^{99}Sr β^- decay 1985Pe02

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 145, 25 (2017)	1-Jul-2017

Parent: ^{99}Sr: E=0.0; $J^\pi=3/2^+$; $T_{1/2}=269$ ms *1*; Q(β^-)=8128 *8*; %β^- decay=100.0
Measured Eγ, Iγ, $\gamma\gamma$, $\beta\gamma$.

^{99}Y Levels

E(level)	J^π†	E(level)	J^π†	E(level)	J^π†
0.0	$(5/2^+)$	817.60 *5*	$(7/2^-)$	1411.69 *9*	$(1/2^+,3/2,5/2)$
125.124 *25*	$(7/2^+)$	1009.00? *17*	$(3/2^+)$	1930.73 *11*	$(3/2^+,5/2^+)$
283.72 *5*	$(9/2^+)$	1011.76 *6*	$(1/2^+)$	2205.90 *8*	$(5/2^+)$
482.19 *21*	$(11/2^+)$	1119.60 *5*	$(3/2^+)$	2239.39 *10*	$(5/2^+)$
487.28 *4*	$(5/2^-)$	1191.63 *12*	$(5/2^+)$	2245.32 *9*	$(3/2^+,5/2^+)$
536.19 *4*	$(3/2^-)$	1197.94 *6*	$(1/2^+,3/2^+,5/2^+)$	2276.11 *9*	$(3/2^+,5/2^+)$
599.99 *9*		1213.07 *9*	$(5/2^+)$	2279.71 *13*	$(3/2^+,5/2^+)$
624.38 *5*	$(7/2^-)$	1220.65 *10*	$(7/2^+)$	2314.93 *16*	$(1/2^+,3/2^+,5/2^+)$
656.87 *4*	$(5/2^-)$	1402.09 *9*	$(3/2^+,5/2)$		

† Adopted values.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
(5813 *8*)	2314.93	1.7 *4*	5.64 *11*	av Eβ=2614.9 *39*
(5848 *8*)	2279.71	10.7 *17*	4.85 *7*	av Eβ=2631.9 *39*
(5852 *8*)	2276.11	4.6 *7*	5.22 *7*	av Eβ=2633.6 *39*
(5883 *8*)	2245.32	5.3 *8*	5.17 *7*	av Eβ=2648.5 *39*
(5889 *8*)	2239.39	10.0 *15*	4.89 *7*	av Eβ=2651.3 *39*
(5922 *8*)	2205.90	10.0 *15*	4.90 *7*	av Eβ=2667.5 *39*
(6197 *8*)	1930.73	3.7 *6*	5.42 *8*	av Eβ=2800.1 *39*
(6716 *8*)	1411.69	2.2 *4*	5.81 *8*	av Eβ=3050.1 *39*
(6726 *8*)	1402.09	2.2 *4*	5.81 *8*	av Eβ=3054.8 *39*
(6907‡ *8*)	1220.65			Iβ^-: 1.1 *2* from intensity balance is too large for a second-forbidden transition. Decay scheme is probably incomplete.
(6915 *8*)	1213.07			
(6930 *8*)	1197.94	4.2 *10*	5.59 *11*	av Eβ=3153.1 *39*
(6936 *8*)	1191.63	1.6 *3*	6.01 *9*	av Eβ=3156.2 *39*
(7008 *8*)	1119.60	1.4 *4*	6.09 *13*	av Eβ=3190.9 *39*
(7116 *8*)	1011.76	1.06 *18*	6.24 *8*	av Eβ=3242.8 *39*
(7119‡ *8*)	1009.00?	1.6 *3*	6.06 *9*	av Eβ=3244.1 *39*
(7310 *8*)	817.60	0.9 *3*	8.48[1u] *15*	av Eβ=3330.4 *39*
(7471 *8*)	656.87	1.1 *6*	6.32 *24*	av Eβ=3413.7 *39*
(7504 *8*)	624.38	1.27 *21*	8.41[1u] *8*	av Eβ=3423.8 *39*
(7528 *8*)	599.99	1.7 *3*	6.15 *8*	av Eβ=3441.1 *39*
(7592‡ *8*)	536.19	2.0 *14*	6.1 *3*	av Eβ=3471.8 *39*
(7641‡ *8*)	487.28	0.5 *4*	6.7 *4*	av Eβ=3495.4 *39*
(7646‡ *8*)	482.19			Iβ^-: 0.15 *5* from intensity balance is too large for a fourth-forbidden transition. Decay scheme is probably incomplete.
(7844‡ *8*)	283.72	0.5 *3*	11.2[2u] *3*	av Eβ=3596.8 *39*
(8003‡ *8*)	125.124	<1.2	>6.4	av Eβ=3669.7 *39*
(8128 *8*)	0.0	30 *9*	5.05 *14*	av Eβ=3729.9 *39*

