

⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	30-Sep-2020

Parent: ⁷⁷Ge: E=0.0; J^π=7/2⁺; T_{1/2}=11.211 h 3; Q(β⁻)=2703.5 17; %β⁻ decay=100.0

⁷⁷Ge-J^π,T_{1/2}: From ⁷⁷Ge Adopted Levels.

⁷⁷Ge-Q(β⁻): From 2017Wa10.

1974LeYO (also 1976LeZU): measured E_γ, I_γ, γγ and γγ(θ).

2012Me04: measured E_γ, I_γ.

Others:

1979ChZQ, 1977ChYV: measured E_γ, I_γ, γγ.

1971Yt01 (also 1971PoZQ thesis): measured E_γ, I_γ. Total of 153 γ rays reported, but 15 of these have not been confirmed in other studies.

1968Do05: measured E_γ, I_γ; energies of seven low-energy γ rays measured with curved-crystal spectrometer. Total of 82 γ rays reported.

1968Ng02: measured E_γ, I_γ, γγ. Total of 66 γ rays reported.

1968Ma26: measured E_γ, I_γ.

1967Ma13 (same group as 1968Ma26): measured E_γ, I_γ with a pair spectrometer. Total of 46 gamma rays reported above 1.19 MeV.

1952Sm13: measured E_β, I_β.

γγ(t): 1989Mo14, 1970Dr09, 1969Az04; deduced level half-life.

γγ(θ): 1975Ch32, 1974Gu30, 1973Ch42, 1971Lo14, 1965Va12.

γγ(θ,H,t), g factors: 1990Mo23, 1990Mo23, 1989Mo14.

γγ(lin pol,θ): 1963Ma37.

Total decay energy of 2693 keV 42 deduced (by RADLIST code) from proposed decay scheme is in agreement with the expected value of 2702.5 keV 18, indicating that decay scheme is fairly complete.

⁷⁷As Levels

E(level) [†]	J ^π [‡]	T _{1/2} [‡]	Comments
0.0	3/2 ⁻	38.79 h 5	
194.70 7	3/2 ⁻	7.4 ns 3	T _{1/2} : γγ(t) (1970Dr09).
215.54 3	3/2 ⁻	<0.3 ns	T _{1/2} : from γγ(t) (1969Az04).
264.427 20	5/2 ⁻ #	304 ps 3	T _{1/2} : from γγ(t) in (1989Mo14). Others: 1973Ch26, 1969Az04. g-factor=0.303 8 from γγ(θ,H) using DPAC technique (1989Mo14,1990Mo22). Other: 0.30 3 from γγ(θ,H) using PAC (1973Ch42). Q<0.75 (1990Mo23) from γγ(θ,H,t).
475.48 4	9/2 ⁺ #	114.0 μs 25	%IT=100 T _{1/2} : other: 116 μs 4 from γγ(t) (1957Sc11).
614.48 4	3/2 ⁻		
631.88 3	5/2 ⁺ #	60 ps 6	T _{1/2} : from βγ(t) in ⁷⁷ Ge decay (1974ChXP). Others: 1970Tu03, 1969Az04. g-factor=+1.01 16 from γγ(θ,H,t) using PAC technique (1974Ch31).
634.48 5	5/2 ⁺ ,7/2 ⁻		
784.71 4	7/2 ⁻		
875.22 5	3/2 ⁻ ,5/2 ⁺		
889.02 6	3/2 ⁻ ,5/2 ⁺ ,7/2 ⁻		
1058.68 8	(9/2 ⁻)#		
1165.00 9	5/2 ⁻		
1189.83 4	7/2 ⁻ #	<0.2 ns	T _{1/2} : from γγ(t) (1969Az04).
1201.41 6	1/2 ⁺		
1221.30 7	(11/2 ⁺)		
1279.99 9	(≤7/2)		
1319.76 6	7/2 ⁻		
1345.19 7	(3/2 ⁻ ,5/2 ⁺ ,7/2 ⁻)		

Continued on next page (footnotes at end of table)

⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04 (continued)

⁷⁷As Levels (continued)

