^{69}Se ε decay 1988De28,1977Ma24

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	C. D. Nesaraja	NDS 115, 1 (2014)	31-Jul-2013

Parent: ^{69}Se: E=0.0; J$^{\pi}$=1/2$^-$; $T_{1/2}$=27.4 s *2*; Q(ε)=6680 *30*; %ε+%β^+ decay=100.0

1988De28: Measured ε delayed p, γ, and β^+, Eγ, Iγ, γγ and pγ coincidences using the recoil transport helium jet technique. Gammas detected by Ge(Li)counters with 20% efficiency. Emitted protons detected with the Si(Au) surface barrier counter. FWHM typically 18 keV for composite α source of ^{239}Pu,^{241}Am, ^{244}Cm. Authors assume that all the observed transitions are Gamow-Teller and conclude that the sum over all of them over an energy range of about 6.5 MeV is equal to 0.23 or 7.7% of the sum rule limit of 3.

1977Ma24: Measured ε delayed p, γ, and β^+ spectra, Eγ, Iγ, and γγ, β^+γ, pγ, pX-ray and γX-ray coincidences and α(K)exp.

Other: 1973Pr12.

^{69}As Levels

E(level)†	J$^{\pi}$‡	E(level)†	E(level)†	E(level)†
0.0	5/2$^-$	2872.9 *10*	5161 *33*	5879 *33*
98.00 *4*	3/2$^-$	3031.3 *4*	5228 *33*	5923 *33*
164.51 *6*	1/2$^-$,3/2$^-$	3144.5 *8*	5273 *33*	5950 *33*
497.30 *12*		3220.1 *7*	5314 *33*	5994 *33*
789.41 *12*	1/2$^-$,3/2$^-$	3346.6 *4*	5369 *33*	6030 *33*
933.62 *19*		3394.6 *5*	5416 *33*	6081 *33*
1075.96 *18*		3468.9 *7*	5452 *33*	6136 *33*
1690.8 *3*		3651.6 *10*	5480 *33*	6197 *33*
1744.2 *6*		3999.6 *7*	5533 *33*	6239 *33*
1864.9 *3*		4649 *33*	5570 *33*	6273 *33*
2119.1 *7*		4747 *33*	5606 *33*	6322 *33*
2149.9 *5*		4871 *33*	5657 *33*	6387 *33*
2184.0 *10*		4935 *33*	5695 *33*	6485 *33*
2346.7 *4*		4984 *33*	5741 *33*	
2409.14 *24*		5050 *33*	5800 *33*	
2533.0 *4*		5102 *33*	5841 *33*	

† From a least-squares fit to the Eγ data. Levels at 4649 and above were deduced by 1988De28 from measurements of proton energy emitted from these levels and the assumption that the proton feeding is essentially (98.6 %) to the ground state of ^{68}Ge. A proton separation energy of 3391 *30* keV was adopted by these authors for ^{69}As and a recoil correction was applied. The present S(p) value is 3420 *20*.

‡ From Adopted Levels.

ε,β^+ radiations

E(decay)	E(level)	Iε@	Log *ft*	I(ε+β^+)@	Comments
(2.0×10^2 *5*)	6485	2.0×10^{-4} *4*	5.4 *3*	2.0×10^{-4}# *4*	εK=0.870 *4*; εL=0.109 *4*; εM+=0.0211 *8*
(2.9×10^2 *5*)	6387	3.0×10^{-4} *7*	5.62 *18*	3.0×10^{-4}# *7*	εK=0.8742 *15*; εL=0.1055 *13*; εM+=0.0203 *3*
(3.6×10^2 *5*)	6322	2.0×10^{-4} *5*	5.97 *17*	2.0×10^{-4}# *5*	εK=0.8757 *10*; εL=0.1043 *8*; εM+=0.02003 *18*
(4.1×10^2 *5*)	6273	5.0×10^{-4} *10*	5.69 *14*	5.0×10^{-4}# *10*	εK=0.8765 *8*; εL=0.1036 *6*; εM+=0.01989 *13*
(4.4×10^2 *5*)	6239	2.1×10^{-4} *5*	6.14 *14*	2.1×10^{-4}# *5*	εK=0.8769 *6*; εL=0.1033 *5*; εM+=0.01981 *11*
(4.8×10^2 *5*)	6197	7.0×10^{-4} *20*	5.69 *16*	7.0×10^{-4}# *20*	εK=0.8774 *5*; εL=0.1029 *4*; εM+=0.01973 *9*
(5.4×10^2 *5*)	6136	6.0×10^{-4} *10*	5.87 *11*	6.0×10^{-4}# *10*	εK=0.8779 *4*; εL=0.1025 *4*; εM+=0.01963 *7*
(6.0×10^2 *5*)	6081	1.0×10^{-3} *2*	5.73 *11*	1.0×10^{-3}# *2*	εK=0.8783 *4*; εL=0.1021 *3*; εM+=0.01956 *6*
(6.5×10^2 *5*)	6030	5.0×10^{-4} *10*	6.10 *11*	5.0×10^{-4}# *10*	εK=0.8786 *3*; εL=0.10188 *22*; εM+=0.01951 *5*

