^{69}As ε decay 1979Su02,1978TeZY

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

Parent: ^{69}As: E=0.0; $J^\pi=5/2^-$; $T_{1/2}$=15.2 min *2*; Q(ε)=3990 *30*; %ε+%$β^+$ decay=100.0

1979Su02: measured Eγ, Iγ, γγ coincidences, internal conversion spectra, and ε decay lifetime.

1978TeZY: Eγ, Iγ, γγ coincidences, and ε decay lifetime.

1970Mu03: Eγ, Iγ, prompt and delayed γγ and β+γ coincidences, $β^+$ spectra, electron conversion coefficients, $T_{1/2}$.

Others: 1955Bu15, 1970Bo19, 1971Do01.

^{69}Ge Levels

E(level)†	Jπ‡	$T_{1/2}$@	E(level)†	Jπ‡
0	$5/2^-$#		1539.7 *4*	$3/2^-$
86.784 *24*	$1/2^-$	5.1 μs *2*	1611.12 *17*	$5/2^-$
232.736 *24*	$3/2^-$	176 ps *12*	1614.32 *24*	$7/2^-$
374.11 *5*	$3/2^-$		1767.14 *13*	$3/2^-$#
397.94 *15*	$9/2^+$		1891.03 *16*	$3/2^-$
812.53 *12*	$5/2^+$		2000.7 *3*	$5/2^-$
862.21 *20*	$7/2^-$		2236.4 *3*	$3/2^-$#
933.38 *17*	$5/2^-$		2246.83 *17*	$5/2^-$#
995.13 *24*	$1/2^-$		2594.8 *3*	$3/2^-$,$5/2^-$#
1160.15 *17*	$3/2^-$		2735.49 *22*	$3/2^-$#
1196.07 *14*	$5/2^-$		2772.99 *25*	$5/2^-$
1307.32 *16*	$3/2^-$		2946.8 *4*	
1415.02 *17*	$5/2^-$		2980.7 *3*	$7/2^-$#
1431.0 *4*	$9/2^-$		3433.4 *3*	$3/2^-$,$5/2^-$,$7/2^-$#
1479.0 *3*	$7/2^-$			

† From least-squares fit to Eγ data.

‡ From Adopted Levels. Supporting arguments from this data set are indicated.

$3/2^-$,$5/2^-$,$7/2^-$ from allowed ε decay.

@ From delayed β+γ and γγ coincidences (1970Mu03).

ε,$β^+$ radiations

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)†‡	Comments
(5.6×10² *3*)	3433.4		0.099 *25*	5.18 *12*	0.099 *25*	εK= 0.8795 *2*; εL= 0.10140 *18*; εM+= 0.01907 *4*
(1.01×10³ *3*)	2980.7		0.174 *17*	5.44 *5*	0.174 *17*	εK= 0.8811; εL= 0.1008 *6*; εM+=0.01878 *2*
(1.04×10³ *3*)	2946.8		0.06 *4*	5.9 *3*	0.06 *4*	εK= 0.8812; εL= 0.10003 *5*; εM+=0.01877 *1*
(1.22×10³ *3*)	2772.99	0.0004 *4*	0.19 *4*	5.57 *10*	0.19 *4*	av Eβ= 98 *13*; εK= 0.8782 *23*; εL= 0.0994 *3*; εM+= 0.01865 *6*
(1.25×10³ *3*)	2735.49	0.0007 *4*	0.138 *17*	5.73 *6*	0.139 *17*	av Eβ= 114 *13*; εK= 0.875 *4*; εL= 0.0991 *5*; εM+= 0.01858 *8*
(1.40×10³ *3*)	2594.8	0.0049 *17*	0.159 *18*	5.76 *5*	0.164 *18*	av Eβ= 173 *13*; εK= 0.849 *10*; εL= 0.0960 *12*; εM+= 0.01800 *22*
(1.74×10³ *3*)	2246.83	0.12 *2*	0.37 *3*	5.59 *5*	0.49 *4*	av Eβ= 321 *14*; εK= 0.647 *25*; εL= 0.073 *3*; εM+= 0.0137 *6*
(1.75×10³ *3*)	2236.4	0.11 *2*	0.31 *4*	5.67 *6*	0.42 *5*	av Eβ= 325 *14*; εK= 0.639 *25*; εL= 0.072 *3*; εM+= 0.0135 *6*
(1.99×10³ *3*)	2000.7	0.187 *17*	0.213 *19*	5.95 *5*	0.40 *3*	av Eβ= 428 *14*; εK= 0.452 *24*; εL= 0.051 *3*; εM+= 0.0095 *5*
(2.10×10³ *3*)	1891.03	0.168 *12*	0.134 *11*	6.21 *5*	0.302 *18*	av Eβ= 476 *14*; εK= 0.376 *21*; εL= 0.0423

