^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01

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=0; J$^{\pi}$=2^{-}; $T_{1/2}$=4.8 h *2*; Q(ε)=4690 *40*; %ε+%β^{+} decay=100.0
See also ^{132}La ε decay (4.8 h+24.3 min).
1975WiZJ, 1974WiZW: measured Eγ, Iγ.
1996Ku01, 2002Ga01: measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma(\theta)$ for mixed activities from 4.8-H and 24.3-min isomers.
Others:
1971Am06: Eγ, Iγ, $\gamma\gamma$, ce.
1968Ab02 (also 1969AbZX): Eγ, Iγ, $\gamma\gamma$, γce, ce.
1968Al17: $\beta\gamma$ coin.
1967Fr02 (also 1964Fr05): Eγ, Iγ, $\gamma\gamma$, Eβ, Iβ, ce, $\beta\gamma$.
1965Ge03: G.
1963La03: $T_{1/2}$, γ, La fraction, mixed activity.
1960Gr16: $T_{1/2}$, G.
1960Wa03: $T_{1/2}$, B.
1951Gr14: $T_{1/2}$, β, G.

^{132}Ba Levels

E(level)[†]	J$^{\pi}$[&]	Comments
0.0[a]	0^{+}	
464.602[a] *24*	2^{+}	
1031.750 *23*	2^{+}	
1127.69[a] *3*	4^{+}	
1503.80 *7*	0^{+}	
1511.18 *3*	3^{+}	
1660.4[‡] *4*	0^{+}	J$^{\pi}$: from 2002Ga01.
1685.84 *3*	2^{+}	
1729.42 *3*	4^{+}	
1932.1[a] *6*	6^{+}	
1944.4[‡] *3*	(4^{+})	
1998.25 *3*	2^{+}	
2027.02 *3*	4^{-}	
2046.36[@] *5*	(2^{+})	E(level): it should Be noted that two levels of almost the same energy are proposed by 1996Ku01 and 2002Ga01, one with J$^{\pi}$=2^{+} and the other with J$^{\pi}$=4^{+}. The reason for introducing two levels near this energy is not clear to the evaluators, and it is possible that these two levels are the same.
2046.38[@] *9*	(4^{+})	
2068.64 *3*	3^{-}	
2119.99 *13*	5^{-}	
2220.41[‡] *7*	(3^{-})	
2288.1[‡] *4*	(2^{+},3,4^{+})	
2312.5 *4*	5$^{(-)}$	
2374.51 *3*	3^{-}	
2453.1[‡] *4*	(1^{-})	
2492.3[‡] *6*	(4^{+})	J$^{\pi}$: not 2^{+},3^{-},4^{-},5^{-},6^{+} from $\gamma\gamma(\theta)$ (1996Ku01).
2505.5[‡] *5*	(2)	J$^{\pi}$: not 1^{-},3^{-},4^{+} from $\gamma\gamma(\theta)$ (1996Ku01).
2567.41 *3*	(3)$^{-}$	
2855.88 *4*	(2)$^{-}$	J$^{\pi}$: not 1^{-},2^{+},3,4^{+} from $\gamma\gamma(\theta)$ (1996Ku01).
2876.7[‡] *4*	(1^{+})	J$^{\pi}$: from 2002Ga01.
2927.94 *3*	(3^{-})	
3158.04 *7*	(1)$^{-}$	

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^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01 (continued)

^{132}Ba Levels (continued)

E(level)[†]	Jπ[&]	Comments
3219.36 *5*	(2+)	Jπ: not 1−,2−,3,4+ (1996Ku01,2002Ga01).
3423.93 *5*	(3)−	
3494.94 *5*	(3,4+)	
3561.9[‡#] *6*		
3562.86[#] *6*	(1,2+)	
3563.10[#] *7*	(1,2+)	
3635.56 *9*	1−	
3663.54 *6*	(1−,2−,3−)	
3768.28 *6*	(2,3)	
3775.82 *6*	(2+)	

[†] From least-squares fit to Eγ′s, assuming Δ(Eγ)=0.2 keV when not stated.
[‡] Level proposed by 1996Ku01.
[#] 1996Ku01 propose three levels near 3562 whereas only one level was suggested In earlier studies.
[@] Doublet proposed At 2046 by 1996Ku01; only one level was proposed In earlier studies.
[&] From Adopted Levels.
[a] Band(A): g.s. band.

ε,β+ radiations

Iβ(3600):Iβ(3200):Iβ(2620)=75 *15*:100 *20*:100 *25* (1967Fr02).

E(decay)	E(level)	Iβ+ [†]	Iε[†]	Log *ft*	I(ε+β+)[†]	Comments
(9.1×10² *4*)	3775.82		0.46	7.1	0.46	εK=0.8452 *5*; εL=0.1209 *4*; εM+=0.03391 *11*
(9.2×10² *4*)	3768.28		0.31	7.3	0.31	εK=0.8453 *5*; εL=0.1209 *4*; εM+=0.03389 *11*
(1.03×10³ *4*)	3663.54		1.0	6.9	1.0	εK=0.8462 *4*; εL=0.1201 *3*; εM+=0.03365 *9*
(1.05×10³ *4*)	3635.56		0.61	7.1	0.61	εK=0.8465 *4*; εL=0.11995 *25*; εM+=0.03359 *9*
(1.13×10³ *4*)	3563.10		0.52	7.3	0.52	εK=0.8470 *3*; εL=0.11954 *22*; εM+=0.03346 *7*
(1.13×10³ *4*)	3562.86		0.33	7.5	0.33	εK=0.8470 *3*; εL=0.11954 *22*; εM+=0.03346 *7*
(1.20×10³ *4*)	3494.94		1.2	7.0	1.2	εK=0.8474 *3*; εL=0.11920 *20*; εM+=0.03335 *7*
(1.27×10³ *4*)	3423.93		1.5	6.9	1.5	εK=0.8476; εL=0.11887 *20*; εM+=0.03324 *7*
(1.47×10³ *4*)	3219.36		1.9	6.9	1.9	av Eβ=211 *18*; εK=0.8454 *12*; εL=0.1177 *3*; εM+=0.03289 *9*
(1.53×10³ *4*)	3158.04		0.48	7.6	0.48	av Eβ=238 *18*; εK=0.8435 *18*; εL=0.1172 *4*; εM+=0.03274 *11*
(1.76×10³ *4*)	2927.94	0.1	2.3	7.0	2.4	av Eβ=338 *18*; εK=0.828 *5*; εL=0.1144 *7*; εM+=0.03193 *20*
(1.83×10³ *4*)	2855.88	0.1	1.5	7.2	1.6	av Eβ=370 *18*; εK=0.819 *6*; εL=0.1131 *9*; εM+=0.03156 *24*
(2.12×10³ *4*)	2567.41	2	15	6.4	17	av Eβ=496 *18*; εK=0.768 *10*; εL=0.1055 *14*; εM+=0.0294 *4*
(2.32×10³ *4*)	2374.51	1.4	7.8	6.7	9.2	av Eβ=582 *18*; εK=0.718 *12*; εL=0.0984 *17*; εM+=0.0274 *5*
(2.62×10³ *4*)	2068.64	0.8	2.1	7.4	2.9	av Eβ=719 *18*; εK=0.622 *14*; εL=0.0850 *19*; εM+=0.0237 *6*
(2.64×10³ *4*)	2046.36	0.19	0.48	8.1	0.67	av Eβ=729 *18*; εK=0.614 *14*; εL=0.0839 *19*; εM+=0.0234 *6*
(2.66×10³[‡] *4*)	2027.02	0.9	2.4	7.4	3.3	av Eβ=737 *18*; εK=0.608 *14*; εL=0.0830 *19*; εM+=0.0231 *6* I(ε+β+),Log *ft*: log *ft* is too low for ΔJ=2,Notransition. The feeding May Be due to unobserved γ rays feeding this level.
(2.69×10³ *4*)	1998.25	0.4	1.0	7.8	1.4	av Eβ=750 *18*; εK=0.598 *14*; εL=0.0817 *19*; εM+=0.0227 *6*
(3.00×10³ *4*)	1685.84	0.7	0.9	7.9	1.6	av Eβ=891 *19*; εK=0.493 *14*; εL=0.0671 *19*; εM+=0.0187 *5*
(3.18×10³ *4*)	1511.18	0.4	0.5	8.2	0.9	av Eβ=971 *19*; εK=0.438 *13*; εL=0.0595 *17*; εM+=0.0166 *5*
(3.19×10³ *4*)	1503.80	0.09	0.29	10.0[1u]	0.38	av Eβ=986 *18*; εK=0.642 *11*; εL=0.0892 *15*; εM+=0.0249 *4*
(3.56×10³ *4*)	1127.69	0.8	1.3	9.6[1u]	2.1	av Eβ=1154 *18*; εK=0.544 *11*; εL=0.0753 *15*; εM+=0.0210 *5* Eβ≈2500 (1967Fr02).