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^{69}Se ε decay 1988De28,1977Ma24 (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ †@	Iε@	Log *ft*	I(ε+β^+)@	Comments
(6.9×10^2 *5*)	5994		6.0×10^{-4} *10*	6.07 *10*	6.0×10^{-4}# *10*	εK=0.8788 *3*; εL=0.10173 *19*; εM+=0.01947 *5*
(7.3×10^2 *5*)	5950		6.0×10^{-4} *10*	6.13 *10*	6.0×10^{-4}# *10*	εK=0.8790 *2*; εL=0.10157 *17*; εM+=0.01944 *4*
(7.6×10^2 *5*)	5923		4.0×10^{-4} *10*	6.33 *13*	4.0×10^{-4}# *10*	εK=0.8791 *2*; εL=0.10147 *16*; εM+=0.01942 *4*
(8.0×10^2 *5*)	5879		1.7×10^{-3} *4*	5.76 *12*	1.7×10^{-3}# *4*	εK=0.8793 *2*; εL=0.10134 *14*; εM+=0.01939 *3*
(8.4×10^2 *5*)	5841		1.7×10^{-3} *4*	5.80 *12*	1.7×10^{-3}# *4*	εK=0.8794 *2*; εL=0.10123 *13*; εM+=0.01936 *3*
(8.8×10^2 *5*)	5800		2.4×10^{-3} *5*	5.69 *11*	2.4×10^{-3}# *5*	εK=0.8795 *2*; εL=0.10113 *12*; εM+=0.019341 *25*
(9.4×10^2 *5*)	5741		1.4×10^{-3} *3*	5.98 *11*	1.4×10^{-3}# *3*	εK=0.8797 *2*; εL=0.1010 *1*; εM+=0.019312 *22*
(9.9×10^2 *5*)	5695		7.0×10^{-4} *20*	6.32 *13*	7.0×10^{-4}# *20*	εK=0.8798 *1*; εL=0.10090 *9*; εM+=0.019291 *20*
(1.02×10^3 *5*)	5657		2.6×10^{-3} *6*	5.79 *11*	2.6×10^{-3}# *6*	εK=0.8799 *1*; εL=0.10083 *9*; εM+=0.01928 *2*
(1.07×10^3 *5*)	5606		5.0×10^{-4} *10*	6.55 *10*	5.0×10^{-4}# *10*	εK=0.8800; εL=0.10075 *8*; εM+=0.01926 *2*
(1.11×10^3 *5*)	5570		1.6×10^{-3} *4*	6.07 *12*	1.6×10^{-3}# *4*	εK=0.8800 *3*; εL=0.1007 *1*; εM+=0.019244 *21*
(1.15×10^3 *5*)	5533		1.7×10^{-3} *4*	6.07 *11*	1.7×10^{-3}# *4*	εK=0.8799 *7*; εL=0.10061 *15*; εM+=0.01923 *3*
(1.20×10^3 *5*)	5480	1.5×10^{-6} *23*	0.0011 *2*	6.30 *9*	1.1×10^{-3}# *2*	av Eβ=82 *19*; εK=0.8790 *18*; εL=0.1004 *3*; εM+=0.01919 *6*
(1.23×10^3 *5*)	5452	3.×10^{-6} *4*	0.0012 *3*	6.28 *12*	1.2×10^{-3}# *3*	av Eβ=93 *19*; εK=0.878 *3*; εL=0.1003 *4*; εM+=0.01916 *7*
(1.26×10^3 *5*)	5416	5.×10^{-6} *5*	0.0011 *2*	6.35 *9*	1.1×10^{-3}# *2*	av Eβ=109 *19*; εK=0.876 *4*; εL=0.1000 *6*; εM+=0.01911 *10*