E(level) [†]	J ^π [‡]	T _{1/2} [‡]	Comments
1350.29 13	(3/2 ⁻ ,5/2,7/2 ⁻)		
1397.65? 25	(5/2 ⁻ ,7/2 ⁻)		
1398.70 5	(7/2 ⁺) [#]		
1457.75 5	(5/2,7/2 ⁻) [#]		
1528.34 4	5/2 ⁺ [#]		
1538.86 6	(1/2 ⁺ ,3/2,5/2 ⁺)		
1560.47 5	5/2 ⁺ [#]	<0.1 ns	T _{1/2} : from γγ(t) (1969Az04).
1573.77 5	(3/2 ⁻ ,5/2,7/2 ⁻)		
1732.80 9	(3/2 ⁻ ,5/2 ⁺)		
1837.72 12	(≤7/2)		
1971.17 6	7/2 ⁺ ,9/2 ⁺		
2000.19 4	5/2 ⁺ [#]		
2110.94 5	5/2 ⁺ [#]		
2195.9? 3	1/2 ⁻		
2341.75 4	(5/2) ⁺ [#]		
2354.22 5	(7/2 ⁻) [#]		
2424.53 9	(7/2 ⁻)		
2463.3 3	(5/2,7/2,9/2 ⁺)		
2513.48 8	(7/2) ⁺		
2543.96 8	(5/2,7/2 ⁻)		

[†] From least-squares fit to Eγ data. Reduced χ²=1.4. Seven gamma-ray energies are fitted poorly, but most of these are doublets.

[‡] From the Adopted Levels.

[#] A₂ and A₄ values for relevant cascades in γγ(θ) data used in conjunction with other arguments for spin assignment.

β⁻ radiations

Measured: Eβ, Iβ values: Eβ=710, Iβ=23; Eβ=1379, Iβ=35; Eβ=2196, Iβ=42 (1952Sm13).

E(decay)	E(level)	Iβ ^{-†‡}	Log ft	Comments
(159.5 17)	2543.96	0.108 10	5.98 5	av Eβ=43.47 54
(190.0 17)	2513.48	0.255 13	5.84 3	av Eβ=52.74 56
				Log ft: value of 5.84 3 is somewhat lower than >5.9 expected for first-forbidden β transition.
(240.2 17)	2463.3	0.026 9	7.2 2	av Eβ=68.50 59
(279.0 17)	2424.53	0.170 19	6.57 5	av Eβ=81.09 60
(349.3 17)	2354.22	1.08 4	6.09 2	av Eβ=104.84 63
(361.8 17)	2341.75	2.37 6	5.80 2	av Eβ=109.19 63
(507.6 [#] 17)	2195.9?			av Eβ=161.71 68
				Iβ=0.007 2 is consistent with zero as expected from ΔJ=3.
(592.6 17)	2110.94	2.32 7	6.55 2	av Eβ=193.82 70
(703.3 17)	2000.19	8.07 21	6.28 1	av Eβ=237.08 72
(732.3 17)	1971.17	2.64 10	6.83 2	av Eβ=248.66 72
(970.7 17)	1732.80	0.074 7	8.83 5	av Eβ=346.70 76
(1129.7 17)	1573.77	1.95 7	7.66 2	av Eβ=414.53 78
(1143.0 17)	1560.47	7.5 4	7.10 2	av Eβ=420.19 78
(1164.6 [#] 17)	1538.86	<0.34	>8.5	av Eβ=429.63 78
(1175.2 17)	1528.34	1.87 11	7.75 3	av Eβ=434.19 79

Continued on next page (footnotes at end of table)

^{77}Ge β^- decay (11.211 h) 1974LeYO,2012Me04 (continued) β^- radiations (continued)