Continued on next page (footnotes at end of table)

^{99}Sr β^- decay 1985Pe02 (continued)

β^- radiations (continued)

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

^{99}Sr β^- decay 1985Pe02 (continued)

$\gamma(^{99}Y)$

Iγ normalization: From Iβ(g.s.)=30% *9* and Σ(I(γ+ce) to g.s.)=70% *9*.
Absolute γ-ray inensities are values calculated using the decay-scheme normalization.

E_γ	I_γ[b]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[†a]	Comments
63.85 *8*	8.5 *5*	599.99		536.19	(3/2$^-$)			%Iγ=1.36 *20*.
120.58 *12*	11.4 *10*	656.87	(5/2$^-$)	536.19	(3/2$^-$)	[M1,E2]	0.32[&] *22*	α(K)=0.27 *18*; α(L)=0.040 *30*; α(M)=0.0069 *51* α(N)=8.8×10^{-4} *63*; α(O)=4.3×10^{-5} *26* %Iγ=1.8 *3*.
125.12 *3*	100 *6*	125.124	(7/2$^+$)	0.0	(5/2$^+$)	(M1)	0.0980	α(K)= 0.0866; α(L)=0.00989; α(M)=0.00170; α(N+..)=0.00029 α(K)=0.0862 *12*; α(L)=0.00989 *14*; α(M)=0.001694 *24* α(N)=0.000227 *4*; α(O)=1.550×10^{-5} *22* %Iγ=15.9 *22*.
158.62 *4*	10.7 *7*	283.72	(9/2$^+$)	125.124	(7/2$^+$)	(M1)	0.0517	α(K)= 0.0456; α(L)=0.00518; α(N+..)=0.00015 α(K)=0.0455 *7*; α(L)=0.00519 *8*; α(M)=0.000889 *13* α(N)=0.0001192 *17*; α(O)=8.17×10^{-6} *12* %Iγ=1.7 *3*.
160.73 *4*	4.6 *4*	817.60	(7/2$^-$)	656.87	(5/2$^-$)	[M1,E2]	0.119[&] *69*	α(K)=0.103 *59*; α(L)=0.0137 *87*; α(M)=0.0023 *15* α(N)=3.0×10^{-4} *19*; α(O)=1.66×10^{-5} *88* %Iγ=0.73 *12*.
169.56 *4*	3.2 *3*	656.87	(5/2$^-$)	487.28	(5/2$^-$)	[M1,E2]	0.099[&] *56*	α(K)= 0.09 *5*; α(L)= 0.011 *7*; α(N+..)=0.00031 *19* α(K)=0.086 *48*; α(L)=0.0113 *70*; α(M)=0.0019 *12* α(N)=2.5×10^{-4} *15*; α(O)=1.39×10^{-5} *71* %Iγ=0.51 *9*.
198.47 *20*	0.7 *2*	482.19	(11/2$^+$)	283.72	(9/2$^+$)	[E2]	0.0876	α(K)=0.0757 *11*; α(L)=0.00993 *15*; α(M)=0.001699 *25* α(N)=0.000219 *4*; α(O)=1.217×10^{-5} *18* %Iγ=0.11 *4*.
210.05 *20*	0.8 *1*	1402.09	(3/2$^+$,5/2)	1191.63	(5/2$^+$)			%Iγ=0.128 *24*.
283.68 *13*	1.0 *2*	283.72	(9/2$^+$)	0.0	(5/2$^+$)	[E2]	0.0248	α(K)=0.0216 *3*; α(L)=0.00265 *4*; α(M)=0.000453 *7* α(N)=5.93×10^{-5} *9*; α(O)=3.58×10^{-6} *5* %Iγ=0.16 *4*.
330.30 *11*	2.4 *3*	817.60	(7/2$^-$)	487.28	(5/2$^-$)	[M1,E2]	0.0113 *35*	α(K)=0.0099 *30*; α(L)=0.00116 *39*; α(M)=1.99×10^{-4} *67* α(N)=2.63×10^{-5} *86*; α(O)=1.70×10^{-6} *47* %Iγ=0.38 *7*.
340.81 *12*	1.3 *2*	624.38	(7/2$^-$)	283.72	(9/2$^+$)			%Iγ=0.21 *5*.
(357.2[†] *3*)	0.15 *6*	482.19	(11/2$^+$)	125.124	(7/2$^+$)	[E2]	0.01137	α(K)=0.00996 *15*; α(L)=0.001185 *17*; α(M)=0.000202 *3* α(N)=2.67×10^{-5} *4*; α(O)=1.674×10^{-6} *24* %Iγ=0.024 *10*. I_γ: from adopted branching ratios and Iγ(198γ)=0.7 *2*.
362.11 *5*	3.0 *2*	487.28	(5/2$^-$)	125.124	(7/2$^+$)			%Iγ=0.48 *7*.
(395[‡])	<0.8[‡]	1213.07	(5/2$^+$)	817.60	(7/2$^-$)			%Iγ=0.06 *7*.
462.70 *6*	6.3 *6*	1119.60	(3/2$^+$)	656.87	(5/2$^-$)			%Iγ=1.00 *17*.