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^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01 (continued)

ε,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I(ε+β^+)†	Comments
(3.66×10^3 *4*)	1031.750	11	6	7.2	17	av Eβ=1191 *19*; εK=0.310 *10*; εL=0.0420 *13*; εM+=0.0117 *4* Eβ=2620 *80* (1967Fr02).
(4.23×10^3 *4*)	464.602	14	5	7.5	19	av Eβ=1454 *19*; εK=0.206 *6*; εL=0.0278 *8*; εM+=0.00774 *23* Eβ=3200 *70* (1967Fr02).
(4.69×10^3 *4*)	0.0	9.2 *13*	4.8 *7*	9.48^{1u} *7*	14 *2*	av Eβ=1665 *19*; εK=0.294 *7*; εL=0.0403 *10*; εM+=0.0112 *3* Eβ=3660 *50*; first-forbidden unique transition (1967Fr02). I(ε+β^+): from relative Iβ and theoretical ε/β^+ (1971Go40).

† Absolute intensity per 100 decays.

‡ Existence of this branch is questionable.

γ(^{132}Ba)

Iγ normalization: Σ(I(γ+ce) of γ's to g.s.)=86 *2*; %ε+%β^+(to g.s.)=14 *2*.

E$_\gamma$[†]	I$_\gamma$[†d]	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult.[a]	α[e]	Comments
73.1[@]		2119.99	5^-	2046.38	(4^+)			
82.6[@]	0.004[&] *2*	2027.02	4^-	1944.4	(4^+)			
92.7[@]		2119.99	5^-	2027.02	4^-			
102.3[@]		2046.38	(4^+)	1944.4	(4^+)			
154.3[@]	0.004[&] *1*	2374.51	3^-	2220.41	(3^-)			
175.2[@]		2119.99	5^-	1944.4	(4^+)	(E1)[c]	0.0482	α(K)=0.0414 *13*; α(L)=0.00541 *17*; α(M)=0.00110 *4*; α(N+..)=0.00029 *1*
179.9[@]		2492.3	(4^+)	2312.5	$5^{(-)}$			
187.6[@]		2119.99	5^-	1932.1	6^+	(E1)[c]	0.0400	α(K)=0.0344 *11*; α(L)=0.00447 *14*; α(M)=0.00091 *3*; α(N+..)=0.00024 *1*
192.6 *5*	1.5 *3*	2567.41	$(3)^-$	2374.51	3^-	M1,E2	0.179 *19*	α(K)exp=0.13 *6* (1967Fr02) α(K)=0.144 *8*; α(L)=0.027 *9*; α(M)=0.0056 *20*; α(N+..)=0.0015 *5*
192.8[@]		2312.5	$5^{(-)}$	2119.99	5^-			
218.2[@]	0.0018[&] *4*	1729.42	4^+	1511.18	3^+			
254.8[@]	0.05[&] *2*	2567.41	$(3)^-$	2312.5	$5^{(-)}$			
265.9[@]		2312.5	$5^{(-)}$	2046.38	(4^+)			
275.9[@]		2220.41	(3^-)	1944.4	(4^+)			
279.3[@]	0.10[&] *2*	2567.41	$(3)^-$	2288.1	$(2^+,3,4^+)$			
285.4[@]		2312.5	$5^{(-)}$	2027.02	4^-			
297.5[@]	2.1[&]	2027.02	4^-	1729.42	4^+			
305.85 *10*	0.66 *9*	2374.51	3^-	2068.64	3^-	(M1,E2)	0.0456	α(K)exp=0.048 *30* (1967Fr02) α(K)=0.037 *3*; α(L)=0.0057 *6*; α(M)=0.00119 *13*; α(N+..)=0.00032 *3* δ: $-1.13\leq\delta\leq-0.04$ (2002Ga01).
312.4[@]	0.035[&] *10*	1998.25	2^+	1685.84	2^+			
317.3 *4*	0.07 *3*	2046.38	(4^+)	1729.42	4^+			
342.7[@]		3219.36	(2^+)	2876.7	(1^+)			
347.1[@]	0.08[&] *2*	2567.41	$(3)^-$	2220.41	(3^-)			
350.4[@]	≤0.016[&]	2855.88	$(2)^-$	2505.5	(2)			
360.66 *12*	0.26 *8*	2046.38	(4^+)	1685.84	2^+			
360.66 *12*	0.26 *8*	2927.94	(3^-)	2567.41	$(3)^-$			
368.2[@]		2312.5	$5^{(-)}$	1944.4	(4^+)			
376.0[@]	0.015[&] *4*	2374.51	3^-	1998.25	2^+			
380.4[@]		2312.5	$5^{(-)}$	1932.1	6^+			
382.8[@]	0.14[&] *2*	2068.64	3^-	1685.84	2^+			

γ(^{132}Ba) (continued)

E$_γ$[†]	I$_γ$[†d]	E$_i$(level)	J^π_i	E$_f$	J^π_f	Mult.[a]	δ	α[e]	Comments
383.28 11	0.56 8	1511.18	3$^+$	1127.69	4$^+$	(M1+E2)[b]	+6[b] 1	0.0236	α(K)=0.0177 1; α(L)=0.00289; α(M)=0.00060; α(N+..)=0.00016
386.0[@]		2046.38	(4$^+$)	1660.4	0$^+$				
390.51 11	0.51 8	2119.99	5$^-$	1729.42	4$^+$				
403.1[@]	0.064[&] 15	2855.88	(2)$^-$	2453.1	(1$^-$)				
423.6[@]		2876.7	(1$^+$)	2453.1	(1$^-$)				
430.13[@] 6	0.27[&] 1	2374.51	3$^-$	1944.4	(4$^+$)				
^{x}457.10[#] 25	0.23 7								
464.55 3	100 6	464.602	2$^+$	0.0	0$^+$	E2		0.0121	α(K)=0.0101 3; α(L)=0.00156 5; α(M)=0.00032 1 K/L=6.25 19, M/L=0.34 2.
472.05 6	0.47 4	1503.80	0$^+$	1031.750	2$^+$				
474.65 13	0.117 22	2927.94	(3$^-$)	2453.1	(1$^-$)				
479.47 3	2.89 22	1511.18	3$^+$	1031.750	2$^+$	E2(+M1)[b]	≥+12[b]	0.0111	α(K)exp=0.008 4 α(K)=0.0093; α(L)=0.00142; α(M)=0.00029
487.1[@]	0.016[&] 5	1998.25	2$^+$	1511.18	3$^+$				
494.4[@]	0.02[&] 1	1998.25	2$^+$	1503.80	0$^+$				
498.79 3	0.70 6	2567.41	(3)$^-$	2068.64	3$^-$	(M1,E2)		0.0117 18	α(K)=0.0099 16; α(L)=0.00137 11; α(M)=0.00028 2 δ: −1.03≤δ≤−0.08 (2002Ga01).
515.78 9	6.6 7	2027.02	4$^-$	1511.18	3$^+$	E1		0.00306	α(K)exp=0.0027 15 α=0.00306; α(K)=0.00262 8; α(L)=0.00033 1
520.7[@]	0.04[&] 1	2567.41	(3)$^-$	2046.38	(4$^+$)				
534.6 3	0.11 3	2220.41	(3$^-$)	1685.84	2$^+$	[c]			
535.5[@]		2046.38	(4$^+$)	1511.18	3$^+$				
540.363 23	10.1 7	2567.41	(3)$^-$	2027.02	4$^-$	M1,E2		0.0096 15	α(K)exp=0.0093 18 α(K)=0.0081 14; α(L)=0.00110 11 K/L=7.4 12.
548.0[@]		2492.3	(4$^+$)	1944.4	(4$^+$)				Additional information 1.
553.43 4	0.27 2	2927.94	(3$^-$)	2374.51	3$^-$				
^{x}558.50[#] 23	0.053 16								
567.14 3	20.7 16	1031.750	2$^+$	464.602	2$^+$	M1+E2[b]	+14[b] +3−2	0.00710 1	α(K)exp=0.0063 6 α=0.00710 1; α(K)=0.00595 1; α(L)=0.00087 K/L=6.3 10.
569.1[@]	1.0[&] 2	2567.41	(3)$^-$	1998.25	2$^+$	(E1)[c]		0.00245	α=0.00245; α(K)=0.00210 7; α(L)=0.00026 1
^{x}581.5[#] 4	0.08 3								
583.1[@]		2312.5	5$^{(-)}$	1729.42	4$^+$				
^{x}596.5[#] 3	0.023 11								
601.75 3	0.45 3	1729.42	4$^+$	1127.69	4$^+$	(M1+E2)[b]	−2.6[b] 2	0.00638 5	α=0.00638 5; α(K)=0.00538 5; α(L)=0.00076