(1.31×10^3 *5*)	5369	1.0×10^{-5} *7*	0.00097 *22*	6.43 *11*	9.8×10^{-4}# *22*	av Eβ=128 *19*; εK=0.872 *7*; εL=0.0994 *8*; εM+=0.01900 *15*
(1.37×10^3 *5*)	5314	2.9×10^{-5} *17*	0.0015 *3*	6.29 *10*	1.5×10^{-3}# *3*	av Eβ=152 *19*; εK=0.864 *10*; εL=0.0985 *12*; εM+=0.01881 *22*
(1.41×10^3 *5*)	5273	2.8×10^{-5} *15*	0.00095 *19*	6.50 *10*	9.8×10^{-4}# *20*	av Eβ=169 *19*; εK=0.855 *13*; εL=0.0974 *15*; εM+=0.0186 *3*
(1.45×10^3 *5*)	5228	0.00016 *8*	0.0036 *8*	5.95 *10*	3.8×10^{-3}# *8*	av Eβ=188 *19*; εK=0.842 *16*; εL=0.0960 *19*; εM+=0.0183 *4*
(1.52×10^3 *5*)	5161	0.00017 *7*	0.0022 *5*	6.20 *10*	2.4×10^{-3}# *5*	av Eβ=216 *19*; εK=0.818 *21*; εL=0.0931 *24*; εM+=0.0178 *5*
(1.58×10^3 *5*)	5102	0.00018 *6*	0.0015 *4*	6.40 *11*	1.7×10^{-3}# *4*	av Eβ=241 *19*; εK=0.790 *25*; εL=0.090 *3*; εM+=0.0172 *6*
(1.63×10^3 *5*)	5050	0.00015 *4*	0.00095 *18*	6.63 *9*	1.1×10^{-3}# *2*	av Eβ=263 *19*; εK=0.76 *3*; εL=0.086 *4*; εM+=0.0165 *7*
(1.70×10^3 *5*)	4984	0.00019 *5*	0.00081 *17*	6.73 *10*	1.0×10^{-3}# *2*	av Eβ=292 *20*; εK=0.72 *4*; εL=0.082 *4*; εM+=0.0156 *7*
(1.75×10^3 *5*)	4935	0.00056 *16*	0.0019 *5*	6.38 *12*	2.5×10^{-3}# *6*	av Eβ=313 *20*; εK=0.68 *4*; εL=0.078 *4*; εM+=0.0148 *8*
(1.81×10^3 *5*)	4871	0.00027 *8*	0.00070 *18*	6.86 *12*	9.7×10^{-4}# *24*	av Eβ=340 *20*; εK=0.63 *4*; εL=0.072 *4*; εM+=0.0138 *8*
(1.93×10^3 *5*)	4747	0.00089 *25*	0.0014 *4*	6.61 *13*	2.3×10^{-3}# *6*	av Eβ=394 *20*; εK=0.54 *4*; εL=0.061 *4*; εM+=0.0117 *8*
(2.03×10^3 *5*)	4649	0.0011 *3*	0.0012 *3*	6.72 *11*	2.3×10^{-3}# *5*	av Eβ=437 *20*; εK=0.47 *4*; εL=0.053 *4*; εM+=0.0101 *8*
(2.68×10^3 *3*)	3999.6	0.21 *4*	0.048 *10*	5.36 *9*	0.26‡ *5*	av Eβ=728 *14*; εK=0.163 *8*; εL=0.0184 *9*; εM+=0.00352 *17*
(3.03×10^3 *3*)	3651.6	0.10 *3*	0.012 *3*	6.06 *13*	0.11‡ *3*	av Eβ=888 *14*; εK=0.098 *5*; εL=0.0111 *5*; εM+=0.00212 *9*
(3.21×10^3 *3*)	3468.9	0.19 *4*	0.018 *4*	5.94 *9*	0.21‡ *4*	av Eβ=973 *14*; εK=0.077 *3*; εL=0.0087 *4*; εM+=0.00166 *7*
(3.29×10^3 *3*)	3394.6	0.40 *7*	0.034 *7*	5.69 *9*	0.43‡ *8*	av Eβ=1007 *14*; εK=0.070 *3*; εL=0.0079 *3*;