Continued on next page (footnotes at end of table)

^{69}As ε decay 1979Su02,1978TeZY (continued)

ε,β+ radiations (continued)

E(decay)	E(level)	Iβ+ ‡	Iε‡	Log *ft*	I(ε+β+)†‡	Comments
						23; εM+= 0.0079 *5*
(2.22×10^3 *3*)	1767.14	0.65 *5*	0.36 *3*	5.82 *5*	1.01 *7*	av Eβ= 531 *14*; εK= 0.304 *17*; εL= 0.0342 *19*; εM+= 0.0064 *4*
(2.38×10^3 *3*)	1614.32	0.46 *4*	0.17 *2*	6.20 *5*	0.63 *5*	av Eβ= 600 *14*; εK= 0.234 *13*; εL= 0.0263 *15*; εM+= 0.0049 *3*
(2.38×10^3 *3*)	1611.12	0.25 *2*	0.093 *10*	6.47 *6*	0.34 *3*	av Eβ= 601 *14*; εK= 0.233 *13*; εL= 0.0261 *15*; εM+= 0.0049 *3*
(2.45×10^3 *3*)	1539.7	0.086 *9*	0.028 *3*	7.02 *6*	0.114 *12*	av Eβ= 633 *14*; εK= 0.206 *11*; εL= 0.0232 *13*; εM+= 0.00434 *24*
(2.51×10^3 *3*)	1479.0	0.170 *10*	0.048 *4*	6.81 *5*	0.218 *12*	av Eβ= 661 *14*; εK= 0.187 *10*; εL= 0.0209 *11*; εM+= 0.00393 *21*
(2.57×10^3 *3*)	1415.02	0.21 *2*	0.051 *6*	6.80 *6*	0.26 *3*	av Eβ= 690 *14*; εK= 0.168 *9*; εL= 0.0189 *10*; εM+= 0.00354 *19*
(2.68×10^3 *3*)	1307.32	0.34 *3*	0.068 *7*	6.71 *6*	0.41 *4*	av Eβ= 739 *15*; εK= 0.142 *7*; εL= 0.0159 *8*; εM+= 0.00298 *15*
(2.79×10^3 *3*)	1196.07	0.52 *4*	0.084 *8*	6.65 *5*	0.60 *5*	av Eβ= 790 *15*; εK= 0.119 *6*; εL= 0.0134 *7*; εM+= 0.00251 *12*
(2.83×10^3 *3*)	1160.15	0.41 *2*	0.062 *4*	6.79 *4*	0.468 *25*	av Eβ= 806 *15*; εK= 0.113 *6*; εL= 0.0127 *6*; εM+= 0.00238 *12*
(3.06×10^3 *3*)	933.38	0.48 *6*	0.051 *7*	6.94 *7*	0.53 *7*	av Eβ= 911 *15*; εK= 0.082 *4*; εL= 0.0092 *4*; εM+= 0.00173 *8*
(3.13×10^3 *3*)	862.21	0.52 *5*	0.049 *5*	6.98 *5*	0.57 *5*	av Eβ= 944 *15*; εK= 0.075 *4*; εL= 0.0084 *4*; εM+= 0.00157 *7*
(3.18×10^3 *3*)	812.53	0.64 *9*	0.057 *8*	6.75 *4*	0.70 *10*	av Eβ= 967 *15*; εK= 0.070 *3*; εL= 0.0078 *4*; εM+= 0.00147 *6*
(3.59×10^3 *3*)	397.94	0.70 *7*	0.095 *10*	8.51^{1u} *6*	0.79 *8*	av Eβ= 1182 *15*; εK= 0.103 *4*; εL= 0.0117 *5*; εM+= 0.00219 *8*
(3.62×10^3 *3*)	374.11	0.76 *8*	0.038 *4*	7.21 *5*	0.80 *8*	av Eβ= 1172 *15*; εK= 0.0414 *15*; εL= 0.00464 *17*; εM+= 0.00087 *3*
(3.76×10^3 *3*)	232.736	14.0 *5*	0.60 *3*	6.05 *2*	14.6 *5*	av Eβ= 1238 *15*; εK= 0.0356 *12*; εL= 0.00398 *14*; εM+= 0.000746 *25*
(3.99×10^3 *3*)	0	73.3 *9*	2.47 *8*	5.49 *2*	75.8 *9*	av Eβ= 1349 *15*; εK= 0.0281 *9*; εL= 0.00315 *10*; εM+=0.000590 *19*

