^{127}La β^+ decay (5.1 min) 2002Sh01,1990GiZV

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	A. Hashizume	NDS 112, 1647 (2011)	1-Oct-2009

Parent: ^{127}La: E=0.0; J$^\pi$=(11/2$^-$); T$_{1/2}$=5.1 min *1*; Q(β^+)=4920 *28*; %β^+ decay=100.0

The decay scheme is that proposed by 2002Sh01 and 1990GiZV.

2002Sh01: ^{nat}Mo+^{32}S, E=160 MeV, on-line mass separation; measured γ, ce, level lifetimes: $\gamma\gamma$, γX, γ(ce).

1990GiZV: ^{92}Mo, ^{94}Mo, ^{96}Mo+^{35}Cl, ^{36}Ar, ^{40}Ca E=5-7 MeV/u, on-line mass separation; measured γ, ce; $\gamma\gamma$, γX, γ(ce).

1981LiZK: Ce+280 MeV ^{3}He, Ce+200 MeV p, mass separation; measured γ, K-X ray, ce; $\gamma\gamma$, γX, γ(ce).

^{127}Ba Levels

E(level)†	J$^\pi$‡	T$_{1/2}$	Comments
0.0#	1/2$^+$	12.7 min *4*	
56.26# *14*	3/2$^+$		
80.22@ *16*	7/2$^-$	1.93 s *7*	T$_{1/2}$: from IT decay (2002Sh01).
81.31& *15*	(5/2)$^+$	75 ns *4*	T$_{1/2}$: from $\gamma\gamma$ delayed coincidence (2002Sh01).
159.69@ *21*	(9/2)$^-$	0.4 ns *2*	T$_{1/2}$: from centroid shift method of γ spectrum (2002Sh01).
195.6& *3*	(7/2)$^+$		
269.6# *3*	(5/2)$^+$		
293.86@ *25*	(11/2)$^-$		
324.3 *3*	(7/2)$^+$		
375.2# *3*	(7/2)$^+$		
416.0& *3*	(9/2)$^+$		
579.5@ *4*	(13/2)$^-$		
599.4 *3*	(9/2$^+$)		
669.0& *4*	(11/2)$^+$		
715.3 *6*			
728.5 *4*	(9/2$^+$)		
776.9 *5*	(15/2$^-$)		
805.1 *6*			
832.5 *4*			
868.4 *4*	(11/2$^+$)		
876.2 *4*			
906.5 *3*	(11/2$^+$)		
963.9 *5*	(13/2$^+$)		
987.3 *4*			
991.2 *4*			
1219.0 *4*	(15/2$^-$)		
1230.5 *6*	(13/2$^+$)		
1305.0 *5*			
1403.3 *4*			
1410.4 *4*			
1626 *5*			
1674.0 *4*			
1764.70 *25*			
1790.6 *4*			
1881 *5*			
1961.1 *4*			
2351.8 *4*			

† From a least-squares fit to E$_\gamma$′s assuming ΔE$_\gamma$=0.2 keV for low-energy γ rays (<85 keV), ΔE$_\gamma$=0.5 keV for others (evaluator).

‡ From Adopted Levels.

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^{127}La β^+ decay (5.1 min) 2002Sh01,1990GiZV (continued)

^{127}Ba Levels (continued)

Band(A): 1/2[411]. This band corresponds to $\nu d_{3/2}$, Ω=1/2, α=±1/2, assigned by (1998De48). (Ω : The projection of particle angular momentum to the nuclear symmetry axis).
@ Band(B): 7/2[523]. This band corresponds to $\nu h_{11/2}$, Ω=7/2, α=±1/2, assigned by (1998De48).
& Band(C): 5/2[402]. This band corresponds to $\nu d_{5/2}$), Ω=5/2, α=±1/2, assigned by (1998De48).