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^{69}Se ε decay 1988De28,1977Ma24 (continued)

ϵ,β+ radiations (continued)

E(decay)	E(level)	Iβ+ †@	Iε@	Log ft	I(ε+β+)@	Comments
						εM+=0.00151 *6*
(3.33×10³ *3*)	3346.6	0.49 *6*	0.040 *5*	5.63 *7*	0.53‡ *7*	av Eβ=1029 *14*; εK=0.0662 *25*; εL=0.0075 *3*; εM+=0.00143 *6*
(3.46×10³ *3*)	3220.1	0.28 *7*	0.019 *5*	5.98 *11*	0.30‡ *7*	av Eβ=1089 *14*; εK=0.0569 *21*; εL=0.00643 *23*; εM+=0.00123 *5*
(3.54×10³ *3*)	3144.5	0.89 *13*	0.056 *9*	5.54 *7*	0.95‡ *14*	av Eβ=1124 *14*; εK=0.0521 *19*; εL=0.00589 *21*; εM+=0.00112 *4*
(3.65×10³ *3*)	3031.3	0.94 *18*	0.052 *10*	5.60 *9*	0.99‡ *19*	av Eβ=1177 *15*; εK=0.0459 *16*; εL=0.00519 *18*; εM+=0.00099 *4*
(3.81×10³ *3*)	2872.9	1.14 *18*	0.052 *9*	5.63 *8*	1.19‡ *19*	av Eβ=1252 *15*; εK=0.0388 *13*; εL=0.00438 *14*; εM+=0.00084 *3*
(4.15×10³ *3*)	2533.0	2.1 *3*	0.069 *10*	5.58 *7*	2.2‡ *3*	av Eβ=1413 *15*; εK=0.0278 *8*; εL=0.00314 *9*; εM+=0.000598 *17*
(4.27×10³ *3*)	2409.14	6.1 *7*	0.18 *2*	5.20 *6*	6.3‡ *7*	av Eβ=1471 *15*; εK=0.0248 *7*; εL=0.00280 *8*; εM+=0.000534 *15*
(4.33×10³ *3*)	2346.7	1.7 *3*	0.045 *8*	5.81 *8*	1.7‡ *3*	av Eβ=1501 *15*; εK=0.0235 *7*; εL=0.00265 *8*; εM+=0.000505 *14*
(4.50×10³ *3*)	2184.0	0.33 *9*	0.0079 *21*	6.60 *12*	0.34‡ *9*	av Eβ=1579 *15*; εK=0.0204 *6*; εL=0.00230 *6*; εM+=0.000439 *12*
(4.53×10³ *3*)	2149.9	3.3 *4*	0.076 *9*	5.62 *6*	3.4‡ *4*	av Eβ=1595 *15*; εK=0.0198 *5*; εL=0.00224 *6*; εM+=0.000427 *11*
(4.56×10³ *3*)	2119.1	1.7 *9*	0.037 *20*	5.94 *23*	1.7‡ *9*	av Eβ=1610 *15*; εK=0.0193 *5*; εL=0.00218 *6*; εM+=0.000416 *11*
(4.82×10³ *3*)	1864.9	7.9 *9*	0.14 *2*	5.40 *6*	8.0‡ *9*	av Eβ=1732 *15*; εK=0.0158 *4*; εL=0.00178 *5*; εM+=0.000340 *8*
(4.94×10³ *3*)	1744.2	1.8 *5*	0.029 *8*	6.11 *13*	1.8‡ *5*	av Eβ=1790 *15*; εK=0.0144 *4*; εL=0.00162 *4*; εM+=0.000310 *7*
(4.99×10³ *3*)	1690.8	3.1 *4*	0.050 *6*	5.88 *6*	3.2‡ *4*	av Eβ=1815 *15*; εK=0.0138 *4*; εL=0.00156 *4*; εM+=0.000298 *7*
(5.60×10³ *3*)	1075.96	0.9 *9*	0.009 *9*	6.7 *5*	0.9‡ *9*	av Eβ=2112 *15*; εK=0.00906 *18*; εL=0.001022 *20*; εM+=0.000195 *4*
(5.75×10³ *3*)	933.62	0.9 *5*	0.008 *5*	6.78 *25*	0.9‡ *5*	av Eβ=2181 *15*; εK=0.00828 *16*; εL=0.000934 *18*; εM+=0.000178 *4*
(5.89×10³ *3*)	789.41	22.7 *25*	0.197 *22*	5.44 *5*	22.9‡ *25*	av Eβ=2251 *15*; εK=0.00758 *14*; εL=0.000855 *16*; εM+=0.000163 *3* E(decay): 5006 *75* from the end point of the β+ spectrum in coincidence with the 691 γ (1977Ma24).
(6.18×10³ *3*)	497.30	0.8 *7*	0.006 *5*	7.0 *4*	0.8‡ *7*	av Eβ=2392 *15*; εK=0.00639 *11*; εL=0.000720 *13*; εM+=0.0001373 *2*
(6.52×10³ *3*)	164.51	32 *4*	0.19 *2*	5.53 *6*	32‡ *4*	av Eβ=2554 *15*; εK=0.00532 *9*; εL=0.000599 *10*; εM+=0.0001142 *1*
(6.58×10³ *3*)	98.00	9 *7*	0.05 *4*	6.1 *4*	9‡ *7*	av Eβ=2587 *15*; εK=0.00513 *9*; εL=0.000578 *10*; εM+=0.0001103 *1*