^{99}Sr β^- decay 1985Pe02 (continued)

$\gamma(^{99}Y)$ (continued)

E_γ	I_γ[b]	E_i(level)	J_i^π	E_f	J_f^π	Comments
475.59 *5*	8.5 *6*	1011.76	$(1/2^+)$	536.19	$(3/2^-)$	%Iγ=1.36 *21*.
487.31 *5*	28.5 *18*	487.28	$(5/2^-)$	0.0	$(5/2^+)$	%Iγ=4.5 *7*.
499.26 *7*	4.8 *5*	624.38	$(7/2^-)$	125.124	$(7/2^+)$	%Iγ=0.77 *13*.
531.75 *6*	18.7 *15*	656.87	$(5/2^-)$	125.124	$(7/2^+)$	%Iγ=3.0 *5*.
533.9 *3*	4.3 *14*	817.60	$(7/2^-)$	283.72	$(9/2^+)$	%Iγ=0.69 *24*.
536.12 *5*	87[#] *7*	536.19	$(3/2^-)$	0.0	$(5/2^+)$	%Iγ=13.9 *21*.
556.4 *3*	0.8 *3*	1213.07	$(5/2^+)$	656.87	$(5/2^-)$	%Iγ=0.13 *5*.
583.43 *5*	6.0 *4*	1119.60	$(3/2^+)$	536.19	$(3/2^-)$	%Iγ=0.96 *14*.
(589[‡])	<0.5[‡]	1213.07	$(5/2^+)$	624.38	$(7/2^-)$	%Iγ=0.04 *4*.
624.32 *6*	4.6 *3*	624.38	$(7/2^-)$	0.0	$(5/2^+)$	%Iγ=0.73 *11*.
632.32 *19*	1.7 *2*	1119.60	$(3/2^+)$	487.28	$(5/2^-)$	%Iγ=0.27 *5*.
657.17 *16*	2.0 *2*	656.87	$(5/2^-)$	0.0	$(5/2^+)$	%Iγ=0.32 *6*.
661.58 *7*	5.5 *4*	1197.94	$(1/2^+,3/2^+,5/2^+)$	536.19	$(3/2^-)$	%Iγ=0.88 *14*.
676.87 *8*	2.2 *2*	1213.07	$(5/2^+)$	536.19	$(3/2^-)$	%Iγ=0.35 *6*.
(692[‡])	<0.6[‡]	817.60	$(7/2^-)$	125.124	$(7/2^+)$	%Iγ=0.05 *5*.
(726[‡])	<1.5[‡]	1213.07	$(5/2^+)$	487.28	$(5/2^-)$	%Iγ=0.12 *12*.
732.3 *3*	1.5 *2*	1930.73	$(3/2^+,5/2^+)$	1197.94	$(1/2^+,3/2^+,5/2^+)$	%Iγ=0.24 *5*.
740.1 *10*	0.9 *2*	1930.73	$(3/2^+,5/2^+)$	1191.63	$(5/2^+)$	%Iγ=0.14 *4*.
802.7 *3*	1.1 *2*	1402.09	$(3/2^+,5/2)$	599.99		%Iγ=0.18 *4*.
(817[‡])	<0.4[‡]	817.60	$(7/2^-)$	0.0	$(5/2^+)$	%Iγ=0.03 *4*.
875.44 *12*	3.3 *4*	1411.69	$(1/2^+,3/2,5/2)$	536.19	$(3/2^-)$	%Iγ=0.53 *10*.