γ(^{127}Ba)

E_γ	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.†	α#	Comments
24.0@ *2*	1.14	80.22	7/2⁻	56.26	3/2⁺	M2	1.03×10^3 *5*	α(L)=8.0×10^2 *4*; α(M)=183 *8*; α(N+..)=45.6 *19* α(N)=39.5 *17*; α(O)=5.74 *24*; α(P)=0.312 *13* α(exp)=600 to 1600 from intensity balance of γ.
25.1@ *2*	27.1	81.31	(5/2)⁺	56.26	3/2⁺	M1	8.19 *23*	α(L)=6.51 *19*; α(M)=1.34 *4*; α(N+..)=0.337 *10* α(N)=0.289 *8*; α(O)=0.0441 *13*; α(P)=0.00315 *9* α(exp)=6.9 to 20.2 from $\gamma\gamma$ coin and intensity balance.
56.3@ *2*	143.4	56.26	3/2⁺	0.0	1/2⁺	M1(+E2)	10 *6*	α(K)exp=5.0 *4* α(K)=5.0 *6*; α(L)=4 *4*; α(M)=0.9 *9*; α(N+..)=0.22 *19* α(N)=0.19 *17*; α(O)=0.025 *22*; α(P)=0.000270 *23* α(K)exp from X-γ(316.7) coincidence method.
79.4@ *2*	135.2	159.69	(9/2)⁻	80.22	7/2⁻	M1,E2	3.2 *13*	α(K)exp=2.0 *1* α(K)=2.0 *4*; α(L)=0.9 *7*; α(M)=0.20 *16*; α(N+..)=0.05 *4* α(N)=0.04 *4*; α(O)=0.005 *4*; α(P)=0.0001067 *21*
80.2@ *2*	0.66	80.22	7/2⁻	0.0	1/2⁺	E3	74.8 *15*	α(K)=11.75 *19*; α(L)=49.1 *10*; α(M)=11.34 *23*; α(N+..)=2.64 *6* α(N)=2.35 *5*; α(O)=0.297 *6*; α(P)=0.000471 *8* Additional information 1.
81.3@ *2*	1.0	81.31	(5/2)⁺	0.0	1/2⁺			
91.7@ *5*	3.3	416.0	(9/2)⁺	324.3	(7/2)⁺			
105.4@ *5*	9.9	375.2	(7/2)⁺	269.6	(5/2)⁺			
114.3@ *5*	89.3	195.6	(7/2)⁺	81.31	(5/2)⁺	M1,E2	0.9 *3*	α(K)exp=1.0 *5* α(K)=0.69 *12*; α(L)=0.19 *12*; α(M)=0.04 *3*; α(N+..)=0.010 *6* α(N)=0.009 *6*; α(O)=0.0012 *7*; α(P)=3.81×10^{-5} *8*
128.7@ *5*	6.6	324.3	(7/2)⁺	195.6	(7/2)⁺	M1,E2	0.64 *16*	α(K)exp=1.2 *5* α(K)=0.48 *7*; α(L)=0.12 *7*; α(M)=0.026 *15*; α(N+..)=0.006 *4* α(N)=0.005 *3*; α(O)=0.0008 *4*; α(P)=2.70×10^{-5} *6*
134.3@ *5*	133.3	293.86	(11/2)⁻	159.69	(9/2)⁻	M1,E2	0.55 *13*	α(K)exp=0.45 *18* α(K)=0.43 *6*; α(L)=0.10 *6*; α(M)=0.022

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^{127}La β^+ decay (5.1 min) 2002Sh01,1990GiZV (continued)

$\gamma(^{127}Ba)$ (continued)