† From intensity balance.

‡ From intensity imbalances. No direct measurements of the g.s. branch have been made. From a measurement of the annihilation radiation, 1977Ma24 deduce a g.s. branch of 19% *12*, and 1988De28 using their revised decay scheme and the annihilation measurement of 1977Ma24 deduce a g.s. branch of 22% *10*. Both authors assume J^π(^{69}Se g.s.)=3/2⁻. See 1989Ar13 for a discussion of this feeding. With J^π(^{69}Se g.s.) established as 1/2⁻, any decay to the 5/2⁻ g.s. will be negligible (an expected log *ft*

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^{69}Se ε decay **1988De28,1977Ma24 (continued)**

ε,β^+ radiations (continued)

> 12.8 gives $I_{\varepsilon+\beta_+}$<3 x10^{-6} %. The evaluator has revised the decay scheme so that the g.s. feeding is zero. The Iγ normalization now is 0.85 *5* compared with 0.78 *10* for a g.s. branch of 22% *10*, and the log *ft* values for the excited levels are slightly smaller. No changes in J^π assignments for the ^{69}As levels are necessary.

[#] From the delayed proton spectrum (1988De28).

[@] Absolute intensity per 100 decays.

$\gamma(^{69}As)$

Iγ normalization: From ΣI(γ+ce))=0.