922.0[c] *3*	0.9 *3*	1930.73	$(3/2^+,5/2^+)$	1009.00?	$(3/2^+)$	%Iγ=0.14 *6*.
936.93 *11*	2.8 *3*	1220.65	$(7/2^+)$	283.72	$(9/2^+)$	%Iγ=0.45 *8*.
1008.00 *20*	3.1 *6*	2205.90	$(5/2^+)$	1197.94	$(1/2^+,3/2^+,5/2^+)$	%Iγ=0.49 *12*.
1009.12[c] *20*	10.8 *8*	1009.00?	$(3/2^+)$	0.0	$(5/2^+)$	%Iγ=1.7 *3*.
1041.7 *4*	1.0 *3*	2239.39	$(5/2^+)$	1197.94	$(1/2^+,3/2^+,5/2^+)$	%Iγ=0.16 *6*.
1047.35 *8*	26.1 *18*	2245.32	$(3/2^+,5/2^+)$	1197.94	$(1/2^+,3/2^+,5/2^+)$	%Iγ=4.2 *6*.
1066.48 *20*	8.4 *8*	1191.63	$(5/2^+)$	125.124	$(7/2^+)$	%Iγ=1.34 *22*.
(1088[‡])	<1.0[‡]	1213.07	$(5/2^+)$	125.124	$(7/2^+)$	%Iγ=0.08 *8*.
1095.52 *15*	3.8 *4*	1220.65	$(7/2^+)$	125.124	$(7/2^+)$	%Iγ=0.61 *11*.
1117.1 *3*	4.6 *4*	2314.93	$(1/2^+,3/2^+,5/2^+)$	1197.94	$(1/2^+,3/2^+,5/2^+)$	%Iγ=0.73 *12*.
(1119[‡])	<1.0[‡]	1119.60	$(3/2^+)$	0.0	$(5/2^+)$	%Iγ=0.08 *8*.
1191.28 *20*	3.5 *5*	1191.63	$(5/2^+)$	0.0	$(5/2^+)$	%Iγ=0.56 *11*.
1195.28 *18*	6.1 *13*	2314.93	$(1/2^+,3/2^+,5/2^+)$	1119.60	$(3/2^+)$	%Iγ=0.97 *24*.
1198.12 *8*	57 *4*	1197.94	$(1/2^+,3/2^+,5/2^+)$	0.0	$(5/2^+)$	%Iγ=9.1 *14*.
(1213[‡])	<1.0[‡]	1213.07	$(5/2^+)$	0.0	$(5/2^+)$	%Iγ=0.08 *8*.
1264.62 *22*	1.9 *3*	2276.11	$(3/2^+,5/2^+)$	1011.76	$(1/2^+)$	%Iγ=0.30 *7*.
1276.95 *13*	4.5 *5*	1402.09	$(3/2^+,5/2)$	125.124	$(7/2^+)$	%Iγ=0.72 *13*.
1388.44 *23*	3.6 *6*	2205.90	$(5/2^+)$	817.60	$(7/2^-)$	%Iγ=0.57 *13*.
1402.16 *15*	7.4 *8*	1402.09	$(3/2^+,5/2)$	0.0	$(5/2^+)$	%Iγ=1.18 *20*.
1411.74 *12*	10.1 *8*	1411.69	$(1/2^+,3/2,5/2)$	0.0	$(5/2^+)$	%Iγ=1.61 *25*.