† From intensity balance at each level. ε+β+ feeding to the g.s. has been calculated from Iγ(±)=1721 *36* (1979Su02).
‡ Absolute intensity per 100 decays.

^{69}As ε decay 1979Su02,1978TeZY (continued)

γ(^{69}Ge)

Iγ normalization: from Iγ(γ±)=1721 *36* (1979Su02), theoretical ε/β+ ratios, and intensity imbalance at each level. This experimental value is a weighted average of several independent measurements and has been corrected for annihilation-in-flight by authors. Iγ(γ±)=1360 *20* (1978TeZY).
γγ coincidences from 1979Su02 and 1978TeZY.

E_γ †	I_γ †a	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	δ‡	α@&	Comments
x68.2 *5*									E_γ: from 1971Do01.
86.79 *3*	31.5 *6*	86.784	1/2−	0	5/2−	E2		1.267	α(K)=1.095 *16*; α(L)=0.1483 *21*; α(M)=0.0219 *3* α(N)=0.001071 *15* α(K)exp=1.08 *3* and α(L)exp + α(M)exp=0.169 *7* from α(K)exp/(α(L)exp + α(M)exp)=6.4 *2* (1979Su02).
141.34 *6*	0.6 *1*	374.11	3/2−	232.736	3/2−	[M1]		0.0314	α(K)=0.0280 *4*; α(L)=0.00297 *5*; α(M)=0.000444 *7* α(N)=2.88×10^{-5} *4*
145.96 *3*	45.4 *6*	232.736	3/2−	86.784	1/2−	M1+E2	+0.19 *7*	0.034 *5*	α(K)=0.030 *4*; α(L)=0.0033 *5*; α(M)=0.00049 *7* α(N)=3.1×10^{-5} *4* α(K)exp=0.028 *4* (1979Su02)
232.73 *3*	100	232.736	3/2−	0	5/2−	M1+E2	0.74 *16*	0.0169 *24*	α(K)exp=0.015 *2* (1979Su02) α(K)=0.0150 *22*; α(L)=0.00163 *24*; α(M)=0.00024 *4* α(N)=1.50×10^{-5} *21*
287.3 *1*	13.0 *2*	374.11	3/2−	86.784	1/2−	M1+E2	+0.11 *1*	0.00529	α(K)=0.00472 *7*; α(L)=0.000492 *8*; α(M)=7.35×10^{-5} *11* α(N)=4.80×10^{-6} *7*
374.1 *2*	4.1 *1*	374.11	3/2−	0	5/2−	M1+E2	−0.17 *9*	0.00283 *13*	α(K)=0.00253 *11*; α(L)=0.000262 *12*; α(M)=3.91×10^{-5} *18* α(N)=2.56×10^{-6} *11*
398.1 *2*	9.4 *6*	397.94	9/2+	0	5/2−	M2		0.00873	α(K)=0.00776 *11*; α(L)=0.000838 *12*; α(M)=0.0001255 *18* α(N)=8.14×10^{-6} *12*
414.5 *2*	1.4 *2*	812.53	5/2+	397.94	9/2+	E2(+M3)	+0.03 *3*	0.00430 *9*	α(K)=0.00383 *8*; α(L)=0.000406 *9*; α(M)=6.05×10^{-5} *13* α(N)=3.81×10^{-6} *8*
438.4 *2*	2.5 *4*	812.53	5/2+	374.11	3/2−	E1		9.80×10^{-4}	α(K)=0.000877 *13*; α(L)=8.95×10^{-5} *13*; α(M)=1.334×10^{-5} *19* α(N)=8.65×10^{-7} *13*
559.1 *3*	1.3 *3*	933.38	5/2−	374.11	3/2−	M1+E2	−1.2 *1*	0.00143 *4*	α(K)=0.00128 *3*; α(L)=0.000133 *3*; α(M)=1.98×10^{-5} *5* α(N)=1.28×10^{-6} *3*
620.8 *4*	0.5 *1*	995.13	1/2−	374.11	3/2−	(M1)		8.57×10^{-4}	α(K)=0.000766 *11*; α(L)=7.85×10^{-5} *11*; α(M)=1.173×10^{-5} *17* α(N)=7.73×10^{-7} *11*
x656.7 *6*	0.5 *1*								
681.3 *4*	0.8 *3*	1614.32	7/2−	933.38	5/2−	M1+E2	+0.04 *3*	6.99×10^{-4}	α(K)=0.000625 *9*; α(L)=6.39×10^{-5} *9*; α(M)=9.55×10^{-6} *14* α(N)=6.30×10^{-7} *9*
762.4 *3*	0.5 *1*	995.13	1/2−	232.736	3/2−	M1(+E2)	−0.7 *+5−10*	0.00060 *7*	α(K)=0.00053 *6*; α(L)=5.5×10^{-5} *6*; α(M)=8.2×10^{-6} *9* α(N)=5.4×10^{-7} *6*
812.4 *2*	4.2 *7*	812.53	5/2+	0	5/2−	(E1+M2)		2.42×10^{-4} *11*	α(K)=0.000216 *10*; α(L)=2.20×10^{-5} *10*; α(M)=3.28×10^{-6}