From ENSDF

γ(^{132}Ba) (continued)

E_γ[†]	I_γ[†d]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[a]	δ	α[e]	Comments
602.2[@]		2288.1	(2+,3,4+)	1685.84	2+				
x608.4[#] 4	0.020 10								
x618.00[#] 19	0.036 10								
623.03[@] 3	0.3[&] 1	2567.41	(3)−	1944.4	(4+)	(E1)[c]		0.00200	α=0.00200; α(K)=0.00172 6; α(L)=0.00021 1
628.56 6	0.154 14	1660.4	0+	1031.750	2+				
x632.77[#] 16	0.052 11								
645.05 4	0.41 3	2374.51	3−	1729.42	4+	(E1)[c]		0.00186	α=0.00186; α(K)=0.00159 5; α(L)=0.00020 1
654.03 4	0.45 3	1685.84	2+	1031.750	2+	(M1+E2)[b]	+0.28[b] 8	0.00679 9	α=0.00679 9; α(K)=0.00581 8; α(L)=0.00074 1
663.07 3	11.9 8	1127.69	4+	464.602	2+	E2		0.00474	α=0.00474; α(K)=0.00400 12; α(L)=0.00056 2 K/L=6.8 6.
x673.5[#] 4	0.018 8								
x682.2[#] 3	0.020 8								
685.3[@]		3561.9		2876.7	(1+)				
688.66 3	0.35 3	2374.51	3−	1685.84	2+				
697.68 3	1.24 8	1729.42	4+	1031.750	2+	E2		0.00418	α(K)exp=0.0046 18 α=0.00418; α(K)=0.00353 11; α(L)=0.00049 2
x705.76[#] 13	0.097 17								
708.79 21	0.051 15	2220.41	(3−)	1511.18	3+	[c]			
x748.8[#] 3	0.035 19								
766.3[@]		3219.36	(2+)	2453.1	(1−)				
767.7 4	0.034 22	2453.1	(1−)	1685.84	2+				
776.9[@]		2288.1	(2+,3,4+)	1511.18	3+				
787.4 3	0.032 10	2855.88	(2)−	2068.64	3−				
792.8[@]		2453.1	(1−)	1660.4	0+				
801.5[@]		2312.5	5(−)	1511.18	3+				
804.2[@]		1932.1	6+	1127.69	4+				
808.29 6	0.145 15	2927.94	(3−)	2119.99	5−				
816.6[@]		1944.4	(4+)	1127.69	4+	(M1)[c]		0.00409	α=0.00409; α(K)=0.00350 11; α(L)=0.00044 1
819.7[@]		2505.5	(2)	1685.84	2+				
838.7 3	0.13 3	2567.41	(3)−	1729.42	4+				
856.41 8	0.13 2	3423.93	(3)−	2567.41	(3)−				
859.31 4	0.35 3	2927.94	(3−)	2068.64	3−				δ: $-1.84\le\delta\le+0.33$ (2002Ga01).
x867.97[#] 22	0.034 10								
x874.71[#] 17	0.075 16								
881.57 3	1.23 8	2567.41	(3)−	1685.84	2+	E1		0.00098	α(K)exp=0.0009 5 α=0.00098; α(K)=0.00084 3; α(L)=0.00010 from branching ratio (1996Ku01) RI_γ=0.13; may be misprint.

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γ(^{132}Ba) (continued)

Eγ[†]	Iγ[†d]	Ei(level)	J^π_i	Ef	J^π_f	Mult.[a]	δ	α[e]	Comments
899.32 3	6.1 4	2027.02	4⁻	1127.69	4⁺	(E1)[c]		0.00094	α(K)exp=0.00084 25 α=0.00094; α(K)=0.00081 3; α(L)=9.9×10^{-5} 3
912.50 14	0.073 20	1944.4	(4⁺)	1031.750	2⁺				
912.50[‡] 14	0.073 14	3768.28	(2,3)	2855.88	(2)⁻				
918.3[@]		3423.93	(3)⁻	2505.5	(2)				
918.68 10	0.26 3	2046.38	(4⁺)	1127.69	4⁺				
919.7[@]		3775.82	(2⁺)	2855.88	(2)⁻				
929.68 5	0.26 2	2927.94	(3⁻)	1998.25	2⁺				
931.7[@]		3423.93	(3)⁻	2492.3	(4⁺)				
940.87 5	0.35 3	2068.64	3⁻	1127.69	4⁺	(E1)[c]		0.00086	α=0.00086; α(K)=0.00074 2
[x]943.07[#] 14	0.093 17								
948.8 4	0.022 14	2453.1	(1⁻)	1503.80	0⁺				
[x]959.8[#] 4	0.022 11								
966.45 3	0.52 3	1998.25	2⁺	1031.750	2⁺	(M1+E2)[b]	+0.11[b] 6	0.00275 1	α=0.00275 1; α(K)=0.00235 1; α(L)=0.00030
991.95 9	0.18 2	2119.99	5⁻	1127.69	4⁺	[c]			
994.40 6	0.23 2	3561.9		2567.41	(3)⁻				
[x]1007.77[#] 10	0.116 10								
1014.59 19	0.060 15	2046.38	(4⁺)	1031.750	2⁺				
1031.70 3	10.2 7	1031.750	2⁺	0.0	0⁺	E2		0.00170	α(K)exp=0.00126 22 α=0.00170; α(K)=0.00145 5; α(L)=0.00019 1
1036.92 9	0.42 4	2068.64	3⁻	1031.750	2⁺	(E1)[c]		0.00072	α=0.00072; α(K)=0.00062 2
1039.0[@]	0.047[&]	1503.80	0⁺	464.602	2⁺				
1046.56 3	4.48 28	1511.18	3⁺	464.602	2⁺	M1+E2[b]	+2.19[b] 8	0.00176 1	α(K)exp=0.0019 6 α=0.00176 1; α(K)=0.00151 1; α(L)=0.00019
[x]1056.65[#] 18	≤0.053								
[x]1060.9[#] 3	0.029 9								
[x]1076.91[#] 16	0.061 10								
1087.9[@]		2119.99	5⁻	1031.750	2⁺				
1092.56 10	0.111 15	2220.41	(3⁻)	1127.69	4⁺				
1096.15 24	0.042 14	3663.54	(1⁻,2⁻,3⁻)	2567.41	(3)⁻				
1109.2[@]		3562.86	(1,2⁺)	2453.1	(1⁻)				
[x]1118.61[#] 22	0.081 23								
1127.74[‡] 15	0.087 15	1127.69	4⁺	0.0	0⁺				
1150.7[@]		3219.36	(2⁺)	2068.64	3⁻				
1160.08 18	0.14 3	2288.1	(2⁺,3,4⁺)	1127.69	4⁺				
1169.83 19	0.081 15	2855.88	(2)⁻	1685.84	2⁺				
1173.12 8	0.158 19	3219.36	(2⁺)	2046.36	(2⁺)				
1187.4[@]		3561.9		2374.51	3⁻				
1188.35 5	0.38 3	2220.41	(3⁻)	1031.750	2⁺	[c]			

From ENSDF

γ(^{132}Ba) (continued)