E_γ	I_γ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.†	α#	Comments
								12; α(N+..)=0.005 *3* α(N)=0.0046 *25*; α(O)=0.0006 *3*; α(P)=2.39×10^{-5} *5*
197.4 *5*		776.9	(15/2$^-$)	579.5	(13/2)$^-$			
213.3@ *5*	2.9	269.6	(5/2)$^+$	56.26	3/2$^+$	M1,E2	0.129 *10*	α(K)=0.106 *4*; α(L)=0.019 *5*; α(M)=0.0039 *12*; α(N+..)=0.0010 *3* α(N)=0.00084 *23*; α(O)=0.00012 *3*; α(P)=6.3×10^{-6} *5* α(K)exp=0.10 *3* for 213.3+213.7.
213.7@ *5*	15.2	293.86	(11/2)$^-$	80.22	7/2$^-$	(E2)	0.1376 *23*	α(K)=0.1078 *18*; α(L)=0.0236 *4*; α(M)=0.00503 *9*; α(N+..)=0.001212 *21* α(N)=0.001058 *18*; α(O)=0.0001483 *25*; α(P)=5.78×10^{-6} *9* α(K)exp=0.10 *3* for 213.3+213.7.
220.4@ *5*	58.1	416.0	(9/2)$^+$	195.6	(7/2)$^+$	M1,E2	0.117 *8*	α(K)exp=0.097 *30* α(K)=0.0959 *23*; α(L)=0.017 *5*; α(M)=0.0035 *10*; α(N+..)=0.00086 *22* α(N)=0.00075 *20*; α(O)=0.000108 *24*; α(P)=5.7×10^{-6} *5*
243.0@ *5*	71.3	324.3	(7/2)$^+$	81.31	(5/2)$^+$	M1,E2	0.087 *3*	α(K)exp=0.078 *25* α(K)=0.0720 *13*; α(L)=0.0120 *25*; α(M)=0.0025 *6*; α(N+..)=0.00062 *13* α(N)=0.00054 *12*; α(O)=7.8×10^{-5} *14*; α(P)=4.3×10^{-6} *5*
253.3@ *5*	23.8	669.0	(11/2)$^+$	416.0	(9/2)$^+$	M1,E2	0.0770 *17*	α(K)exp=0.087 *30* α(K)=0.0638 *16*; α(L)=0.0105 *20*; α(M)=0.0022 *5*; α(N+..)=0.00054 *10* α(N)=0.00047 *9*; α(O)=6.8×10^{-5} *11*; α(P)=3.9×10^{-6} *4*
269.6@ *5*	24.8	269.6	(5/2)$^+$	0.0	1/2$^+$	(E2)	0.0637	α(K)exp=0.062 *28* α(K)=0.0513 *8*; α(L)=0.00982 *16*; α(M)=0.00208 *4*; α(N+..)=0.000505 *8* α(N)=0.000439 *7*; α(O)=6.26×10^{-5} *10*; α(P)=2.87×10^{-6} *5*
275.2 *5*		599.4	(9/2$^+$)	324.3	(7/2)$^+$			
285.6@ *5*	45.4	579.5	(13/2)$^-$	293.86	(11/2)$^-$	M1,E2	0.0540 *14*	α(K)exp=0.047 *15* α(K)=0.0451 *24*; α(L)=0.0071 *9*; α(M)=0.00148 *21*; α(N+..)=0.00037 *5* α(N)=0.00032 *4*; α(O)=4.7×10^{-5} *5*; α(P)=2.8×10^{-6} *4*
293.7@ *5*	3.8	375.2	(7/2)$^+$	81.31	(5/2)$^+$			
294.8 *5*		963.9	(13/2$^+$)	669.0	(11/2)$^+$			
307.0 *5*		906.5	(11/2$^+$)	599.4	(9/2$^+$)			
318.7@ *5*	100.0	375.2	(7/2)$^+$	56.26	3/2$^+$	(E2)	0.0373	α(K)exp=0.035 *10* α(K)=0.0305 *5*; α(L)=0.00539 *9*; α(M)=0.001136 *18*; α(N+..)=0.000277 *5* α(N)=0.000241 *4*; α(O)=3.47×10^{-5} *6*; α(P)=1.75×10^{-6} *3*
324.0 *5*		1230.5	(13/2$^+$)	906.5	(11/2$^+$)			
334.8@ *5*	20.7	416.0	(9/2)$^+$	81.31	(5/2)$^+$			
353.4 *5*		728.5	(9/2$^+$)	375.2	(7/2)$^+$			
403.8 *5*		599.4	(9/2$^+$)	195.6	(7/2)$^+$			

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$^{127}La\ \beta^+$ decay (5.1 min) 2002Sh01,1990GiZV (continued)

$\gamma(^{127}Ba)$ (continued)