E_γ [†]	I_γ [†a]	E_i(level)	J^π_i	E_f	J^π_f	Mult.	α [&]	Comments
66.50 *5*	37.6 *18*	164.51	1/2⁻,3/2⁻	98.00	3/2⁻	(M1) [@]	0.36 *8*	α(K)exp=0.32 *7*
97.99 *4*	100	98.00	3/2⁻	0.0	5/2⁻	(M1) [@]	0.07 *6*	α(K)exp=0.06 *5*
291.9 *3*	2.7 *3*	789.41	1/2⁻,3/2⁻	497.30				
332.7 *2*	1.6 *2*	497.30		164.51	1/2⁻,3/2⁻			
399.3 *2*	5.3 *3*	497.30		98.00	3/2⁻			I_γ: taken from 1977Ma24; contaminated γ in 1998De28.
497.5 *3*	1.6 *2*	497.30		0.0	5/2⁻			
625.0 *3*	3.8 *4*	789.41	1/2⁻,3/2⁻	164.51	1/2⁻,3/2⁻			
ˣ637.1 [‡] *2*	3.2 [‡] *5*							
691.5 *2*	25.5 *19*	789.41	1/2⁻,3/2⁻	98.00	3/2⁻			
789.4 *2*	6.1 *8*	789.41	1/2⁻,3/2⁻	0.0	5/2⁻			
835.7 *2*	2.7 *4*	933.62		98.00	3/2⁻			
911.2 *4*	1.6 *8*	1075.96		164.51	1/2⁻,3/2⁻			
978.1 *2*	2.3 *5*	1075.96		98.00	3/2⁻			
1075.8 *10*	4.4 *6*	1864.9		789.41	1/2⁻,3/2⁻			
ˣ1202.3 [#] *10*	0.4 [#] *1*							
1329.6 *9*	1.5 *10*	2119.1		789.41	1/2⁻,3/2⁻			
1360.9 *8*	1.7 *2*	2149.9		789.41	1/2⁻,3/2⁻			
ˣ1394.5 [‡] *7*	1.4 [‡] *2*							
1456.9 *5*	1.7 *3*	2533.0		1075.96				
1475.7 *3*	1.7 *3*	2409.14		933.62				
1526.5 [‡] *5*	1.2 [‡] *3*	1690.8		164.51	1/2⁻,3/2⁻			
1557.2 *4*	1.2 *2*	2346.7		789.41	1/2⁻,3/2⁻			
ˣ1562.9 *7*	0.4 *1*							
1592.6 *4*	1.2 *2*	1690.8		98.00	3/2⁻			
1620.0 *15*	2.4 *4*	2409.14		789.41	1/2⁻,3/2⁻			
1646.4 *10*	1.4 *5*	1744.2		98.00	3/2⁻			
1652.9 *8*	1.4 *3*	2149.9		497.30				
1690.9 *6*	1.4 *1*	1690.8		0.0	5/2⁻			
1700.2 *4*	1.7 *4*	1864.9		164.51	1/2⁻,3/2⁻			
1744.1 *7*	0.7 *2*	1744.2		0.0	5/2⁻			
1766.8 *4*	2.6 *4*	1864.9		98.00	3/2⁻			
1849.4 *8*	0.8 *2*	2346.7		497.30				
1866.0 *10*	0.7 *1*	1864.9		0.0	5/2⁻			
1912.3 *6*	1.2 *4*	2409.14		497.30				
1956.2 *7*	0.7 *2*	3031.3		1075.96				
2051.4 *7*	0.9 *2*	2149.9		98.00	3/2⁻			
2069.1 *10*	0.4 *1*	3144.5		1075.96				
2086.0 *10*	0.4 *1*	2184.0		98.00	3/2⁻			
2119.2 *10*	0.5 *1*	2119.1		0.0	5/2⁻			
2244.6 *5*	0.8 *2*	2409.14		164.51	1/2⁻,3/2⁻			

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^{69}Se ε decay 1988De28,1977Ma24 (continued)

γ(^{69}As) (continued)

