67.6+x	(7/2$^-$)				
237.3	41.6	237.2	(5/2$^+$)	0.0	1/2$^{(+)}$	(E2)		0.0969	α(K)exp=0.056 *17* α(K)=0.0770 *11*; α(L)=0.01579 *23*; α(M)=0.00336 *5*; α(N+..)=0.000812 *12* α(N)=0.000708 *10*; α(O)=0.0001000 *14*; α(P)=4.21×10^{-6} *6*
^{x}254.6[@]									
^{x}272.5[@]									

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^{125}La ε decay 2002Sh01,1989IiZZ (continued)

γ(^{125}Ba) (continued)

E_γ †	I_γ &	E_i(level)	J_i^π	E_f	J_f^π	Mult. [a]	α [b]	Comments
281.9	100.0	325.7	(7/2$^+$)	43.6	3/2$^{(+)}$	(E2)	0.0552	α(K)exp=0.046 *14* α(K)=0.0446 *7*; α(L)=0.00835 *12*; α(M)=0.001764 *25*; α(N+..)=0.000429 *6* α(N)=0.000373 *6*; α(O)=5.34×10^{-5} *8*; α(P)=2.51×10^{-6} *4*
384.9	6.3	384.9+x	(9/2$^+$)	0.0+x	(5/2$^+$)			
414.0#		651.3		237.2	(5/2$^+$)			
521.6#		687.9+x		166.3+x	(9/2$^-$)			
526.0#		763.2		237.2	(5/2$^+$)			
569.1#		735.4+x		166.3+x	(9/2$^-$)			
610.0#		910.4+x		300.4+x	(11/2$^-$)			
634.7#		702.3+x		67.6+x	(7/2$^-$)			
675.5#		841.8+x		166.3+x	(9/2$^-$)			
685.9#		753.5+x		67.6+x	(7/2$^-$)			
774.1#		841.8+x		67.6+x	(7/2$^-$)			
958.2#		1284.0		325.7	(7/2$^+$)			
985.2#		1310.9		325.7	(7/2$^+$)			
1240.6#		1284.0		43.6	3/2$^{(+)}$			

† From 2002Sh01, unless otherwise noted.
‡ From 1978Bo32.
# From 1989IiZZ.
@ Given in spectrum figure of 2002Sh01.
& From 2002Sh01 relative to I(282)=100.
[a] From measured α(K)exp (2002Sh01) normalized to α(K)(E2 theory) for the 230 keV 2$^+$ to 0$^+$ transition in ^{124}Ba, unless otherwise noted.
[b] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[x] γ ray not placed in level scheme.

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Decay Scheme

Intensities: Relative I_γ