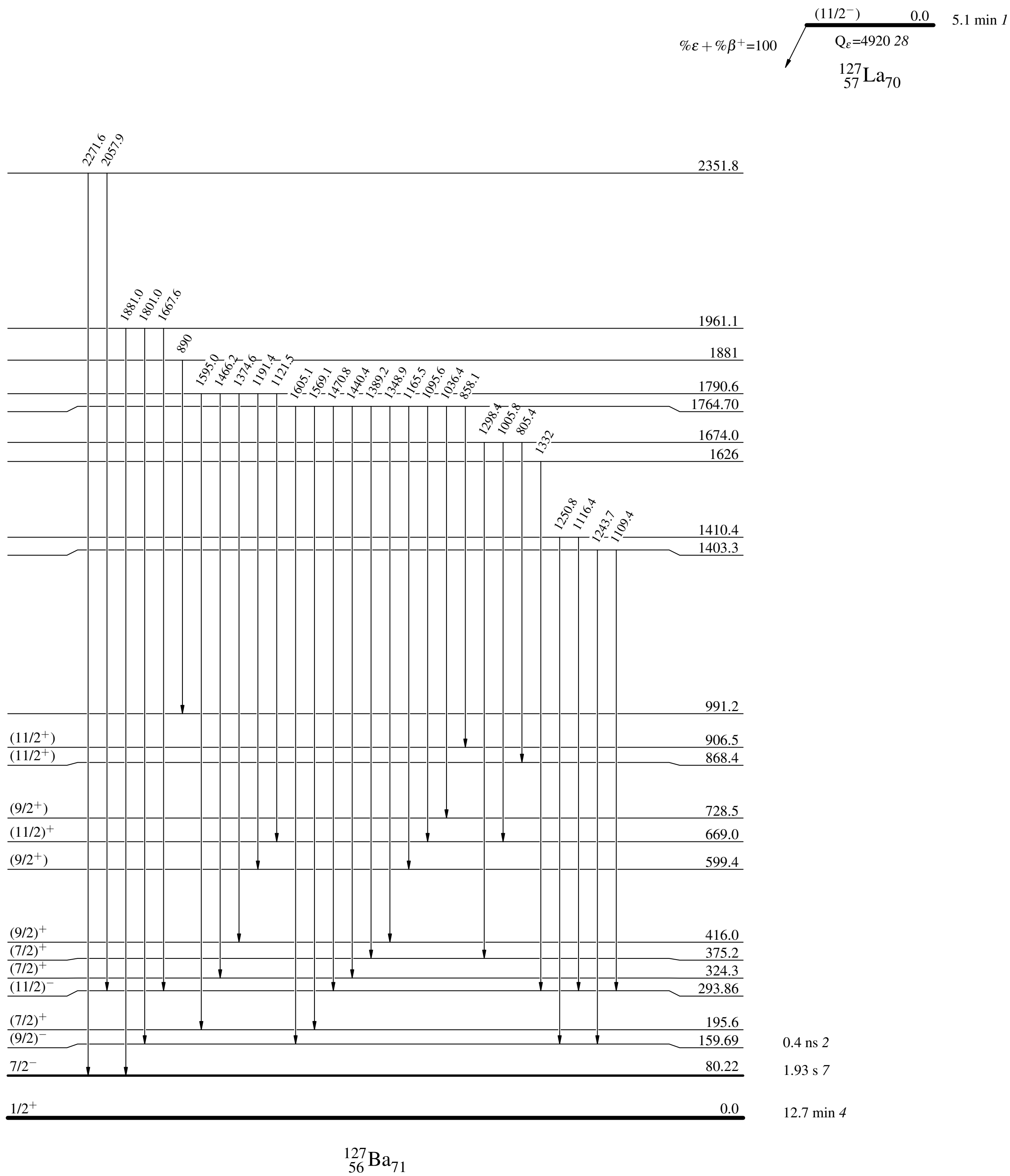
E_γ	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	E_γ	E_i(level)	J_i^π	E_f	J_f^π
419.9[@] 5	22.0	579.5	(13/2)$^-$	159.69	(9/2)$^-$	911.0 5	991.2		80.22	7/2$^-$
428.8 5		1305.0		876.2		925.4 5	1219.0	(15/2$^-$)	293.86	(11/2)$^-$
452.2 5		868.4	(11/2$^+$)	416.0	(9/2)$^+$	1005.8 5	1674.0		669.0	(11/2)$^+$
458.9 5		728.5	(9/2$^+$)	269.6	(5/2)$^+$	1036.4 5	1764.70		728.5	(9/2$^+$)
473.6[@] 5	29.9	669.0	(11/2)$^+$	195.6	(7/2)$^+$	1059.1 5	1219.0	(15/2$^-$)	159.69	(9/2)$^-$
483.0 5		776.9	(15/2$^-$)	293.86	(11/2)$^-$	1095.6 5	1764.70		669.0	(11/2)$^+$
490.3 5		906.5	(11/2$^+$)	416.0	(9/2)$^+$	1109.4 5	1403.3		293.86	(11/2)$^-$
493.3 5		868.4	(11/2$^+$)	375.2	(7/2)$^+$	1116.4 5	1410.4		293.86	(11/2)$^-$
518.2 5		599.4	(9/2$^+$)	81.31	(5/2)$^+$	1121.5 5	1790.6		669.0	(11/2)$^+$
531.4 5		906.5	(11/2$^+$)	375.2	(7/2)$^+$	1165.5 5	1764.70		599.4	(9/2$^+$)
543.9 5		868.4	(11/2$^+$)	324.3	(7/2)$^+$	1191.4 5	1790.6		599.4	(9/2$^+$)
548.0 5		963.9	(13/2$^+$)	416.0	(9/2)$^+$	1243.7 5	1403.3		159.69	(9/2)$^-$
555.6 5		715.3		159.69	(9/2)$^-$	1250.8 5	1410.4		159.69	(9/2)$^-$