E_{γ}[†]	I_{γ}[†d]	E_i(level)	J^{π}_i	E_f	J^{π}_f	Mult.[a]	δ	α[e]	Comments
1188.35[‡] *5*	0.38 *3*	3562.86	(1,2$^+$)	2374.51	3$^-$				E_{γ}: 1187.4γ proposed from 3561.9 level (1996Ku01).
1190.6[@]		2876.7	(1$^+$)	1685.84	2$^+$				
1195.82 *4*	0.46 *3*	1660.4	0$^+$	464.602	2$^+$				
1198.67 *10*	0.15 *2*	2927.94	(3$^-$)	1729.42	4$^+$				
1208.48 *6*	0.30 *3*	3775.82	(2$^+$)	2567.41	(3)$^-$				
1210.7[@]		3663.54	(1$^-$,2$^-$,3$^-$)	2453.1	(1$^-$)				
1221.23 *3*	3.86 *24*	1685.84	2$^+$	464.602	2$^+$	M1+E2[b]	−0.25[b] *2*	0.00159	α(K)exp=0.0014 *4* α=0.00159; α(K)=0.00136; α(L)=0.00017
^{x}1237.00[#] *8*	0.174 *16*								
1242.06 *5*	0.265 *19*	2927.94	(3$^-$)	1685.84	2$^+$				
1246.81 *4*	0.46 *3*	2374.51	3$^-$	1127.69	4$^+$				
^{x}1253.34[#] *19*	0.058 *11*								
1256.34 *19*	0.058 *11*	2288.1	(2$^+$,3,4$^+$)	1031.750	2$^+$				
1264.77 *4*	0.37 *3*	1729.42	4$^+$	464.602	2$^+$				
^{x}1270.65[#] *11*	0.095 *13*								
^{x}1274.20[#] *19*	0.055 *12*								
^{x}1307.0[#] *3*	0.083 *25*								
^{x}1322.1[#] *3*	0.084 *21*								
1342.81 *7*	0.47 *4*	2374.51	3$^-$	1031.750	2$^+$	(E1)[c]		0.00045	α=0.00045; α(K)=0.00039 *1*
1355.04 *10*	0.118 *16*	3423.93	(3)$^-$	2068.64	3$^-$				
1364.6[@]		2492.3	(4$^+$)	1127.69	4$^+$	(M1+E2)[b]	+0.40[b] *5*	0.00122 *1*	α=0.00122 *1*; α(K)=0.00104 *1*; α(L)=0.00013
1372.7[@]		2876.7	(1$^+$)	1503.80	0$^+$				
^{x}1378.15[#] *24*	0.13 *5*								
1396.99 *6*	0.24 *2*	3423.93	(3)$^-$	2027.02	4$^-$				
^{x}1407.51[#] *7*	0.48 *4*								
1416.92 *15*	0.066 *14*	2927.94	(3$^-$)	1511.18	3$^+$				
1439.80 *5*	0.37 *4*	2567.41	(3)$^-$	1127.69	4$^+$				
^{x}1447.3[#] *4*	0.08 *3*								
^{x}1458.7[#] *3*	0.038 *12*								
1467.93[‡] *24*	0.06 *2*	3494.94	(3,4$^+$)	2027.02	4$^-$				
1472.5[@]		3158.04	(1)$^-$	1685.84	2$^+$				
1479.7 *5*	0.020 *13*	1944.4	(4$^+$)	464.602	2$^+$				
1487.6[@]		3775.82	(2$^+$)	2288.1	(2$^+$,3,4$^+$)				
1493.7[@]		3562.86	(1,2$^+$)	2068.64	3$^-$				
^{x}1495.62[#] *18*	≤0.081								
1498.0[@]		3158.04	(1)$^-$	1660.4	0$^+$				
1503		1503.80	0$^+$	0.0	0$^+$	E0			α(K)exp>0.01

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γ(^{132}Ba) (continued)

E_γ[†]	I_γ[†d]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[a]	α[e]	Comments
1516.61 *28*	0.05 *2*	3562.86	(1,2$^+$)	2046.36	(2$^+$)			
1533.66 *4*	1.94 *12*	1998.25	2$^+$	464.602	2$^+$	(M1)	0.00083	α=0.00083; α(K)=0.00083 *3* I_γ: Iγ(1533.6)/Iγ(1998.3)=3.3 *5* (1996Ku01) suggests that most of the intensity belongs with placement from 1998 level; the component from 3219 level must Be very weak. α(K)exp=0.00069 *25* for a doublet.
1533.7		3219.36	(2$^+$)	1685.84	2$^+$			E_γ: from 1996Ku01. See also comment for 1533.66γ.
1555.59 *15*	0.104 *21*	3775.82	(2$^+$)	2220.41	(3$^-$)			
1562.3[@] *1*	0.04 *2*	2027.02	4$^-$	464.602	2$^+$			
1564.3[@]		3562.86	(1,2$^+$)	1998.25	2$^+$			
1581.75 *4*	1.16 *8*	2046.36	(2$^+$)	464.602	2$^+$			
1581.9[@]		2046.38	(4$^+$)	464.602	2$^+$	*c*		
1604.03 *3*	4.8 *3*	2068.64	3$^-$	464.602	2$^+$	(E1)		α(K)exp=2.1×10^{-4} *3* for doublet.
1617.06 *21*	0.067 *15*	3663.54	(1$^-$,2$^-$,3$^-$)	2046.36	(2$^+$)			
[x]1624.41[#] *15*	0.075 *14*							
[x]1644.05[#] *16*	0.090 *14*							
1655.0[@]		2119.99	5$^-$	464.602	2$^+$			
[x]1673.4[#] *3*	0.10 *3*							
[x]1677.19[#] *17*	0.16 *3*							
[x]1681.41[#] *22*	0.15 *3*							
1685.5[@]	0.07[&] *2*	1685.84	2$^+$	0.0	0$^+$			E_γ: level-energy difference=1685.9.
1699.47 *10*	0.065 *13*	3768.28	(2,3)	2068.64	3$^-$			
1706.47 *18*	0.115 *16*	3775.82	(2$^+$)	2068.64	3$^-$			
[x]1732.55[#] *16*	0.084 *18*							
1737.99 *16*	0.094 *19*	3423.93	(3)$^-$	1685.84	2$^+$			
[x]1740.89[#] *23*	0.067 *18*							
1755.51 *7*	0.30 *3*	2220.41	(3$^-$)	464.602	2$^+$			
1800.34 *7*	0.35 *3*	2927.94	(3$^-$)	1127.69	4$^+$			
[x]1804.12[#] *6*	0.40 *3*							
1809.4[@]		3494.94	(3,4$^+$)	1685.84	2$^+$			
1823.5[@]		2288.1	(2$^+$,3,4$^+$)	464.602	2$^+$			
1824.08 *4*	0.72 *5*	2855.88	(2)$^-$	1031.750	2$^+$			
1844.83 *9*	0.188 *19*	2876.7	(1$^+$)	1031.750	2$^+$			
[x]1854.3[#] *3*	0.056 *17*							
[x]1870.6[#] *3*	0.095 *20*							
1876.67 *9*	0.32 *3*	3562.86	(1,2$^+$)	1685.84	2$^+$			
[x]1895.2[#] *3*	0.091 *22*							
1902.9[@]		3563.10	(1,2$^+$)	1660.4	0$^+$			
1909.91 *4*	11.9 *8*	2374.51	3$^-$	464.602	2$^+$	E1		α(K)exp=2.1×10^{-4} *3*

γ(^{132}Ba) (continued)