E(decay)	E(level)	$I\beta^{-\dagger\ddagger}$	Log ft	Comments
(1245.8 17)	1457.75	4.8 4	7.44 4	av $E\beta=464.98$ 79
(1304.8 17)	1398.70	1.93 19	7.91 5	av $E\beta=490.97$ 80
(1305.8# 17)	1397.65?	0.08 6	9.3 4	av $E\beta=491.39$ 81
(1353.2 17)	1350.29	0.049 6	9.6 1	av $E\beta=512.32$ 80
(1358.3 17)	1345.19	0.19 3	9.0 1	av $E\beta=514.58$ 80
(1383.7 17)	1319.76	0.43 15	8.7 2	av $E\beta=525.86$ 80
(1423.5# 17)	1279.99	<0.003	>10.9	av $E\beta=543.56$ 81
(1482.2# 17)	1221.30			av $E\beta=569.82$ 81 $I\beta<0.08$ is consistent with zero as expected from $\Delta J=3$.
(1502.1# 17)	1201.41			av $E\beta=578.74$ 81 $I\beta<0.15$ is consistent with zero as expected from $\Delta J=3$.
(1513.7 17)	1189.83	19.2 12	7.17 3	av $E\beta=583.93$ 81
(1538.5 17)	1165.00	0.172 17	9.2 1	av $E\beta=595.11$ 82
(1644.8 17)	1058.68	0.13 6	9.5 2	av $E\beta=643.19$ 82
(1814.5 17)	889.02	0.287 22	9.31 4	av $E\beta=720.55$ 83
(1828.3 17)	875.22	0.30 6	9.3 1	av $E\beta=726.93$ 83
(1918.8 17)	784.71	0.41 17	9.3 2	av $E\beta=768.55$ 83
(2069.0 17)	634.48	0.21 10	9.7 2	av $E\beta=838.13$ 84
(2071.6 17)	631.88	21.4 17	7.68 4	av $E\beta=839.32$ 84
(2089.0 17)	614.48	0.79 10	10.24 ^{1u} 6	av $E\beta=860.77$ 83
(2228.0 17)	475.48	16.0 10	7.93 3	av $E\beta=912.18$ 85
(2439.1# 17)	264.427	<1.7	>9.1	av $E\beta=1011.15$ 85
(2488.0 17)	215.54	4.1 13	10.0 ^{1u} 2	av $E\beta=1044.47$ 84
(2508.8 17)	194.70	0.41 11	11.0 ^{1u} 1	av $E\beta=1054.13$ 84

[†] From γ -ray intensity balance, assuming no β feeding to g.s..

[‡] Absolute intensity per 100 decays.

Existence of this branch is questionable.

γ(⁷⁷As)

I_γ normalization: from I(γ+ce)(gammas to g.s.)=100; assuming no β⁻ feeding to g.s. From β spectrum (1952Sm13), estimated Iβ(g.s.)<10%. 2012Me04 give normalization factor=0.538 13 based on no β feeding to g.s.

The following γ rays of energy (intensity) reported by 1971Yt01 only have been omitted: 408.5 (0.06), 901.6 (0.07), 1202.9 (0.04), 1285.3 (0.05), 1378.0 (0.03), 1457.5 (0.03), 1488.6 (0.03), 1607.5 (0.02), 1613.7 (0.017), 1671.4 (0.02), 1676.6 (0.016), 1867.1 (0.024), 2325.4 (0.006), 2373.9 (<0.005), 2391.1 (<0.005).

Values of A₂ and A₄ are from 1974LeYO. The evaluator has reanalyzed part of the dataset of 1974LeYO. In a few cases results are compared with γγ(θ) data from 1975Ch32 and 1974Gu30.