582.3 5		876.2		293.86	(11/2)$^-$	1298.4 5	1674.0		375.2	(7/2)$^+$
582.3 5		906.5	(11/2$^+$)	324.3	(7/2)$^+$	1332 5	1626		293.86	(11/2)$^-$
639.5 5		1219.0	(15/2$^-$)	579.5	(13/2)$^-$	1348.9 5	1764.70		416.0	(9/2)$^+$
645.4 5		805.1		159.69	(9/2)$^-$	1374.6 5	1790.6		416.0	(9/2)$^+$
672.5 5		832.5		159.69	(9/2)$^-$	1389.2 5	1764.70		375.2	(7/2)$^+$
693.3 5		987.3		293.86	(11/2)$^-$	1440.4 5	1764.70		324.3	(7/2)$^+$
697.4 5		991.2		293.86	(11/2)$^-$	1466.2 5	1790.6		324.3	(7/2)$^+$
716.6 5		876.2		159.69	(9/2)$^-$	1470.8[&] 5	1764.70		293.86	(11/2)$^-$
725.4 5		1305.0		579.5	(13/2)$^-$	1569.1 5	1764.70		195.6	(7/2)$^+$
752.6 5		832.5		80.22	7/2$^-$	1595.0 5	1790.6		195.6	(7/2)$^+$
795.9 5		876.2		80.22	7/2$^-$	1605.1[&] 5	1764.70		159.69	(9/2)$^-$
805.4 5		1674.0		868.4	(11/2$^+$)	1667.6 5	1961.1		293.86	(11/2)$^-$
827.7 5		987.3		159.69	(9/2)$^-$	1801.0 5	1961.1		159.69	(9/2)$^-$
831.4 5		991.2		159.69	(9/2)$^-$	1881.0 5	1961.1		80.22	7/2$^-$
858.1 5		1764.70		906.5	(11/2$^+$)	2057.9 5	2351.8		293.86	(11/2)$^-$
890 5		1881		991.2		2271.6 5	2351.8		80.22	7/2$^-$