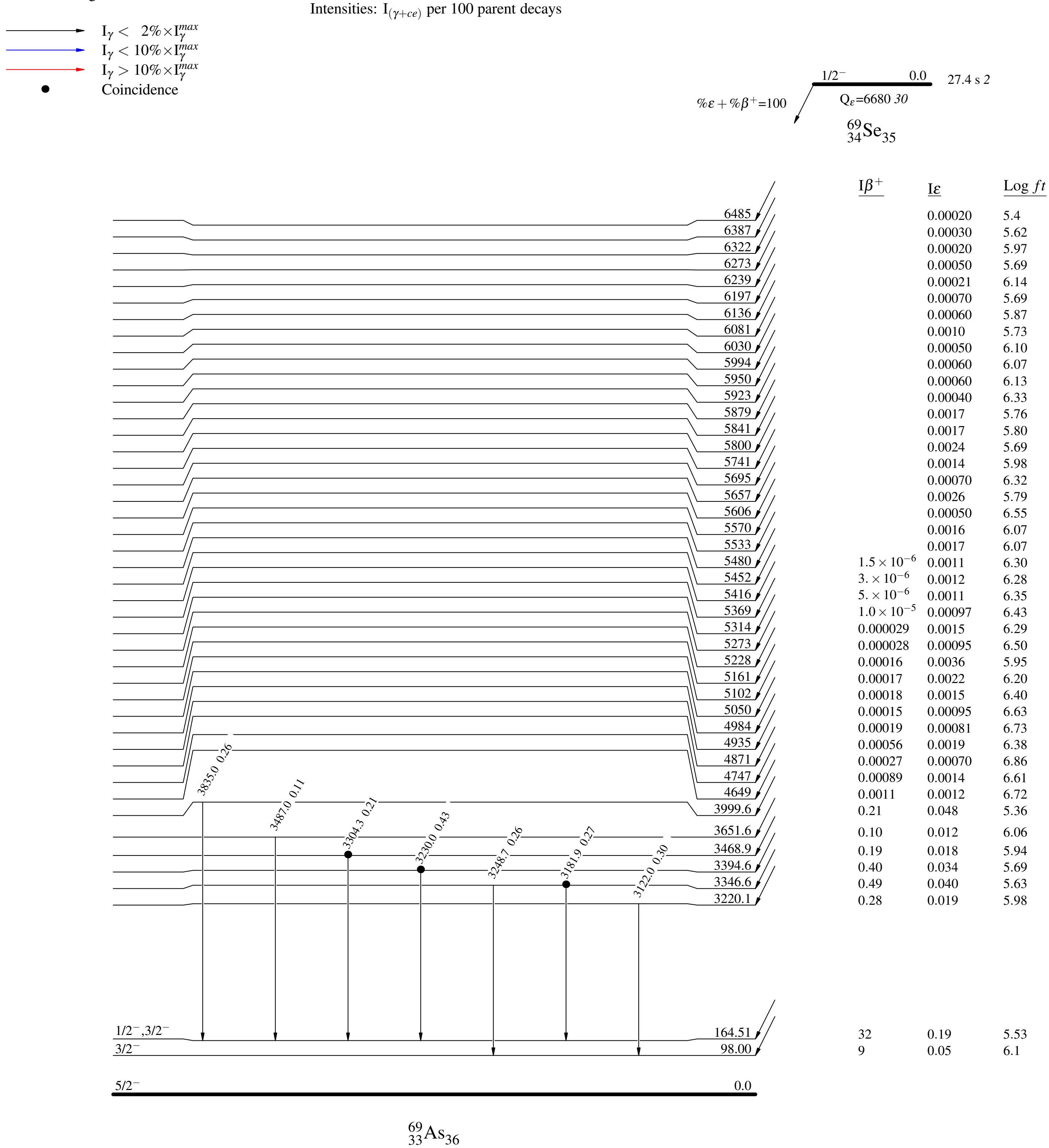
E_γ [†]	I_γ [†a]	E_i(level)	J^π_i	E_f	J^π_f
2310.2 *5*	1.3 *2*	2409.14		98.00	3/2⁻
2368.6 *10*	0.7 *1*	2533.0		164.51	1/2⁻,3/2⁻
2375.6 *10*	1.4 *2*	2872.9		497.30	
2435.0 *5*	0.20 *5*	2533.0		98.00	3/2⁻
2866.5 *5*	0.16 *4*	3031.3		164.51	1/2⁻,3/2⁻
2932.4 *10*	0.30 *6*	3031.3		98.00	3/2⁻
3045.9 *10*	0.72 *10*	3144.5		98.00	3/2⁻
3122.0 *7*	0.35 *7*	3220.1		98.00	3/2⁻
3181.9 *5*	0.32 *5*	3346.6		164.51	1/2⁻,3/2⁻
3230.0 *5*	0.50 *8*	3394.6		164.51	1/2⁻,3/2⁻
3248.7 *7*	0.30 *5*	3346.6		98.00	3/2⁻
3304.3 *7*	0.25 *4*	3468.9		164.51	1/2⁻,3/2⁻
3487.0 *10*	0.13 *3*	3651.6		164.51	1/2⁻,3/2⁻
3835.0 *7*	0.30 *5*	3999.6		164.51	1/2⁻,3/2⁻

[†] Weighted average data from 1988De28 and 1977Ma24, unless indicated otherwise.
[‡] From 1977Ma24. Not reported by 1988De28.
[#] From 1988De28. Not reported by 1977Ma24.
[@] α(K)exp consistent with multi E1 or M1. Δπ from decay scheme.
[&] Calculated from α(K)exp and α(K)/α. α(K)exp have been recalculated from the values given by 1977Ma24 using the fluorescent yield from 1972Bb16.
[a] For absolute intensity per 100 decays, multiply by 0.85 *5*.
[x] γ ray not placed in level scheme.