E_{γ}[†]	I_{γ}[†d]	E_i(level)	J_i^{π}	E_f	J_f^{π}	Mult.[a]	Comments
[x]1928.56[#] 9	0.39 3						
1949.5[@]		3635.56	1^-	1685.84	2^+		
[x]1969.79[#] 6	0.297 21						
1974.5[@]		3635.56	1^-	1660.4	0^+		
1977.31 19	0.109 11	3663.54	$(1^-,2^-,3^-)$	1685.84	2^+		
1984.0 3	0.051 13	3494.94	$(3,4^+)$	1511.18	3^+		
[x]1989.1[#] 4	0.037 10						
1998.38 6	0.61 4	1998.25	2^+	0.0	0^+		
[x]2024.91[#] 21	0.066 10						
2040.79 5	1.11 7	2505.5	(2)	464.602	2^+		
2058.9 3	0.035 12	3562.86	$(1,2^+)$	1503.80	0^+		
2068.6[@]	0.007[&] 4	2068.64	3^-	0.0	0^+		
2082.45 9	0.149 16	3768.28	(2,3)	1685.84	2^+		
2102.84 5	7.2 4	2567.41	$(3)^-$	464.602	2^+	(E1)	α(K)exp=1.6×10^{-4} 5 for a doublet.
[x]2120.04[#] 14	0.089 13						
2131.2[@]		3635.56	1^-	1503.80	0^+		
[x]2176.5[#] 3	0.069 16						
2187.55 10	0.20 3	3219.36	(2^+)	1031.750	2^+		
[x]2208.7[#] 3	0.041 10						
2220.70[‡g] 10	0.155 21	2220.41	(3^-)	0.0	0^+		
2257.2	0.022 11	3768.28	(2,3)	1511.18	3^+		E_{γ}: from 1996Ku01. Eγ=2257.0 6 In 1975WiZJ.
2264.6 4	0.037 10	3775.82	(2^+)	1511.18	3^+		
2296.18 10	0.167 17	3423.93	$(3)^-$	1127.69	4^+		
[x]2306.66[#] 5	0.40 3						
[x]2329.75[#] 18	0.11 3						
2367.08 7	0.29 2	3494.94	$(3,4^+)$	1127.69	4^+		
2391.35 6	1.28 9	2855.88	$(2)^-$	464.602	2^+	E1	α(K)exp=1.0×10^{-4} 4
2411.92 7	0.61 4	2876.7	(1^+)	464.602	2^+		
2452.74 6	0.49 3	2453.1	(1^-)	0.0	0^+	(E1)	α(K)exp=0.00013 6
2463.22[f] 5	1.15[f] 7	2927.94	(3^-)	464.602	2^+	(E1)	α(K)exp=0.96×10^{-4} 44 for a doublet.
2463.22[f] 5	1.15[f] 7	3494.94	$(3,4^+)$	1031.750	2^+		
[x]2471.8[#] 4	0.030 10						
[x]2545.00[#] 20	0.111 18						
[x]2584.96[#] 25	0.071 16						
[x]2613.5[#] 4	0.045 19						
2631.63 7	0.32 2	3663.54	$(1^-,2^-,3^-)$	1031.750	2^+		δ: −0.56 8 for J=1 (2002Ga01), suggests M1+E2 In contradiction with ΔJ^{π} from mult(3199γ).
[x]2639.75[#] 19	0.081 12						

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γ(^{132}Ba) (continued)

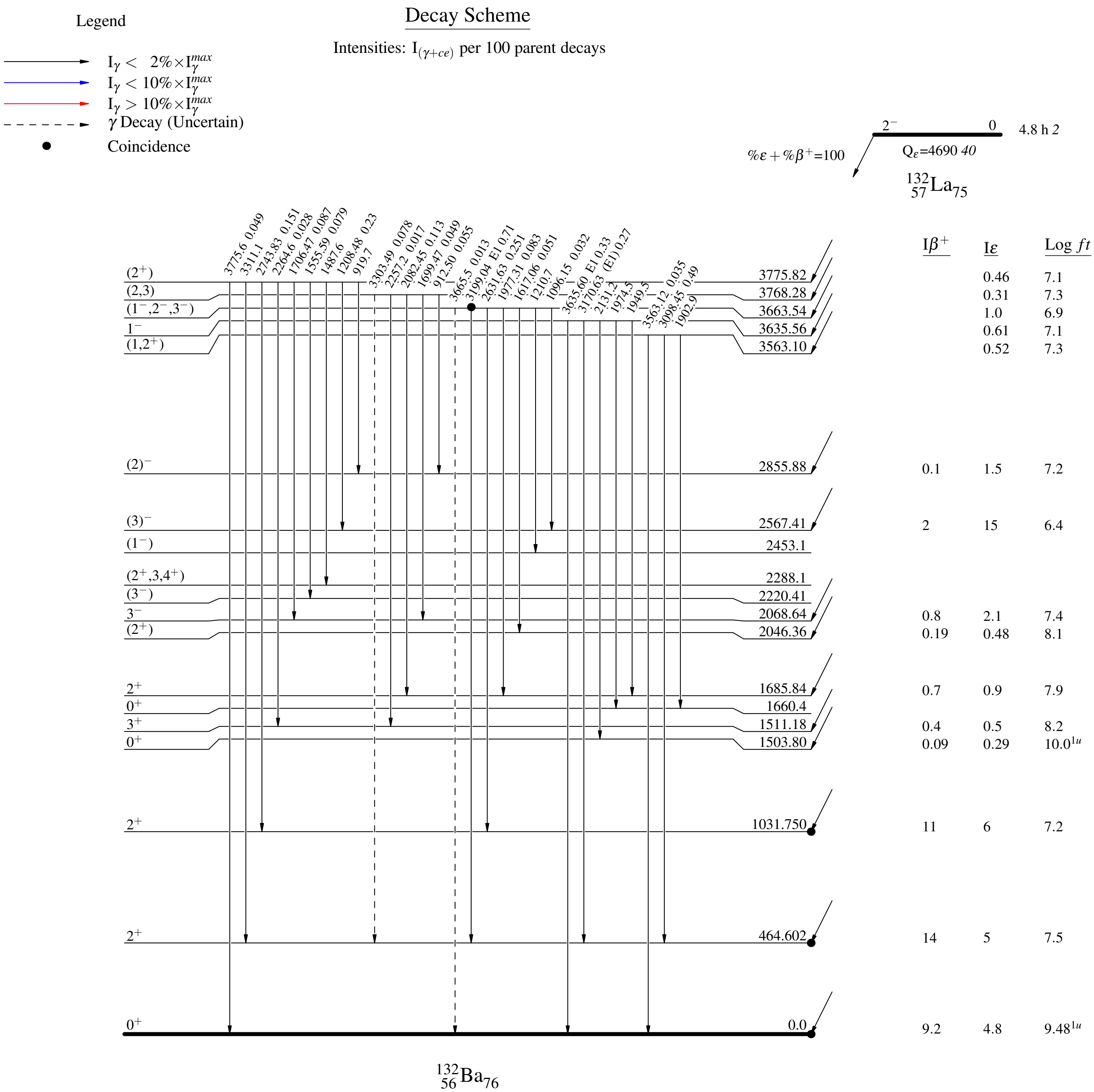
E_γ[†]	I_γ[†d]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	Comments
[x]2654.9[#] *8*	0.017 *9*						
2693.36 *7*	0.51 *4*	3158.04	(1)$^-$	464.602	2$^+$	E1	α(K)exp=1.1×10^{-4} *5*
[x]2707.81[#] *17*	0.116 *19*						
2743.83 *10*	0.199 *18*	3775.82	(2$^+$)	1031.750	2$^+$		
2754.73 *5*	2.10 *13*	3219.36	(2$^+$)	464.602	2$^+$		Mult.: E1 from α(K)exp=1.2×10^{-4} *3* is in contradiction with Δ(J$^\pi$).
[x]2810.2[#] *5*	0.039 *11*						
2877.0[@]		2876.7	(1$^+$)	0.0	0$^+$		E_γ: level-energy difference=2876.6.
[x]2883.8[#] *8*	0.015 *8*						
[x]2935.9[#] *8*	0.017 *9*						
2959.49 *9*	1.24 *9*	3423.93	(3)$^-$	464.602	2$^+$	E1	α(K)exp=0.48×10^{-4} *17*
[x]2970.17[#] *8*	0.42 *3*						
[x]2979.90[#] *24*	0.139 *20*						
[x]2992.8[#] *4*	0.039 *9*						
[x]2997.4[#] *3*	0.043 *9*						
[x]3016.7[#] *6*	0.017 *8*						
3030.81 *10*	0.205 *17*	3494.94	(3,4$^+$)	464.602	2$^+$		
[x]3071.5[#] *4*	0.028 *9*						
3098.45 *6*	0.64 *4*	3563.10	(1,2$^+$)	464.602	2$^+$		Mult.: E1 from α(K)exp=0.63×10^{-4} *24* is in contradiction with Δ(J$^\pi$).
[x]3124.5[#] *4*	0.025 *7*						
3158.28[‡] *19*	0.117 *14*	3158.04	(1)$^-$	0.0	0$^+$		
3170.63 *9*	0.36 *3*	3635.56	1$^-$	464.602	2$^+$	(E1)[c]	
3199.04 *7*	0.94 *6*	3663.54	(1$^-$,2$^-$,3$^-$)	464.602	2$^+$	E1	α(K)exp=0.00076 *22*
[x]3263.3[#] *5*	0.017 *6*						
3303.49[g] *16*	0.102 *11*	3768.28	(2,3)	464.602	2$^+$		
3311.1[@]		3775.82	(2$^+$)	464.602	2$^+$		
[x]3377.8[#] *4*	0.023 *6*						
[x]3414.0[#] *10*	0.010 *6*						
[x]3438.42[#] *21*	0.084 *10*						
[x]3453.15[#] *22*	0.050 *7*						
[x]3478.36[#] *21*	0.047 *7*						
[x]3502.78[#] *13*	0.140 *11*						
[x]3509.84[#] *23*	0.046 *7*						
[x]3534.8[#] *9*	0.006 *4*						
[x]3545.8[#] *5*	0.018 *4*						
[x]3556.9[#] *4*	0.031 *5*						
3563.12[‡] *23*	0.046 *6*	3563.10	(1,2$^+$)	0.0	0$^+$		