† From α(K)exp, unless otherwise noted (2002Sh01).
‡ From 2002Sh01.
# Theoretical conversion coefficients are calculated using BrIcc code for the multipolarity indicated.
@ From 2002Sh01, others are from 1990GiZV, In the latter, no intensity is given by the authors.
& E_γ was not given by 1990GiZV. It is calculated from level-energy difference.

$^{127}La\ \beta^{+}$ decay (5.1 min) 2002Sh01,1990GiZV

Decay Scheme

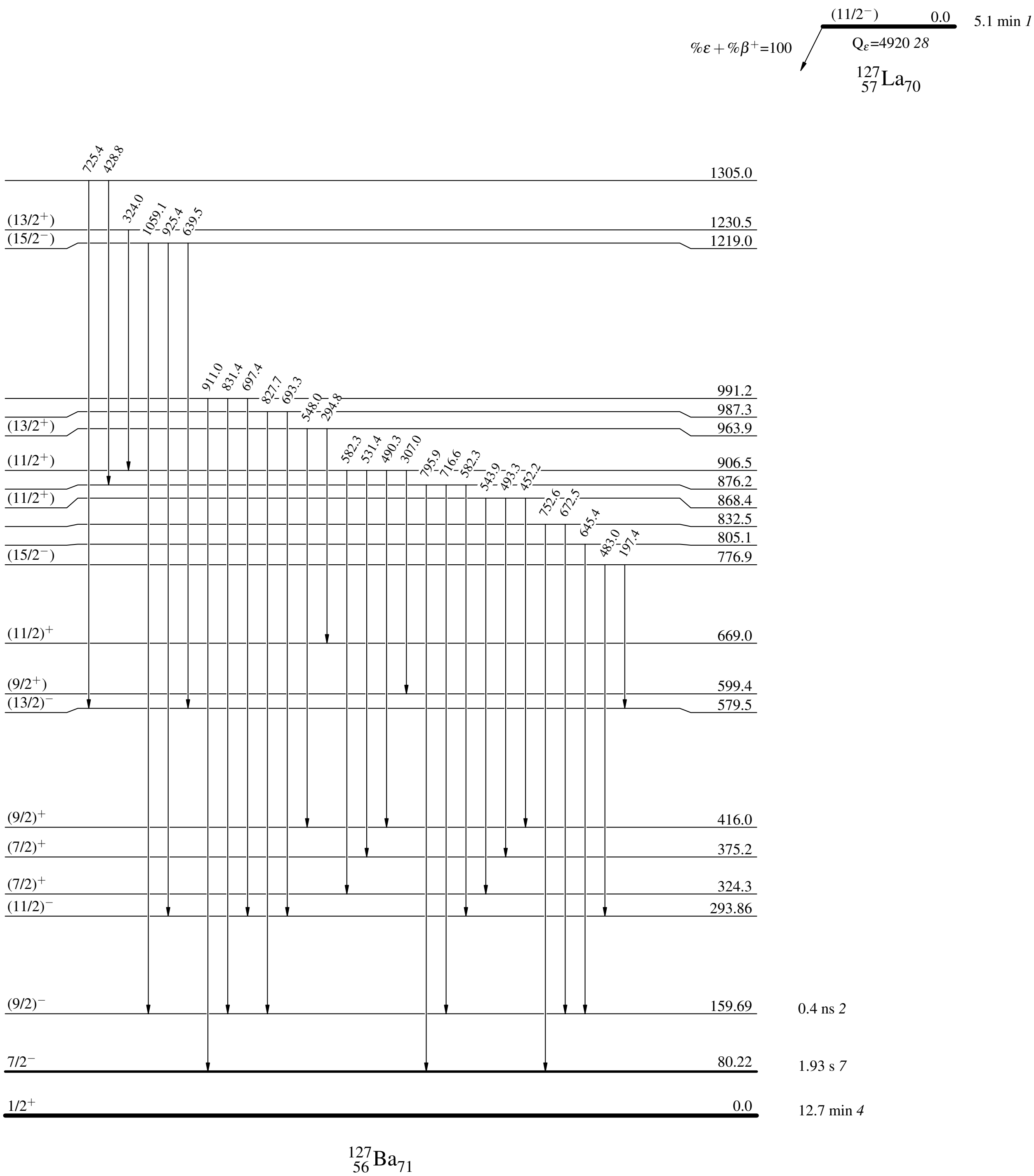
Intensities: Relative I_γ



$^{127}La\ \beta^+$ decay (5.1 min) 2002Sh01,1990GiZV

Decay Scheme (continued)