E _γ [†]	I _γ ^{†c}	E _i (level)	J _i ^π	E _f	J _f ^π	Mult. [‡]	δ [‡]	α ^d	Comments
150.46 [#] 15	0.078 [#] 16	784.71	7/2 ⁻	634.48	5/2 ⁺ , 7/2 ⁻				Additional information 2. α(K)=0.1304 19; α(L)=0.01553 22; α(M)=0.00235 4; α(N)=0.0001663 24 Eγ=156.33 11, Iγ=1.11 4 (2012Me04). Eγ=156.36 3, Iγ=1.49 5 (1974LeYO). I _γ : from 2012Me04. Iγ=0.427 15 (1974LeYO) is in disagreement. Eγ=159.40 35, Iγ=0.077 30 (2012Me04). Eγ=159.11 15, Iγ=0.427 15 (1974LeYO). Eγ=177.27 13, Iγ=0.152 17 (2012Me04). Eγ=177.28 3, Iγ=0.332 10 (1974LeYO). α(K)=0.036 23; α(L)=0.004 3; α(M)=0.0006 4; α(N)=4.E-5 3 Eγ=194.72 10, Iγ=2.99 8 (2012Me04). Eγ=194.762 20, Iγ=3.29 9 (1974LeYO). Eγ=208.68 11, Iγ=2.37 7 (2012Me04). Eγ=208.98 6, Iγ=1.75 4 (1974LeYO). (209γ)(558γ)(θ): A ₂ =+0.27 3, A ₄ =+0.07 6. α(K)=0.0646 10; α(L)=0.00757 12; α(M)=0.001162 17; α(N)=8.64×10 ⁻⁵ 13 Eγ=211.05 10, Iγ=55.1 14 (2012Me04). Eγ=211.031 19, Iγ=57.2 14 (1974LeYO). δ: from reanalysis of γγ(θ). α(K)=0.01137 22; α(L)=0.001214 25; α(M)=0.000185 4; α(N)=1.40×10 ⁻⁵ 3 Eγ=215.51 10, Iγ=51.6 13 (2012Me04). Eγ=215.505 22, Iγ=53.1 13 (1974LeYO). δ: from (416γ)(215γ)(θ). Eγ=254.57 11, Iγ=0.345 16 (2012Me04). Eγ=254.74 15, Iγ=0.391 7 (1974LeYO).
156.35 11	1.30 19	631.88	5/2 ⁺	475.48	9/2 ⁺	[E2]		0.1484	
159.3 3	0.08 3	634.48	5/2 ⁺ , 7/2 ⁻	475.48	9/2 ⁺				
177.28 13	0.24 9	1398.70	(7/2 ⁺)	1221.30	(11/2 ⁺)				
194.74 10	3.14 15	194.70	3/2 ⁻	0.0	3/2 ⁻	[M1,E2]		0.04 3	
208.83 15	2.1 3	1398.70	(7/2 ⁺)	1189.83	7/2 ⁻				
211.03 [@] 4	56.2 14	475.48	9/2 ⁺	264.427	5/2 ⁻	(M2+E3)	+0.100 7	0.0734	
215.51 [@] 4	52.4 13	215.54	3/2 ⁻	0.0	3/2 ⁻	(M1+E2)	-0.164 16	0.01278 25	
219.13 ^a 31	0.27 ^a 27	1538.86	(1/2 ⁺ , 3/2, 5/2 ⁺)	1319.76	7/2 ⁻				
254.66 11	0.369 16	889.02	3/2 ⁻ , 5/2, 7/2 ⁻	634.48	5/2 ⁺ , 7/2 ⁻				

4

⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04 (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[‡]</u>	<u>α^d</u>	<u>Comments</u>
264.450 [@] 25	100	264.427	5/2 ⁻	0.0	3/2 ⁻	M1+E2	0.014 8	α(K)=0.013 7; α(L)=0.0014 8; α(M)=0.00021 11; α(N)=1.6×10 ⁻⁵ 8 Eγ=264.37 11, Iγ=100 (2012Me04). Eγ=264.440 17, Iγ=100 (1974LeYO). δ: δ=-1.46 2 or -0.321 11 from (211γ)(264γ)(θ) and (367γ)(264γ)(θ). Other: -0.8 3 from (211γ)(264γ)(θ) (1989Mo14).
