^{132}La ε decay (24.3 min) 1975WiZJ,1996Ku01,1971Am06

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. A. Rodionov and S. Sakharov, Balraj Singh	NDS 104, 497 (2005)	10-Feb-2005

Parent: ^{132}La: E=188.20 *11*; $J^\pi=6^-$; $T_{1/2}$=24.3 min *5*; Q(ε)=4690 *40*; %ε+%β^+ decay=24.0
^{132}La-%ε+%β^+ decay: %ε+%β^+=24.
See also ^{132}La ε decay (4.8 h+24.3 min).
1975WiZJ, 1974WiZW: measured Eγ, Iγ, γγ.
1996Ku01, 2002Ga01: measured Eγ, Iγ, γγ, γγ(θ).
1971Am06: measured Eγ, Iγ, ce, γγ.
Others:
1972Ha41: Eγ, ce.
1969Ge11: $T_{1/2}$, Eγ, Iγ, ce.

^{132}Ba Levels

E(level)[†]	J^π[#]	E(level)[†]	J^π[#]	E(level)[†]	J^π[#]	E(level)[†]	J^π[#]
0.0[@]	0^+	1511.15 *3*	3^+	1932.0[@] *6*	6^+	2119.6 *3*	5^-
464.556[@] *23*	2^+	1660.4[‡] *6*	0^+	1944.3[‡] *4*	(4^+)	2225.9[‡] *5*	(5^+)
1031.699 *23*	2^+	1685.77 *4*	2^+	2026.95 *5*	4^-	2312.6 *3*	$5^{(-)}$
1127.63[@] *4*	4^+	1729.38 *4*	4^+	2046.32[‡] *9*	(4^+)	2357.7 *3*	(6^-)

† From least-squares fit to Eγ′s, assuming Δ(Eγ)=0.2 keV when not stated.
‡ Level proposed by 1996Ku01.
\# From Adopted Levels.
@ Band(A): g.s. band.

ε,β^+ radiations

E(decay)	E(level)	Iβ^+[†]	Iε[†]	Log *ft*	I(ε+β^+)[†]	Comments
(2.52×10^3 *4*)	2357.7	1.2	3.7	6.1	4.9	av Eβ=681 *21*; εK=0.649 *15*; εL=0.0888 *21*; εM+=0.0247 *6*
(2.57×10^3 *4*)	2312.6	2.2	6.3	5.8	8.5	av Eβ=702 *21*; εK=0.635 *15*; εL=0.0867 *21*; εM+=0.0242 *6*
(2.76×10^3 *4*)	2119.6	1.2	2.4	6.3	3.6	av Eβ=788 *21*; εK=0.569 *16*; εL=0.0777 *22*; εM+=0.0216 *6*
(2.85×10^3[‡] *4*)	2026.95	2.7	4.7	6.1	7.4	av Eβ=830 *21*; εK=0.538 *16*; εL=0.0733 *21*; εM+=0.0204 *6* I(ε+β^+),Log *ft*: log *ft* is too low for a ΔJ=^{2,}Notransition. The apparent intensity May Be due to unobserved γ rays feeding this level.

† Absolute intensity per 100 decays.
‡ Existence of this branch is questionable.

γ(^{132}Ba)

Iγ normalization: From ΣI(γ+ce)=100 to g.s.