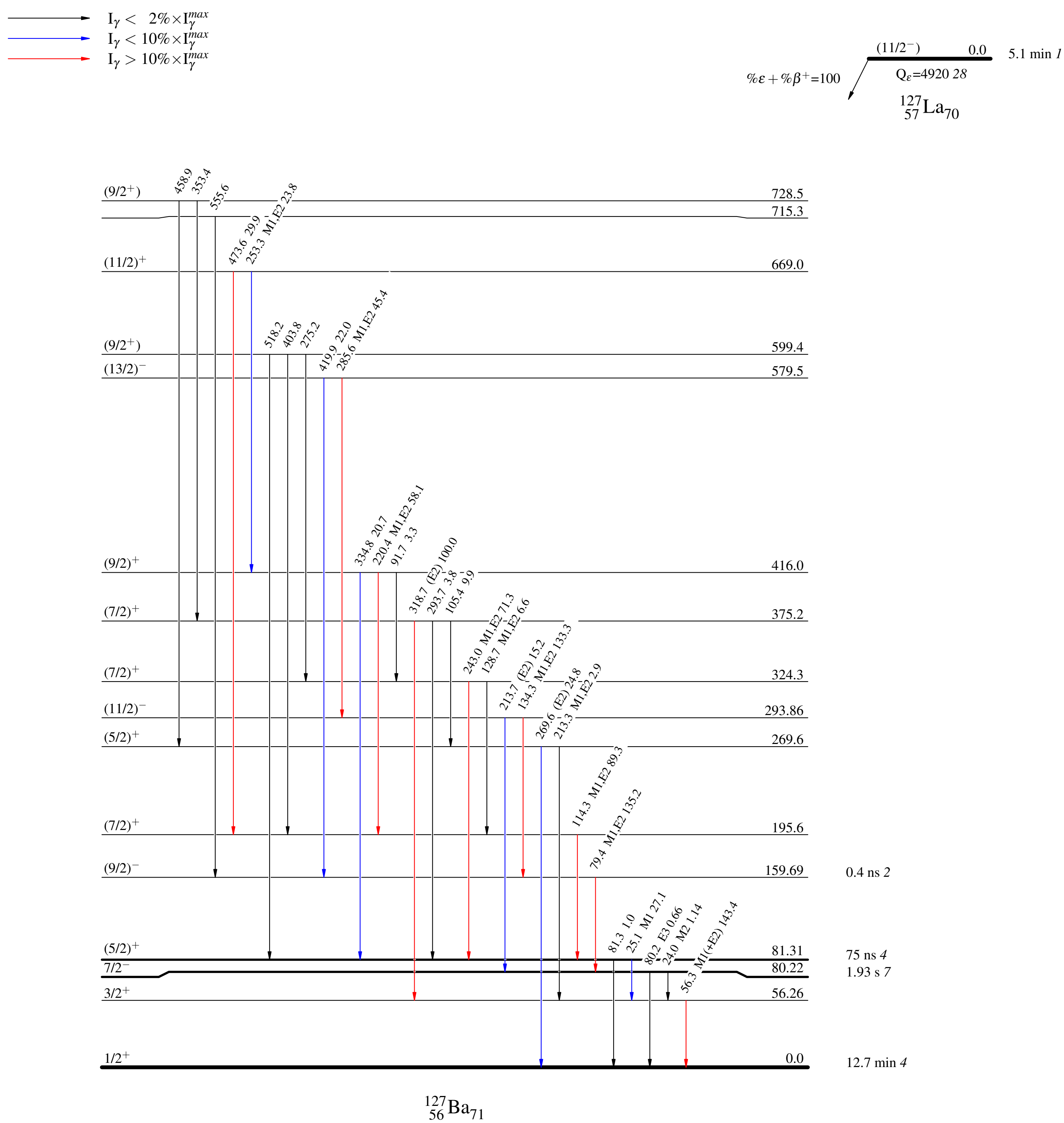
Intensities: Relative I_γ



$^{127}La\ \beta^+$ decay (5.1 min) 2002Sh01,1990GiZV

Decay Scheme (continued)