$\gamma(^{99}Y)$ (continued)

E_γ	I_γ[b]	E_i(level)	J_i^π	E_f	J_f^π	Comments
1421.54 *18*	3.0 *4*	2239.39	$(5/2^+)$	817.60	$(7/2^-)$	%Iγ=0.48 *9*.
1443.44 *18*	4.4 *5*	1930.73	$(3/2^+,5/2^+)$	487.28	$(5/2^-)$	%Iγ=0.70 *13*.
1548.89 *18*	5.2 *7*	2205.90	$(5/2^+)$	656.87	$(5/2^-)$	%Iγ=0.83 *16*.
1581.0 *4*	2.3 *3*	2205.90	$(5/2^+)$	624.38	$(7/2^-)$	%Iγ=0.37 *7*.
1582.6 *3*	3.0 *3*	2239.39	$(5/2^+)$	656.87	$(5/2^-)$	%Iγ=0.48 *8*.
1619.23 *13*	9.8 *9*	2276.11	$(3/2^+,5/2^+)$	656.87	$(5/2^-)$	%Iγ=1.6 *25*.
1623.0 *3*	2.0 *4*	2279.71	$(3/2^+,5/2^+)$	656.87	$(5/2^-)$	%Iγ=0.32 *8*.
1669.8 *3*	2.9 *7*	2205.90	$(5/2^+)$	536.19	$(3/2^-)$	%Iγ=0.46 *13*.
1703.28 *18*	2.9 *3*	2239.39	$(5/2^+)$	536.19	$(3/2^-)$	%Iγ=0.46 *8*.
1718.84 *16*	5.6 *6*	2205.90	$(5/2^+)$	487.28	$(5/2^-)$	%Iγ=0.89 *15*.
1739.82 *15*	9.5 *8*	2276.11	$(3/2^+,5/2^+)$	536.19	$(3/2^-)$	%Iγ=1.51 *24*.
1743.6[@] *4*	7[@] *3*	2279.71	$(3/2^+,5/2^+)$	536.19	$(3/2^-)$	%Iγ=1.1 *5*.
1758.14 *17*	4.6 *4*	2245.32	$(3/2^+,5/2^+)$	487.28	$(5/2^-)$	%Iγ=0.73 *12*.
1793.0 *4*	4.4 *9*	2279.71	$(3/2^+,5/2^+)$	487.28	$(5/2^-)$	%Iγ=0.70 *17*.
1805.72 *24*	6.5 *8*	1930.73	$(3/2^+,5/2^+)$	125.124	$(7/2^+)$	%Iγ=1.04 *19*.
1930.68 *20*	9.3 *8*	1930.73	$(3/2^+,5/2^+)$	0.0	$(5/2^+)$	%Iγ=1.48 *24*.
2080.38 *20*	35 *3*	2205.90	$(5/2^+)$	125.124	$(7/2^+)$	%Iγ=5.6 *9*.
2114.40 *21*	6.5 *7*	2239.39	$(5/2^+)$	125.124	$(7/2^+)$	%Iγ=1.04 *18*.
2154.6 *3*	6.0 *10*	2279.71	$(3/2^+,5/2^+)$	125.124	$(7/2^+)$	%Iγ=0.96 *21*.
2206.1 *3*	4.3 *5*	2205.90	$(5/2^+)$	0.0	$(5/2^+)$	%Iγ=0.69 *12*.
2239.28 *20*	46 *3*	2239.39	$(5/2^+)$	0.0	$(5/2^+)$	%Iγ=7.3 *11*.
2245.3 *3*	2.2 *5*	2245.32	$(3/2^+,5/2^+)$	0.0	$(5/2^+)$	%Iγ=0.35 *10*.
2276.00 *22*	7.3 *15*	2276.11	$(3/2^+,5/2^+)$	0.0	$(5/2^+)$	%Iγ=1.2 *3*.
2279.42 *20*	47 *3*	2279.71	$(3/2^+,5/2^+)$	0.0	$(5/2^+)$	%Iγ=7.5 *11*.