γ(^{132}Ba) (continued)

E_γ[†]	I_γ[†d]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[a]	Comments
[x]3596.3[#] *8*	0.008 *4*						
3635.60[‡] *19*	0.44 *4*	3635.56	1^-	0.0	0^+	E1	α(K)exp=0.45×10^{-4} *19*
3665.5[‡g] *5*	0.017 *4*	3663.54	$(1^-,2^-,3^-)$	0.0	0^+		
[x]3689.1[#] *4*	0.013 *3*						
3775.6[‡] *3*	0.064 *6*	3775.82	(2^+)	0.0	0^+		
[x]3817.5[#] *10*	0.004 *2*						
[x]3837.4[#] *4*	0.035 *5*						
[x]3900.1[#] *13*	0.0024 *19*						
[x]3936.2[#] *14*	0.0013 *13*						
[x]4006.4[#] *13*	0.0014 *10*						

[†] From 1975WiZJ, unless otherwise stated.
[‡] γ not reported by 1996Ku01.
[#] Unplaced γ from 1975WiZJ only; from decay of either of the two isomers (4.8 h and/or 24.3 min). A total of about 8 units of intensity are contained In these γ rays.
[@] From 1996Ku01 only, 0.2 keV uncertainty assumed for the purpose of least-squares fit to obtain level energies.
[&] Deduced from branching ratios given by 1996Ku01 and relative intensities from 1975WiZJ.
[a] From ce data and α(exp) of 1971Am06 and 1967Fr02, unless otherwise stated. See also 1981HaZY. Conversion coefficients are deduced relative to the ce data for 464.6γ, E2 and 663.07γ, E2 and are from 1971Am06, unless otherwise stated.
[b] From γγ(θ) and ΔJ$^\pi$ (2002Ga01).
[c] From γγ(θ) (1996Ku01,2002Ga01) and ΔJ$^\pi$.
[d] For absolute intensity per 100 decays, multiply by 0.76 *4*.
[e] 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.
[f] Multiply placed with undivided intensity.
[g] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

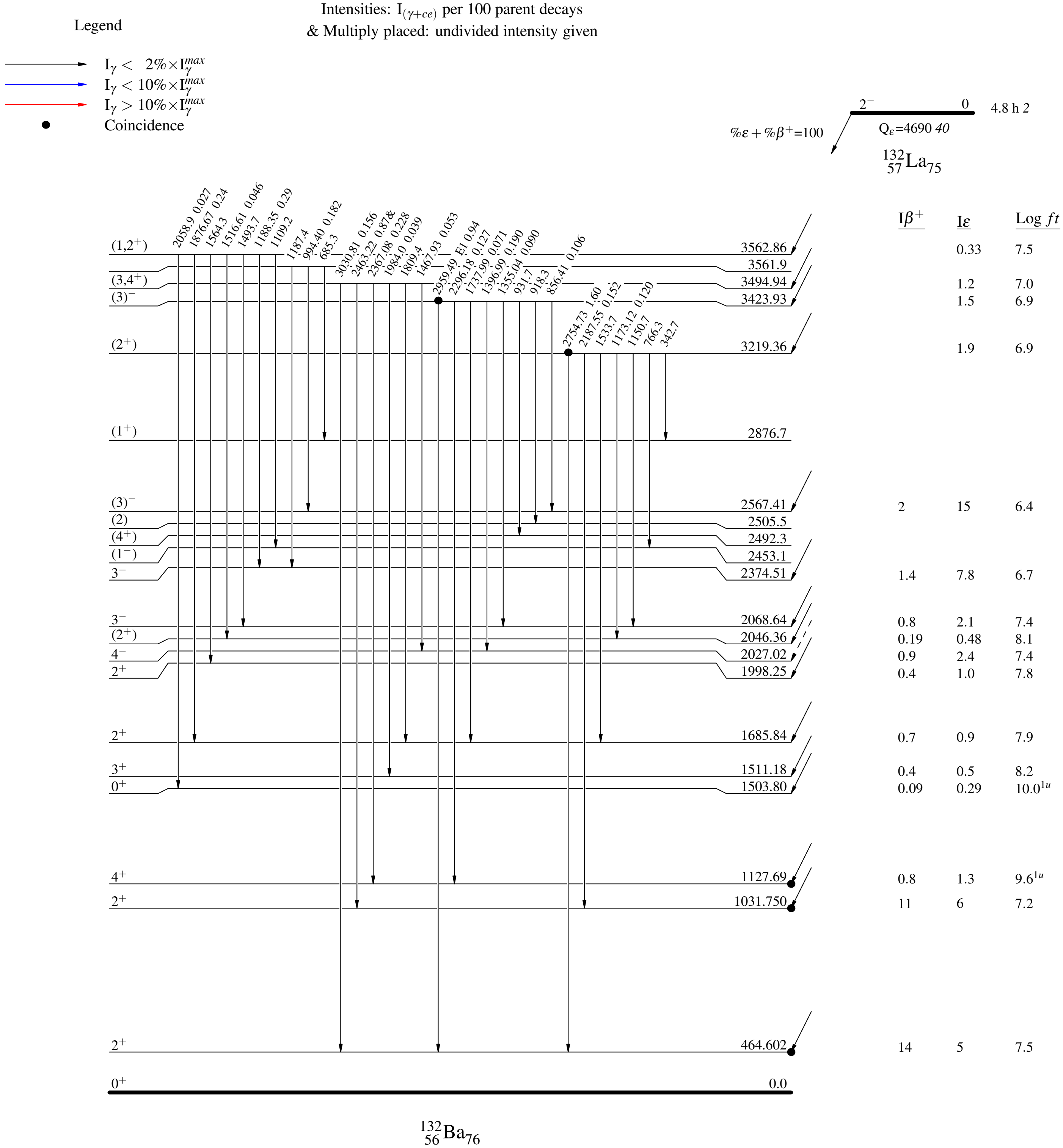
^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01



^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01

Decay Scheme (continued)