E_γ[†]	I_γ[‡e]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α[f]	Comments
45.1 *1*		2357.7	(6^-)	2312.6	$5^{(-)}$				E_γ: from 1972Ha41; not reported by 1996Ku01.
73.1[@]	0.07[&] *2*	2119.6	5^-	2046.32	(4^+)				
82.6[@]	0.020[&] *7*	2026.95	4^-	1944.3	(4^+)				
92.7[@]	0.13[&]	2119.6	5^-	2026.95	4^-				
102.3[@]	0.006[&] *1*	2046.32	(4^+)	1944.3	(4^+)				
131.7[@]	0.32[&] *8*	2357.7	(6^-)	2225.9	(5^+)				
175.2[@]	0.72[&] *5*	2119.6	5^-	1944.3	(4^+)	(E1)[d]		0.0482	α(K)=0.0414 *13*; α(L)=0.00541 *17*; α(M)=0.00110 *4*; α(N+..)=0.00029 *1*
187.6[@]	1.2[&] *1*	2119.6	5^-	1932.0	6^+	(E1)[d]		0.0400	α(K)=0.0344 *11*; α(L)=0.00447 *14*; α(M)=0.00091 *3*; α(N+..)=0.00024 *1*
192.8[@]	0.9[&] *2*	2312.6	$5^{(-)}$	2119.6	5^-				
218.2[@]	0.03[&] *1*	1729.38	4^+	1511.15	3^+				
238.3 *4*	18	2357.7	(6^-)	2119.6	5^-	[M1,E2]		0.093 *3*	α(K)=0.0768 *5*; α(L)=0.013 *3*; α(M)=0.0027 *6*; α(N+..)=0.00072 *15*
[x]252.3[#] *4*									E_γ: γ not seen by 1996Ku01.
265.9[@]	0.4[&] *1*	2312.6	$5^{(-)}$	2046.32	(4^+)				
285.4[@]	33[&]	2312.6	$5^{(-)}$	2026.95	4^-				
297.6 *5*	10 *2*	2026.95	4^-	1729.38	4^+				
317.1[@]	0.21[&] *2*	2046.32	(4^+)	1729.38	4^+				
330.5[@]	2.9[&] *4*	2357.7	(6^-)	2026.95	4^-				
360.66 *12*	0.015[&] *2*	2046.32	(4^+)	1685.77	2^+				
368.2[@]	0.23[&] *5*	2312.6	$5^{(-)}$	1944.3	(4^+)				
380.4[@]	0.013[&] *4*	2312.6	$5^{(-)}$	1932.0	6^+				
383.4[@]	1.0[&] *3*	1511.15	3^+	1127.63	4^+	(M1+E2)[c]	+6[c] *1*	0.0213 *1*	α(K)=0.0177 *1*; α(L)=0.00288; α(M)=0.00060; α(N+..)=0.00016
386.0[@]	0.0013[&] *2*	2046.32	(4^+)	1660.4	0^+				
390.51 *11*	22 *4*	2119.6	5^-	1729.38	4^+				
464.55 *3*	100	464.556	2^+	0.0	0^+	E2		0.0121	α(K)=0.0101 *3*; α(L)=0.00156 *5*; α(M)=0.00032 *1*
479.47 *3*	16 *3*	1511.15	3^+	1031.699	2^+	E2(+M1)[c]	≥+12[c]	0.0111	α(K)=0.0093; α(L)=0.00142; α(M)=0.00029
496.4[@]		2225.9	(5^+)	1729.38	4^+				
515.78 *9*	32 *5*	2026.95	4^-	1511.15	3^+				
535.5[@]	0.19[&] *2*	2046.32	(4^+)	1511.15	3^+				
567.14 *3*	20 *4*	1031.699	2^+	464.556	2^+	M1+E2[c]	+14[c] *+3−2*	0.00710 *1*	α=0.00710 *1*; α(K)=0.00595 *1*; α(L)=0.00087
583.1[@]	2.80[&] *4*	2312.6	$5^{(-)}$	1729.38	4^+				

γ(^{132}Ba) (continued)