^{69}Se ε decay 1988De28,1977Ma24

Decay Scheme

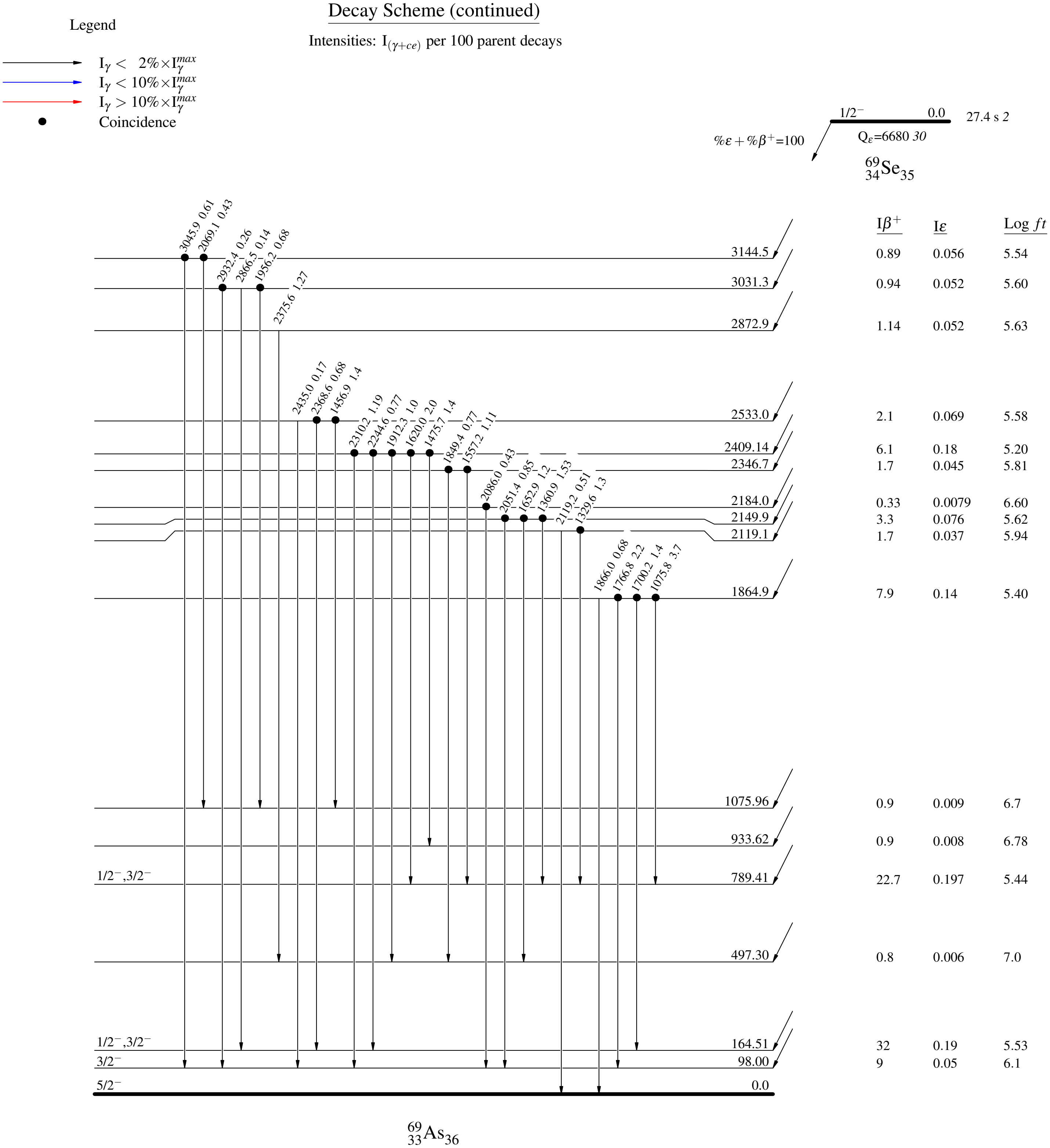
Intensities: $I_{(\gamma+ce)}$ per 100 parent decays



^{69}Se ε decay 1988De28,1977Ma24

Decay Scheme (continued)

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



^{69}Se ε decay 1988De28,1977Ma24

Decay Scheme (continued)

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