268.10 ^a 22	0.55 ^a 55	1457.75	(5/2,7/2 ⁻)	1189.83	7/2 ⁻			Eγ=313.5 10, Iγ=0.042 10 (2012Me04).
313.4 10	0.040 10	2424.53	(7/2 ⁻)	2110.94	5/2 ⁺			Eγ=313.30 17, Iγ=0.038 1 (1974LeYO).
325.5 [#] 10	0.044 [#] 11	1201.41	1/2 ⁺	875.22	3/2 ⁻ ,5/2 ⁺			Eγ=325.6 15, Iγ=0.050 15 (1971Yt01); γ not in 1974LeYO.
337.53 15	0.40 5	1538.86	(1/2 ⁺ ,3/2,5/2 ⁺)	1201.41	1/2 ⁺			Eγ=337.42 15, Iγ=0.36 5 (2012Me04).
338.60 12	1.35 12	1528.34	5/2 ⁺	1189.83	7/2 ⁻			Eγ=337.63 6, Iγ=0.43 1 (1974LeYO). Eγ=338.54 12, Iγ=1.45 12 (2012Me04). Eγ=338.66 4, Iγ=1.24 3 (1974LeYO). (338.6γ)(558γ)(θ): A ₂ =+0.089 26, A ₄ =0.00 4 (1974LeYO). (338.6γ)(558γ)(θ): A ₂ =+0.061 14, A ₄ =-0.089 18 (1975Ch32).
339.6 ^g 4	0.13 10	1397.65?	(5/2 ⁻ ,7/2 ⁻)	1058.68	(9/2 ⁻)			Eγ=339.6 4, Iγ=0.13 10 (2012Me04). Eγ=339 shown only in level-scheme figure 19b (1974LeYO).
350.10 ^a 15	0.031 ^a 1	614.48	3/2 ⁻	264.427	5/2 ⁻			Eγ=350 1 (2012Me04). Eγ=350.10 15, Iγ=0.031 1 (1974LeYO).
367.49 [@] 4	27.2 12	631.88	5/2 ⁺	264.427	5/2 ⁻	(E1)		Eγ=367.33 10, Iγ=28.4 7 (2012Me04). Eγ=367.397 16, Iγ=26.0 3 (1974LeYO). Mult.: dipole from (367γ)(264γ)(θ): A ₂ =-0.374 4, A ₄ =+0.001 7; ΔJ ^π requires E1.
398.97 11	0.197 19	614.48	3/2 ⁻	215.54	3/2 ⁻			Eγ=398.93 11, Iγ=0.215 16 (2012Me04). Eγ=399.01 4, Iγ=0.178 2 (1974LeYO).
416.35 [@] 4	42.5 20	631.88	5/2 ⁺	215.54	3/2 ⁻			Eγ=416.29 10, Iγ=44.5 11 (2012Me04). Eγ=416.328 14, Iγ=40.5 4 (1974LeYO). (416γ)(215γ)(θ): A ₂ =-0.014 3, A ₄ =0.000 5.
419.73 11	2.29 8	614.48	3/2 ⁻	194.70	3/2 ⁻			Eγ=419.71 11, Iγ=2.29 8 (2012Me04). Eγ=419.754 26, Iγ=2.284 24 (1974LeYO). (420γ)(195γ)(θ): A ₂ =-0.012 30, A ₄ =-0.01 6.
430.60 ^a 21	0.019 ^a 1	1319.76	7/2 ⁻	889.02	3/2 ⁻ ,5/2,7/2 ⁻			Eγ=439.49 11, Iγ=0.404 16 (2012Me04).
439.46 11	0.389 16	2000.19	5/2 ⁺	1560.47	5/2 ⁺			Eγ=439.438 20, Iγ=0.375 4 (1974LeYO). (439γ)(1085γ)(θ): A ₂ =-0.121 3, A ₄ =+0.05 11.
444.59 18	0.038 8	1319.76	7/2 ⁻	875.22	3/2 ⁻ ,5/2 ⁺			Eγ=444.76 18, Iγ=0.044 8 (2012Me04). Eγ=444.42 17, Iγ=0.032 1 (1974LeYO).