E_γ[†]	I_γ[‡e]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	δ	α[f]	Comments
601.75 *3*	7 *2*	1729.38	4^+	1127.63	4^+	(E2+M1)[c]	−2.6[c] *2*	0.00638 *5*	α=0.00638 *5*; α(K)=0.00538 *5*; α(L)=0.00076
628.56 *6*	0.154[a] *14*	1660.4	0^+	1031.699	2^+				
654.03 *4*	0.45[a] *4*	1685.77	2^+	1031.699	2^+				
663.07 *3*	52 *8*	1127.63	4^+	464.556	2^+	E2		0.00474	α=0.00474; α(K)=0.00400 *12*; α(L)=0.00056 *2*
697.68 *3*	18 *4*	1729.38	4^+	1031.699	2^+	E2		0.00418	α=0.00418; α(K)=0.00353 *11*; α(L)=0.00049 *2*
714.7[@]		2225.9	(5^+)	1511.15	3^+				
801.5[@]	0.04[&] *1*	2312.6	$5^{(-)}$	1511.15	3^+				
804.2[b]	0.042[b] *13*	1932.0	6^+	1127.63	4^+				
816.6[b]	0.70[b] *5*	1944.3	(4^+)	1127.63	4^+	(M1)[d]		0.00409	α=0.00409; α(K)=0.00350 *11*; α(L)=0.00044 *1*
899.32 *3*	30 *4*	2026.95	4^-	1127.63	4^+	(E1)		0.00094	α=0.00094; α(K)=0.00081 *3*; α(L)=9.9×10^{-5} *3*
912.50[b] *14*	0.073[b] *14*	1944.3	(4^+)	1031.699	2^+				
918.68 *10*	0.26[a] *3*	2046.32	(4^+)	1127.63	4^+				
991.95 *9*	13 *2*	2119.6	5^-	1127.63	4^+	(E1)[d]		0.00078	α=0.00078; α(K)=0.00067 *2*
1014.59 *19*	0.06[a] *2*	2046.32	(4^+)	1031.699	2^+				I_γ: other: 0.11 *2* (1996Ku01).
1031.70 *3*	11 *2*	1031.699	2^+	0.0	0^+	E2		0.00170	α=0.00170; α(K)=0.00145 *5*; α(L)=0.00019 *1*
1046.56 *3*	26 *4*	1511.15	3^+	464.556	2^+	M1+E2[c]	+2.19[c] *8*	0.00176 *1*	α=0.00176 *1*; α(K)=0.00151 *1*; α(L)=0.00019
1087.9[@]	0.013[&] *5*	2119.6	5^-	1031.699	2^+				
1098.1[@]		2225.9	(5^+)	1127.63	4^+				
1195.82 *4*	0.46[a] *3*	1660.4	0^+	464.556	2^+				
1221.23 *3*	3.86[a] *24*	1685.77	2^+	464.556	2^+				
1264.77 *4*	6[&] *1*	1729.38	4^+	464.556	2^+				
1479.7[b]	0.020[b] *13*	1944.3	(4^+)	464.556	2^+				E_γ: transition is present in table of 1975WiZJ, but deleted by authors.
1562.3[@]	0.2[&] *1*	2026.95	4^-	464.556	2^+				
1581.9[@]	0.033[&] *4*	2046.32	(4^+)	464.556	2^+	[d]			
1655.0[@]	0.18[&] *4*	2119.6	5^-	464.556	2^+				
1685.5[@]		1685.77	2^+	0.0	0^+				

[†] From 1975WiZJ, unless otherwise stated.
[‡] From 1971Am06, except as noted.
[#] From 1972Ha41.
[@] γ from 1996Ku01 only. For least-squares fit of level scheme $\Delta(E\gamma)$=0.2 keV is assumed.
[&] Deduced from branching ratios of 1996Ku01 and relative intensities from 1971Am06.
[a] From 1975WiZJ.
[b] $E\gamma$ from 1996Ku01, $I\gamma$ from 1975WiZJ.