$^{69}_{32}Ge_{37}$-3

^{69}As ε decay 1979Su02,1978TeZY (continued)

γ(^{69}Ge) (continued)

E_γ [†]	I_γ [†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[@&]	Comments
									15 α(N)=2.14×10^{-7} *10* I_γ: Deduced by evaluator based on the ratio of Iγ(818)/Iγ(414+438)=1.08 *11* in (α,nγ). Iγ(812)=7.4 *4* was determined in 1979Su02. Evaluator assumes the Iγ=3.2 *8* difference is for placement elsewhere, probably the 1210 level is being populated here. δ: −0.13 *3* from γ(θ) in (p,nγ); +0.17 *11* from γ(θ) in (α,nγ).
822.0 *2*	3.2 *3*	1196.07	5/2$^-$	374.11	3/2$^-$	M1+E2	−0.7 *5*	0.00050 *4*	α(K)=0.00045 *3*; α(L)=4.6×10^{-5} *3*; α(M)=6.9×10^{-6} *5* α(N)=4.5×10^{-7} *3*
846.6 *4*	1.0 *3*	933.38	5/2$^-$	86.784	1/2$^-$	E2(+M3)	+0.05 *10*	0.00054 *4*	α(K)=0.00048 *4*; α(L)=4.9×10^{-5} *4*; α(M)=7.4×10^{-6} *6* α(N)=4.8×10^{-7} *4*
862.2 *2*	5.2 *4*	862.21	7/2$^-$	0	5/2$^-$	M1+E2	+2.4 *3*	4.95×10^{-4} *8*	α(K)=0.000443 *7*; α(L)=4.55×10^{-5} *7*; α(M)=6.79×10^{-6} *11* α(N)=4.42×10^{-7} *7*
927.4 *4*	0.7 *1*	1160.15	3/2$^-$	232.736	3/2$^-$	(M1+E2)	−0.6 *+3−24*	0.00038 *4*	α(K)=0.00034 *4*; α(L)=3.5×10^{-5} *4*; α(M)=5.2×10^{-6} *6* α(N)=3.4×10^{-7} *4*
933.3 *3*	4.1 *2*	933.38	5/2$^-$	0	5/2$^-$	M1+E2	+0.20 *6*	3.60×10^{-4} *6*	α(K)=0.000322 *5*; α(L)=3.28×10^{-5} *5*; α(M)=4.90×10^{-6} *8* α(N)=3.23×10^{-7} *5*
963.4 *4*	0.5 *1*	1196.07	5/2$^-$	232.736	3/2$^-$	M1+E2		0.00036 *3*	α(K)=0.000323 *24*; α(L)=3.3×10^{-5} *3*; α(M)=4.9×10^{-6} *4* α(N)=3.23×10^{-7} *23* δ: −0.27 *15* or −1.6 *+5−10* from γ(θ) in (p,nγ).
1040.8 *2*	0.7 *1*	1415.02	5/2$^-$	374.11	3/2$^-$				E_γ: weighted average from the ^{70}Ge(p,dγ) reaction and ^{69}As ε decay (1978TeZY). Placement from 1978TeZY.
1073.4 *2*	3.0 *1*	1160.15	3/2$^-$	86.784	1/2$^-$	M1+E2	+0.31 *6*	2.71×10^{-4}	α(K)=0.000243 *4*; α(L)=2.47×10^{-5} *4*; α(M)=3.68×10^{-6} *6* α(N)=2.43×10^{-7} *4*
1104.5 *10*		1479.0	7/2$^-$	374.11	3/2$^-$	E2		2.82×10^{-4}	α(K)=0.000251 *4*; α(L)=2.57×10^{-5} *4*; α(M)=3.83×10^{-6} *6* α(N)=2.51×10^{-7} *4*; α(IPF)=9.0×10^{-7} *3* E_γ: 1105.2 *2* from adopted gammas. Placement from 1978TeZY. I_γ: γ not observed in singles, only in γγ coincidences (1978TeZY).
1160.0 *4*	0.6 *1*	1160.15	3/2$^-$	0	5/2$^-$	(M1)		2.32×10^{-4}	α(K)=0.000205 *3*; α(L)=2.09×10^{-5} *3*; α(M)=3.12×10^{-6} *5* α(N)=2.06×10^{-7} *3*; α(IPF)=2.82×10^{-6} *5*
1165.8[#b] *3*	<0.4[#]	1539.7	3/2$^-$	374.11	3/2$^-$	M1+E2	+0.45 *5*	2.34×10^{-4}	α(K)=0.000207 *3*; α(L)=2.10×10^{-5} *3*; α(M)=3.14×10^{-6} *5* α(N)=2.07×10^{-7} *3*; α(IPF)=3.41×10^{-6} *7*
1182.4 *4*	0.4 *1*	1415.02	5/2$^-$	232.736	3/2$^-$	M1+E2	+0.49 *10*	2.30×10^{-4}	α(K)=0.000201 *3*; α(L)=2.05×10^{-5} *4*; α(M)=3.05×10^{-6} *5* α(N)=2.01×10^{-7} *3*; α(IPF)=4.85×10^{-6} *14*
1196.0 *2*	1.8 *1*	1196.07	5/2$^-$	0	5/2$^-$	D+Q			δ: −0.1 *4* or −2.0 *+10−37* from γ(θ) in (p,nγ).
[x]1216.1[#] *1*	0.9[#] *1*								