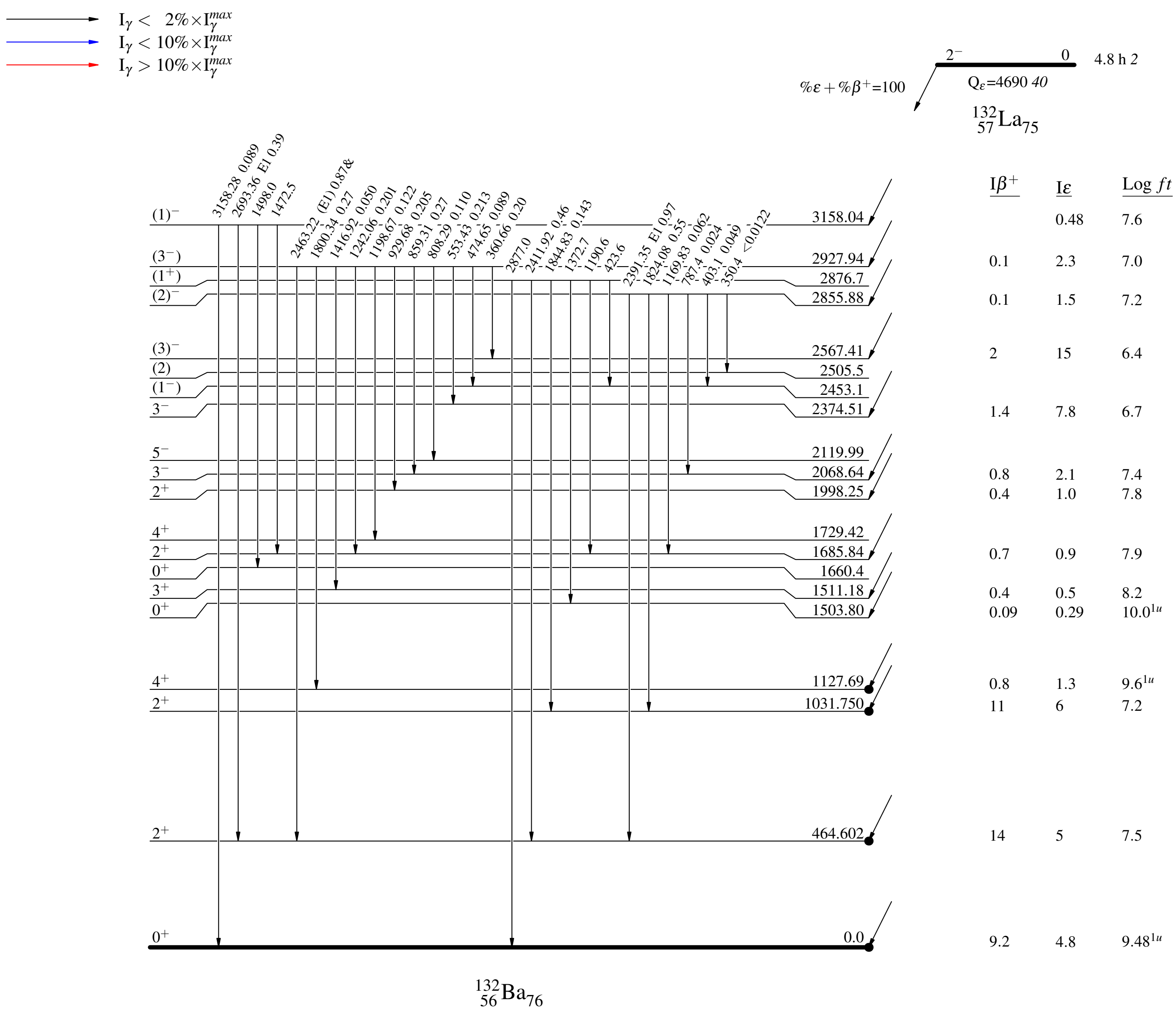
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01

Decay Scheme (continued)

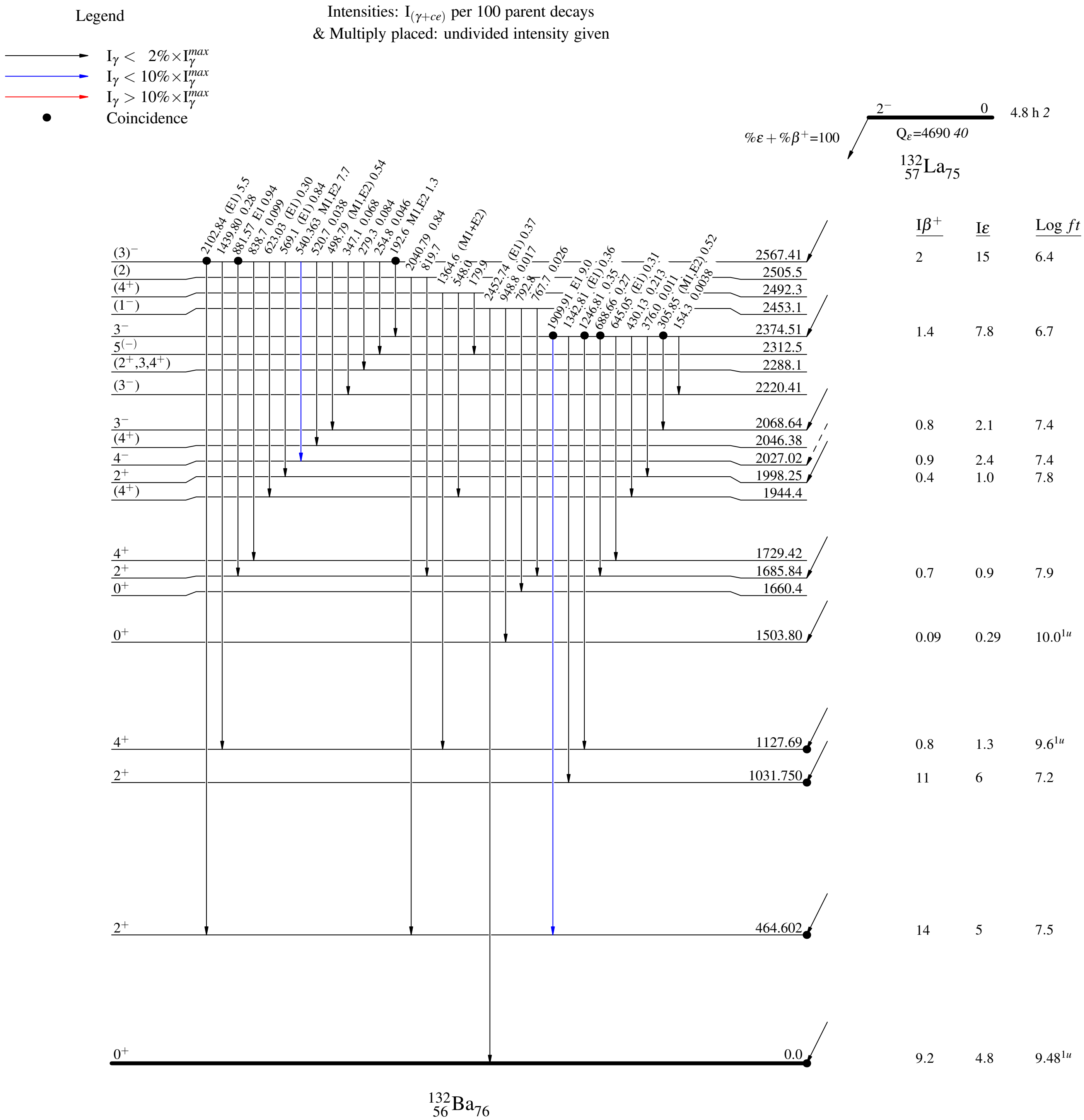
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



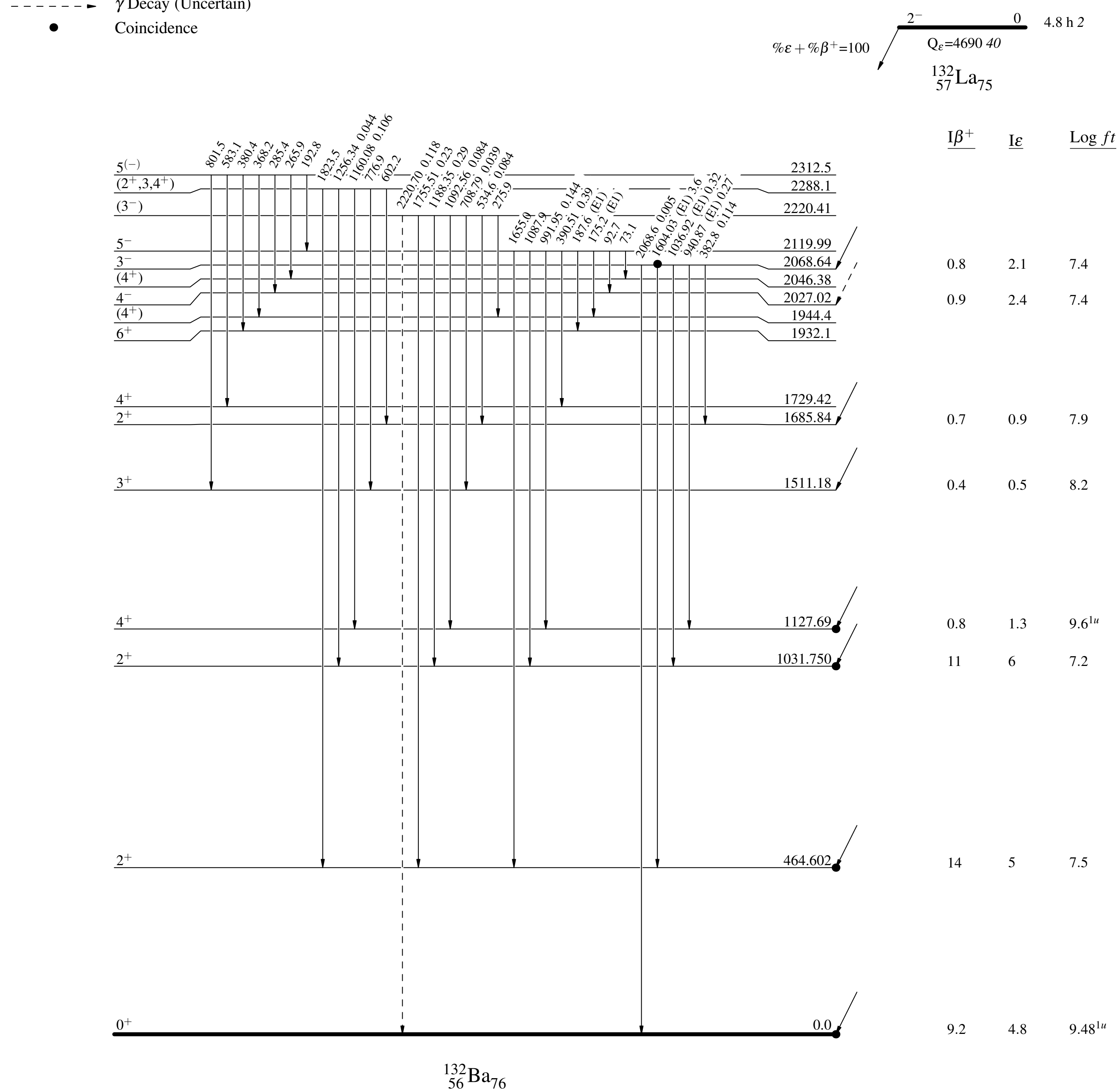
^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given