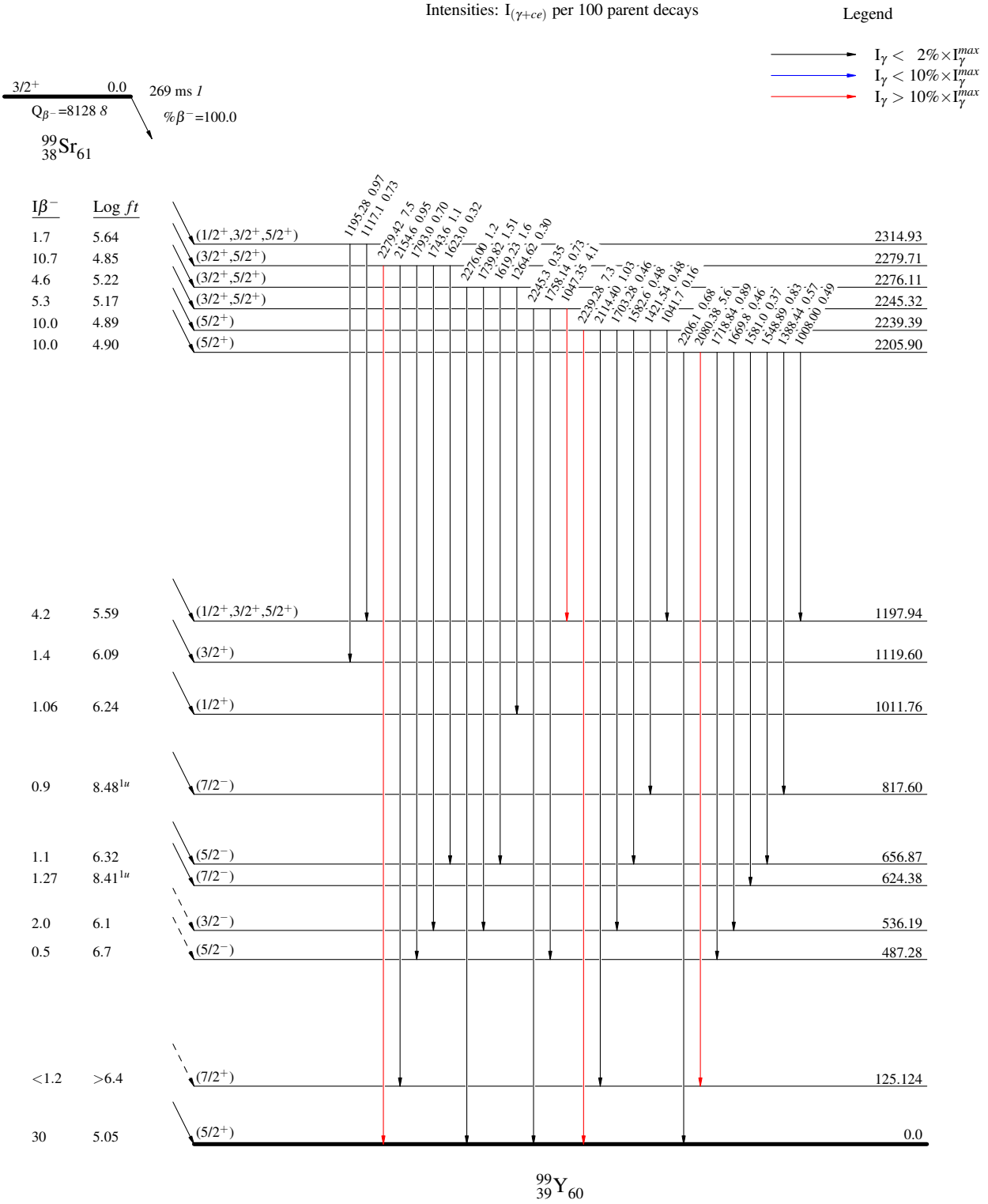
† From adopted gammas.
‡ Not observed. Set only upper limit on Iγ.
# Corrected for contribution from ^{99}Y decay.
@ From measurement in coincidence with 536γ. 1743γ contains a long-lived contamination.
& Average of M1 and E2.
[a] Additional information 1.
[b] For absolute intensity per 100 decays, multiply by 0.159 *21*.
[c] Placement of transition in the level scheme is uncertain.