^{69}As ε decay 1979Su02,1978TeZY (continued)

γ(^{69}Ge) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[@&]	Comments
1220.4 *3*	2.4 *1*	1307.32	3/2$^-$	86.784	1/2$^-$	M1+E2	+0.3 *1*	2.18×10^{-4} *4*	α(K)=0.000187 *3*; α(L)=1.90×10^{-5} *3*; α(M)=2.83×10^{-6} *5* α(N)=1.87×10^{-7} *3*; α(IPF)=8.89×10^{-6} *22*
1236.9[#] *2*	0.5[#] *1*	1611.12	5/2$^-$	374.11	3/2$^-$				
1240.0 *10*	1.0 *4*	2236.4	3/2$^-$	995.13	1/2$^-$				E$_\gamma$: 1239.3γ placed from 1614 level by 1978TeZY.
1287.4 *3*	0.6 *1*	2594.8	3/2$^-$,5/2$^-$	1307.32	3/2$^-$				
1303 *1*	0.3 *1*	2236.4	3/2$^-$	933.38	5/2$^-$				
1307.3 *2*	2.2 *1*	1307.32	3/2$^-$	0	5/2$^-$	(M1(+E2))	+0.0 *1*	2.04×10^{-4}	α(K)=0.0001622 *23*; α(L)=1.645×10^{-5} *23*; α(M)=2.46×10^{-6} *4* α(N)=1.624×10^{-7} *23*; α(IPF)=2.23×10^{-5} *4*
1320.3 *3*	0.5 *1*	2735.49	3/2$^-$	1415.02	5/2$^-$				
1379.0 *3*	1.9 *1*	1611.12	5/2$^-$	232.736	3/2$^-$	M1+E2	+0.39 *2*	2.02×10^{-4}	α(K)=0.0001474 *21*; α(L)=1.495×10^{-5} *21*; α(M)=2.23×10^{-6} *4* α(N)=1.474×10^{-7} *21*; α(IPF)=3.77×10^{-5} *6*
1381.4 *3*	2.5 *1*	1614.32	7/2$^-$	232.736	3/2$^-$	E2		2.21×10^{-4}	α(K)=0.0001544 *22*; α(L)=1.572×10^{-5} *22*; α(M)=2.35×10^{-6} *4* α(N)=1.541×10^{-7} *22*; α(IPF)=4.81×10^{-5} *7*
1415 *1*	1.8 *2*	1415.02	5/2$^-$	0	5/2$^-$	M1+E2	−0.65 *10*	2.06×10^{-4} *4*	α(K)=0.0001415 *21*; α(L)=1.435×10^{-5} *21*; α(M)=2.14×10^{-6} *4* α(N)=1.414×10^{-7} *21*; α(IPF)=4.81×10^{-5} *12*
1431.0 *4*	0.6 *4*	1431.0	9/2$^-$	0	5/2$^-$	E2		2.23×10^{-4}	α(K)=0.0001436 *21*; α(L)=1.460×10^{-5} *21*; α(M)=2.18×10^{-6} *3* α(N)=1.432×10^{-7} *20*; α(IPF)=6.23×10^{-5} *9*
1434.3 *3*	0.9 *1*	2246.83	5/2$^-$	812.53	5/2$^+$				
1452.6 *5*	0.3 *1*	1539.7	3/2$^-$	86.784	1/2$^-$	M1+E2	−0.45 *25*	2.05×10^{-4} *5*	α(K)=0.0001335 *22*; α(L)=1.353×10^{-5} *23*; α(M)=2.02×10^{-6} *4* α(N)=1.335×10^{-7} *22*; α(IPF)=5.6×10^{-5} *3*
1479.0 *3*	2.0 *1*	1479.0	7/2$^-$	0	5/2$^-$	(M1+E2)		2.16×10^{-4} *13*	α(K)=0.000131 *4*; α(L)=1.33×10^{-5} *4*; α(M)=1.98×10^{-6} *6* α(N)=1.31×10^{-7} *4*; α(IPF)=7.0×10^{-5} *9* δ: +0.05 *2* or +4.8 *8*.
[x]1516.4[#] *3*	0.4[#] *1*								
[x]1525.1[#] *2*	1.3[#] *2*								
1534.7 *3*	3.4 *2*	1767.14	3/2$^-$	232.736	3/2$^-$	M1+E2	+0.5 *2*	2.17×10^{-4} *5*	α(K)=0.0001202 *19*; α(L)=1.218×10^{-5} *19*; α(M)=1.82×10^{-6} *3* α(N)=1.202×10^{-7} *18*; α(IPF)=8.2×10^{-5} *3*
1540.0 *5*	0.75 *3*	1539.7	3/2$^-$	0	5/2$^-$				
[x]1585.9[#] *2*	1.3[#] *2*								
1612 *1*	1.0 *1*	1611.12	5/2$^-$	0	5/2$^-$	(M1+E2)	−1.7 *+3−8*	2.50×10^{-4} *6*	α(K)=0.0001119 *17*; α(L)=1.135×10^{-5} *17*; α(M)=1.69×10^{-6} *3* α(N)=1.116×10^{-7} *17*; α(IPF)=0.000125 *4*

$^{69}_{32}Ge_{37}$-5

^{69}As ε decay 1979Su02,1978TeZY (continued)

γ(^{69}Ge) (continued)