From ENSDF

$\gamma(^{132}$Ba) (continued)

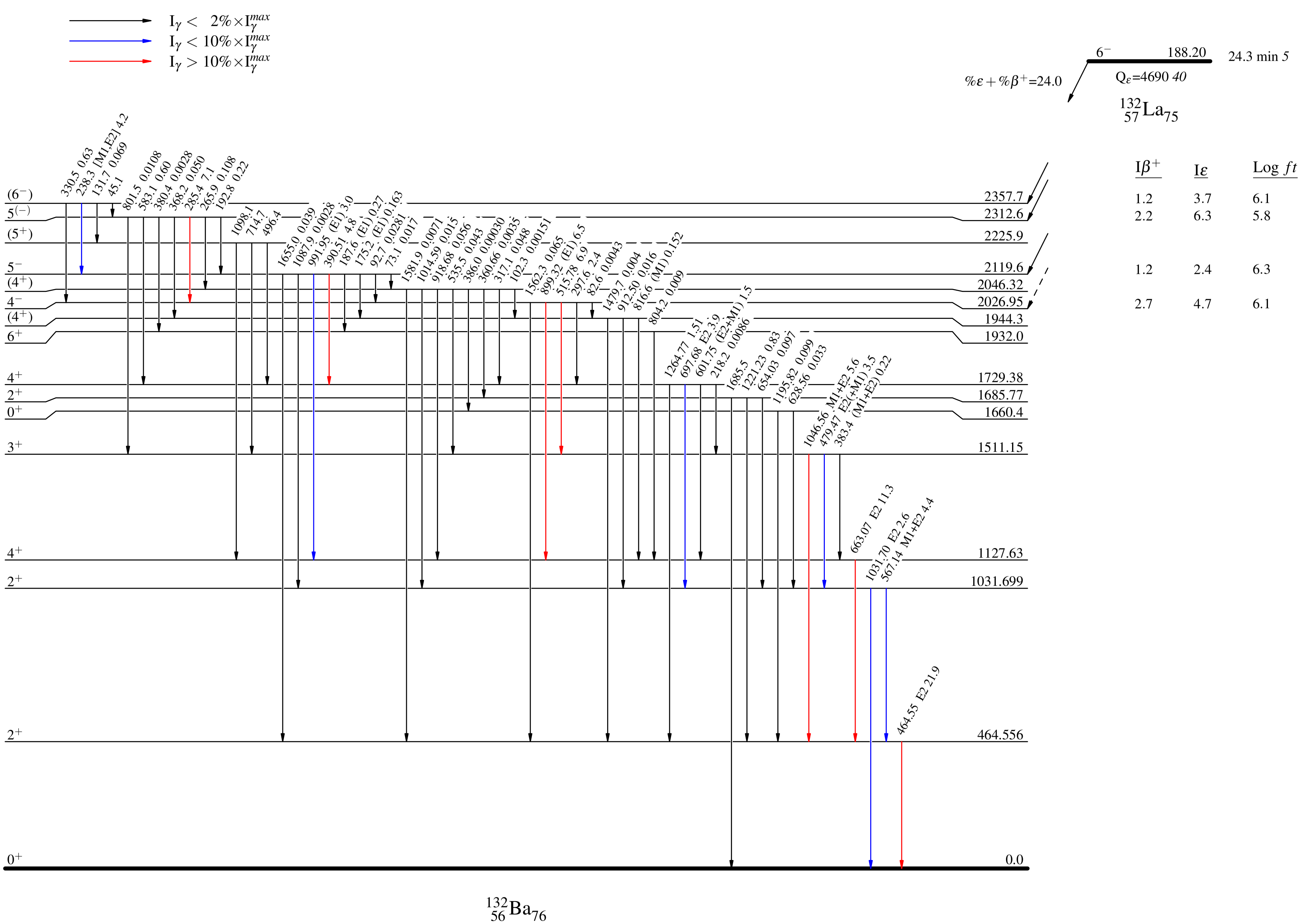
[c] From $\gamma\gamma(\theta)$ (2002Ga01).
[d] From $\gamma\gamma(\theta)$ (1996Ku01,2002Ga01) and ΔJ^{π}.
[e] For absolute intensity per 100 decays, multiply by 0.216 *15*.
[f] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[x] γ ray not placed in level scheme.

$^{132}_{56}Ba_{76}$-4

^{132}La ε decay (24.3 min) 1975WiZJ,1996Ku01,1971Am06

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{132}La ε decay (24.3 min) 1975WiZJ,1996Ku01,1971Am06