Intensities: Relative I_γ



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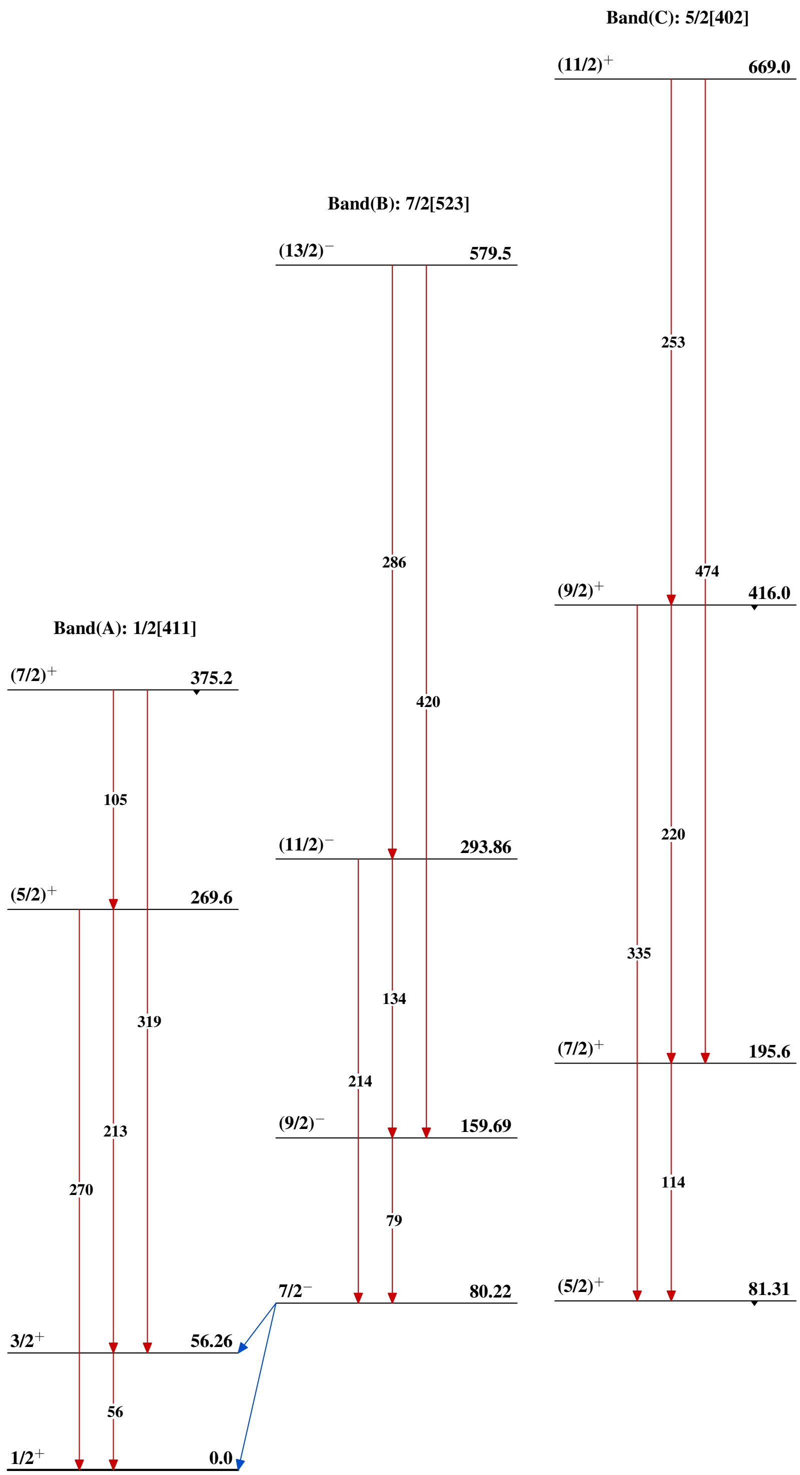

$^{127}_{56}Ba_{71}$