E_γ[†]	I_γ[†a]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ[‡]	α[@&]	Comments
1614 *1*	2.5 *3*	1614.32	7/2⁻	0	5/2⁻	M1+E2	−1.97 *6*	2.52×10⁻⁴	α(K)=0.0001119 *16*; α(L)=1.135×10⁻⁵ *16*; α(M)=1.693×10⁻⁶ *24* α(N)=1.116×10⁻⁷ *16*; α(IPF)=0.0001270 *19*
1639 *1*	0.2 *3*	2946.8		1307.32	3/2⁻				
1658.3 *2*	0.95 *7*	1891.03	3/2⁻	232.736	3/2⁻	M1+E2	−1.2 *4*	2.57×10⁻⁴ *8*	α(K)=0.0001053 *17*; α(L)=1.067×10⁻⁵ *18*; α(M)=1.59×10⁻⁶ *3* α(N)=1.051×10⁻⁷ *17*; α(IPF)=0.000139 *7*
1680.3 *2*	2.7 *2*	1767.14	3/2⁻	86.784	1/2⁻	M1+E2	−0.97 *11*	2.59×10⁻⁴ *5*	α(K)=0.0001023 *15*; α(L)=1.036×10⁻⁵ *15*; α(M)=1.547×10⁻⁶ *22* α(N)=1.021×10⁻⁷ *15*; α(IPF)=0.000145 *3*
1767.0 *2*	3.2 *4*	1767.14	3/2⁻	0	5/2⁻	M1+E2	+1.2 *2*	2.89×10⁻⁴ *6*	α(K)=9.34×10⁻⁵ *14*; α(L)=9.45×10⁻⁶ *14*; α(M)=1.411×10⁻⁶ *21* α(N)=9.31×10⁻⁸ *14*; α(IPF)=0.000185 *5*
1804.0 *3*	1.1 *1*	1891.03	3/2⁻	86.784	1/2⁻	M1+E2	−0.3 *1*	2.79×10⁻⁴ *5*	α(K)=8.84×10⁻⁵ *13*; α(L)=8.93×10⁻⁶ *13*; α(M)=1.334×10⁻⁶ *19* α(N)=8.83×10⁻⁸ *13*; α(IPF)=0.000181 *4*
1823.1 *4*	0.3 *2*	3433.4	3/2⁻,5/2⁻,7/2⁻	1611.12	5/2⁻				
1872.4 *4*	0.4 *1*	2246.83	5/2⁻	374.11	3/2⁻				
1891.3 *4*	0.72 *5*	1891.03	3/2⁻	0	5/2⁻				