Legend

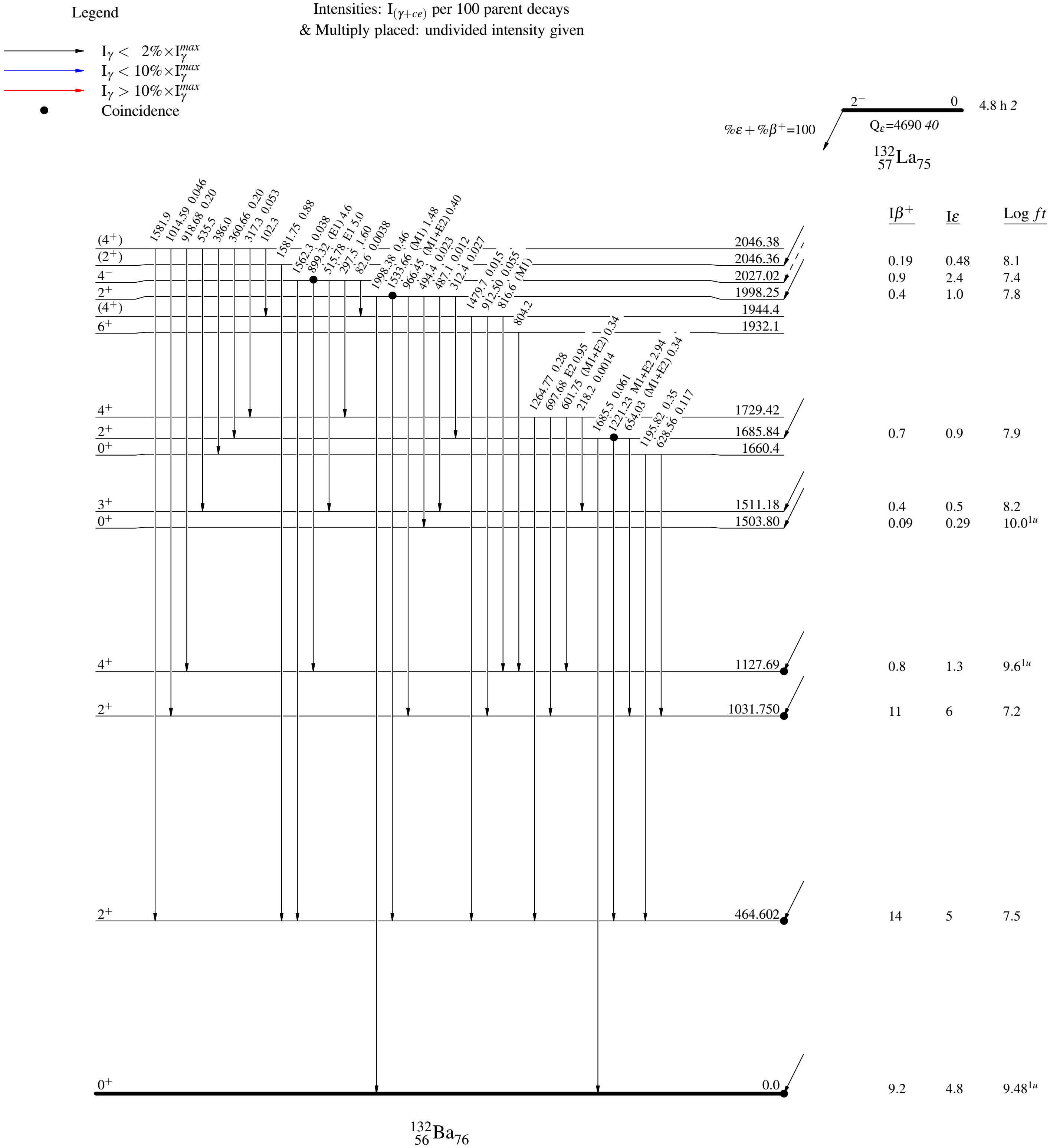
- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- γ Decay (Uncertain)
- Coincidence



^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01

Decay Scheme (continued)

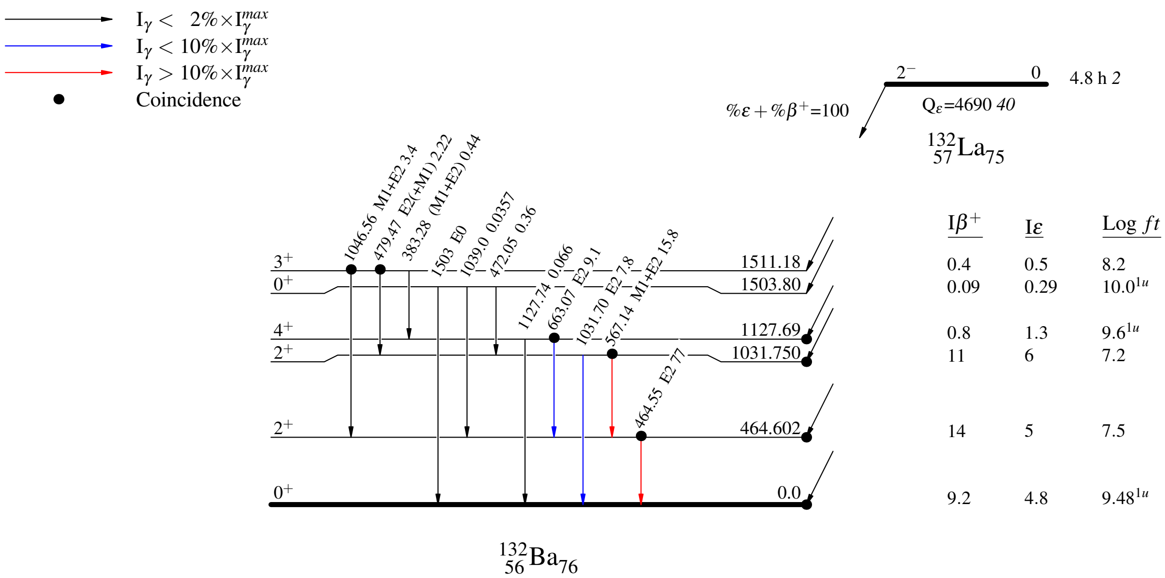
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01

Decay Scheme (continued)

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays
& Multiply placed: undivided intensity given



Level	Iβ⁺	Iε	Log ft
1511.18	0.4	0.5	8.2
1503.80	0.09	0.29	10.0[1u]
1127.69	0.8	1.3	9.6[1u]
1031.750	11	6	7.2
464.602	14	5	7.5
0.0	9.2	4.8	9.48[1u]

^{132}La ε decay (4.8 h) 1975WiZJ,1996Ku01