$^{99}_{39}Y_{60}$-5

^{99}Sr β^- decay 1985Pe02

Decay Scheme

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



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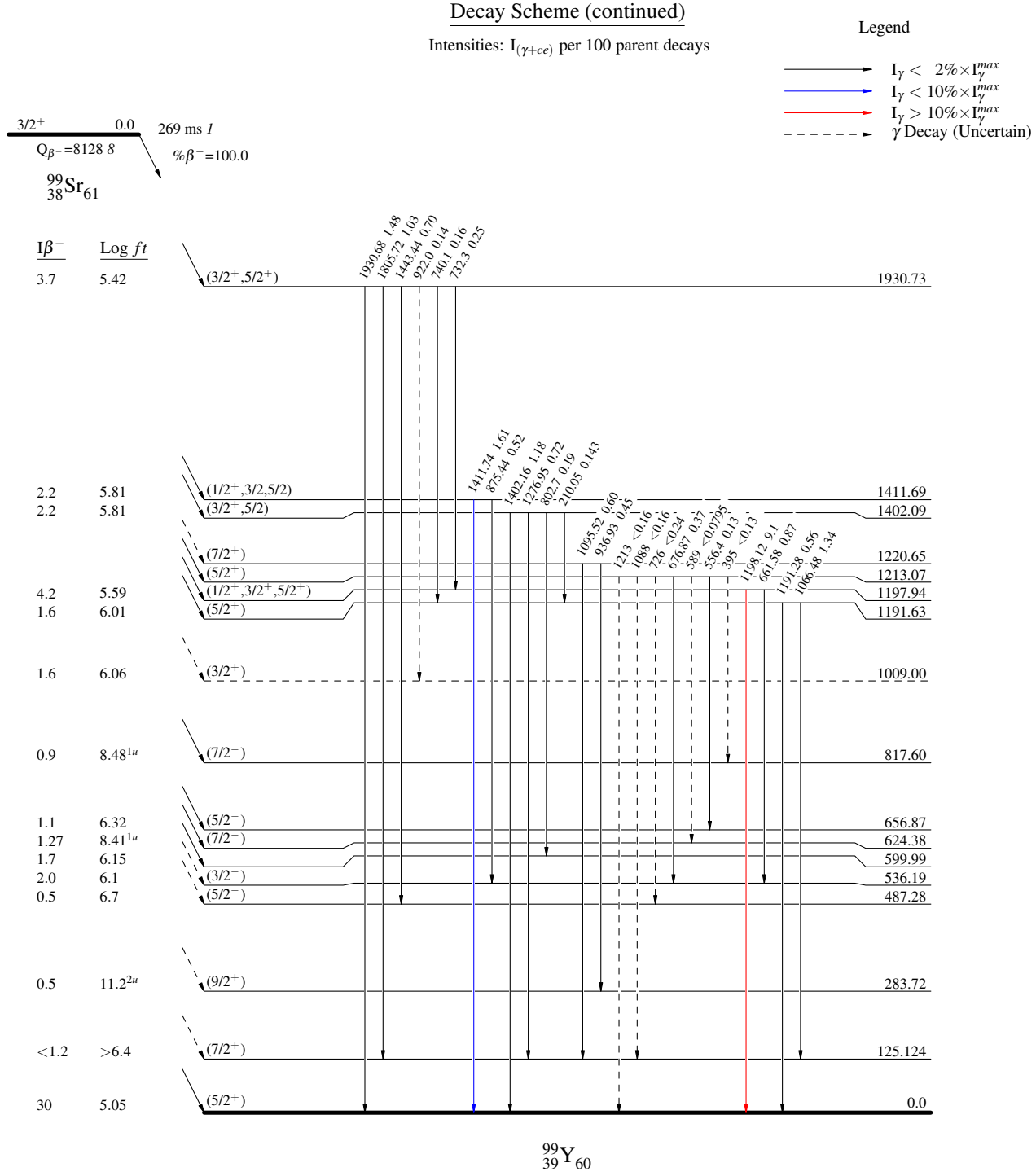
Decay Scheme (continued)

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



^{99}Sr β^- decay 1985Pe02

Decay Scheme (continued)

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