2000.7 *3*	3.7 *2*	2000.7	5/2⁻	0	5/2⁻	M1+E2	−2.0 *2*	3.84×10⁻⁴	α(K)=7.46×10⁻⁵ *11*; α(L)=7.55×10⁻⁶ *11*; α(M)=1.127×10⁻⁶ *16* α(N)=7.44×10⁻⁸ *11*; α(IPF)=0.000301 *5*
2014.1 *3*	2.6 *2*	2246.83	5/2⁻	232.736	3/2⁻	M1+E2	−1.7 *1*	3.86×10⁻⁴	α(K)=7.36×10⁻⁵ *11*; α(L)=7.44×10⁻⁶ *11*; α(M)=1.111×10⁻⁶ *16* α(N)=7.34×10⁻⁸ *11*; α(IPF)=0.000304 *5*
2149.7 *3*	2.6 *1*	2236.4	3/2⁻	86.784	1/2⁻	M1+E2	−1.7 *1*	4.42×10⁻⁴	α(K)=6.55×10⁻⁵ *10*; α(L)=6.61×10⁻⁶ *10*; α(M)=9.87×10⁻⁷ *14* α(N)=6.52×10⁻⁸ *10*; α(IPF)=0.000369 *6*
2167.2 *4*	0.8 *1*	2980.7	7/2⁻	812.53	5/2⁺				
2246.9 *3*	0.64 *5*	2246.83	5/2⁻	0	5/2⁻				
[x]2274.5 *10*	0.34 *3*								
[x]2333.8 *3*	0.4 *1*								
2361.0 *10*	0.6 *1*	2594.8	3/2⁻,5/2⁻	232.736	3/2⁻				
2398.7 *3*	1.1 *1*	2772.99	5/2⁻	374.11	3/2⁻				
2499.2 *4*	0.4 *1*	3433.4	3/2⁻,5/2⁻,7/2⁻	933.38	5/2⁻				
2503.0 *4*	0.28 *3*	2735.49	3/2⁻	232.736	3/2⁻				
2508.3 *4*	0.31 *5*	2594.8	3/2⁻,5/2⁻	86.784	1/2⁻				
2583.3 *3*	0.8 *1*	2980.7	7/2⁻	397.94	9/2⁺				
2686.4 *4*	0.6 *3*	2772.99	5/2⁻	86.784	1/2⁻				
2735.4 *4*	0.5 *1*	2735.49	3/2⁻	0	5/2⁻				
2946.8 *4*	0.39 *3*	2946.8		0	5/2⁻				

$^{69}_{32}Ge_{37}$-6

^{69}As ε decay 1979Su02,1978TeZY (continued)

γ(^{69}Ge) (continued)

E_γ †	I_γ †a	E_i(level)	J_i^π	E_f	J_f^π
x2987.0 *10*	0.08 *3*				
3058.5 *10*	0.21 *2*	3433.4	3/2⁻,5/2⁻,7/2⁻	374.11	3/2⁻

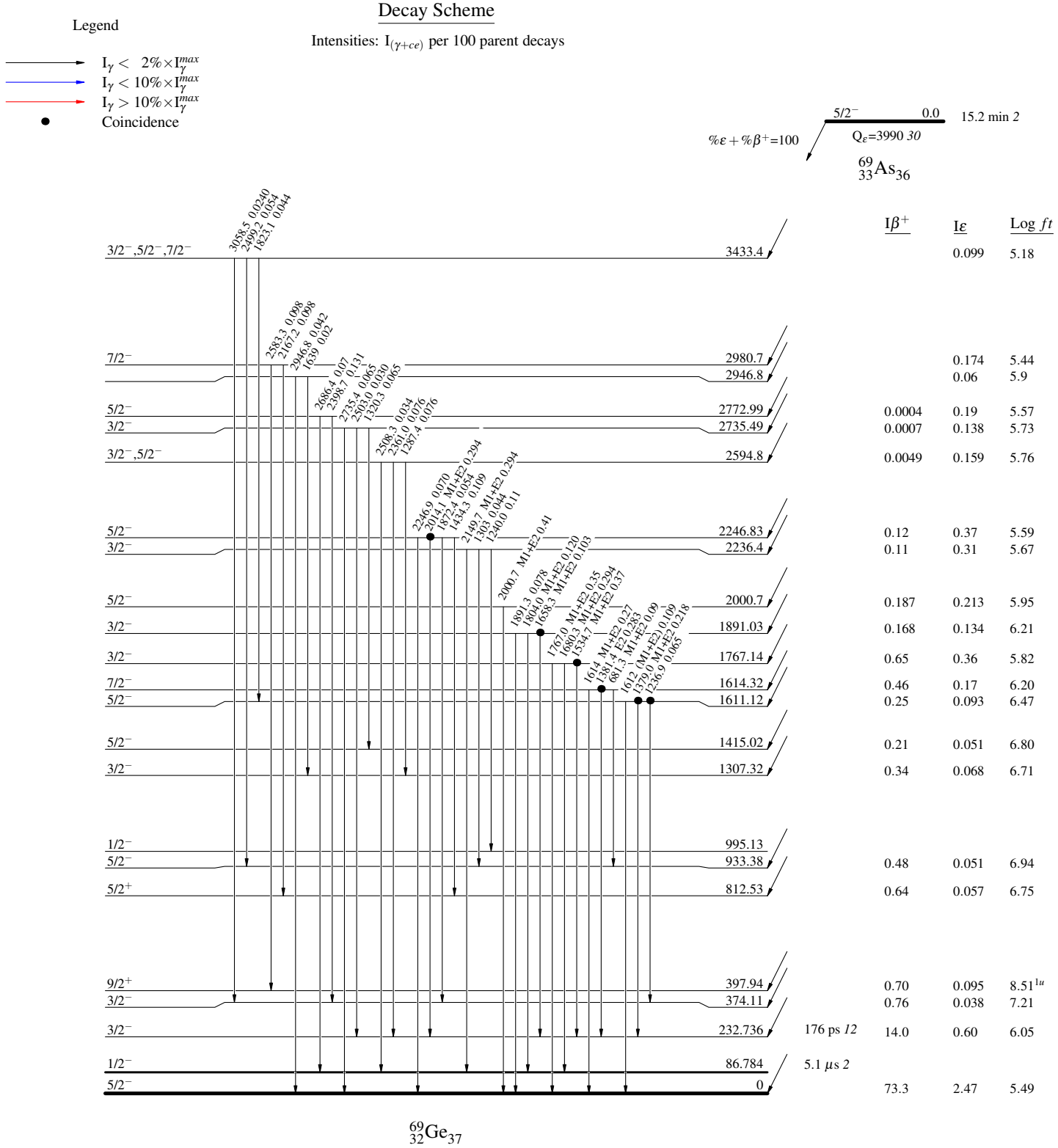
† From 1979Su02, unless otherwise noted.
‡ From adopted gammas.
# From 1978TeZY.
@ From adopted γ's.
& Additional information 1.
a For absolute intensity per 100 decays, multiply by 0.1089 *37*.
b Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

$^{69}_{32}Ge_{37}$-7

^{69}As ε decay 1979Su02,1978TeZY

Decay Scheme

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



^{69}As ε decay 1979Su02,1978TeZY

Decay Scheme (continued)

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