⁷⁷Ge β⁻ decay (11.211 h) **1974LeYO,2012Me04** (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[‡]</u>	<u>δ[‡]</u>	<u>Comments</u>
461.37 <i>10</i>	2.49 <i>14</i>	2000.19	5/2 ⁺	1538.86	(1/2 ⁺ ,3/2,5/2 ⁺)			E _γ =461.37 <i>10</i> , I _γ =2.63 <i>7</i> (2012Me04). E _γ =461.378 <i>13</i> , I _γ =2.348 <i>22</i> (1974LeYO). (461γ)(215γ)(θ): A ₂ =-0.011 <i>17</i> , A ₄ =+0.001 <i>31</i> . (461γ)(264γ)(θ): A ₂ =+0.041 <i>23</i> , A ₄ =-0.01 <i>4</i> . (461γ)(367γ)(θ): A ₂ =-0.04 <i>2</i> , A ₄ =+0.05 <i>5</i> . (461γ)(416γ)(θ): A ₂ =+0.024 <i>19</i> , A ₄ =-0.01 <i>4</i> . (416γ)(632γ)(θ): A ₂ =+0.06 <i>3</i> , A ₄ =+0.09 <i>6</i> . (461γ)(907γ)(θ): A ₂ =+0.04 <i>25</i> , A ₄ =+0.02 <i>5</i> .
470.5 <i>10</i>	0.029 <i>14</i>	1345.19	(3/2 ⁻ ,5/2,7/2 ⁻)	875.22	3/2 ⁻ ,5/2 ⁺			E _γ =471 <i>1</i> , I _γ =0.043 <i>20</i> (2012Me04). E _γ =470, I _γ =0.015 <i>1</i> (1974LeYO).
475.46 <i>10</i>	2.01 <i>17</i>	475.48	9/2 ⁺	0.0	3/2 ⁻	[E3]		E _γ =475.49 <i>10</i> , I _γ =2.18 <i>6</i> (2012Me04). E _γ =475.433 <i>17</i> , I _γ =1.837 <i>16</i> (1974LeYO).
504.02 <i>12</i>	0.125 <i>9</i>	2341.75	(5/2) ⁺	1837.72	(≤7/2)			E _γ =504.10 <i>12</i> , I _γ =0.119 <i>9</i> (2012Me04). E _γ =503.94 <i>6</i> , I _γ =0.130 <i>2</i> (1974LeYO).
520.6 <i>10</i>	0.52 <i>26</i>	784.71	7/2 ⁻	264.427	5/2 ⁻			E _γ =520.6 <i>10</i> , I _γ =0.49 <i>26</i> (2012Me04). E _γ =520, I _γ =0.55 <i>6</i> (1974LeYO).
531.26 <i>14</i>	0.081 <i>11</i>	1732.80	(3/2 ⁻ ,5/2 ⁺)	1201.41	1/2 ⁺			(520γ)(264γ)(θ): A ₂ =+0.22 <i>3</i> , A ₄ =-0.08 <i>6</i> . E _γ =531.20 <i>14</i> , I _γ =0.076 <i>11</i> (2012Me04). E _γ =531.32 <i>18</i> , I _γ =0.086 <i>1</i> (1974LeYO).
534.99 <i>15</i>	0.070 <i>11</i>	1319.76	7/2 ⁻	784.71	7/2 ⁻			E _γ =535.00 <i>15</i> , I _γ =0.059 <i>10</i> (2012Me04). E _γ =534.99 <i>14</i> , I _γ =0.082 <i>1</i> (1974LeYO).
557 ^a <i>1</i>	≈0.08 ^a	1837.72	(≤7/2)	1279.99	(≤7/2)			
557.92 ^{&} <i>8</i>	31.6 <i>18</i>	1189.83	7/2 ⁻	631.88	5/2 ⁺	(E1+M2)	-0.139 <i>6</i>	E _γ =558.03 <i>10</i> , I _γ =33.5 <i>8</i> (2012Me04). E _γ =558.018 <i>13</i> , I _γ =29.79 <i>19</i> (1974LeYO). E _γ =557.70 <i>8</i> (1968Do05 , curved-crystal data). δ: from the following γγ(θ) data: (558γ)(215γ)(θ): A ₂ =-0.029 <i>4</i> , A ₄ =-0.003 <i>8</i> . (558γ)(264γ)(θ): A ₂ =+0.184 <i>5</i> , A ₄ =+0.004 <i>10</i> . (558γ)(367γ)(θ): A ₂ =-0.147 <i>6</i> , A ₄ =+0.016 <i>11</i> . (558γ)(416γ)(θ): A ₂ =+0.124 <i>5</i> , A ₄ =+0.003 <i>9</i> . (558γ)(632γ)(θ): A ₂ =+0.115 <i>9</i> , A ₄ =+0.005 <i>16</i> .
569.39 <i>16</i>	0.28 <i>13</i>	1201.41	1/2 ⁺	631.88	5/2 ⁺			E _γ =569.55 <i>11</i> , I _γ =0.423 <i>18</i> (2012Me04). E _γ =569.22 <i>12</i> , I _γ =0.146 <i>1</i> (1974LeYO).
582.56 <i>10</i>	1.51 <i>6</i>	2110.94	5/2 ⁺	1528.34	5/2 ⁺			E _γ =582.58 <i>10</i> , I _γ =1.57 <i>5</i> (2012Me04). E _γ =582.537 <i>14</i> , I _γ =1.447 <i>8</i> (1974LeYO).
610.88 <i>14</i>	0.128 <i>14</i>	875.22	3/2 ⁻ ,5/2 ⁺	264.427	5/2 ⁻			E _γ =610.80 <i>14</i> , I _γ =0.142 <i>11</i> (2012Me04). E _γ =610.96 <i>14</i> , I _γ =0.114 <i>1</i> (1974LeYO).
614.36 ^f <i>10</i>	1.00 ^f <i>15</i>	614.48	3/2 ⁻	0.0	3/2 ⁻			E _γ : from 1974LeYO , but uncertainty increased from 0.03 to 0.10 keV. E _γ =614, I _γ =1.05 <i>15</i> ; E _γ =614.43 <i>10</i> , I _γ =1.24 <i>4</i> for the Additional information 1 . E _γ =614.36 <i>3</i> , I _γ =0.94 <i>9</i> (1974LeYO).
614.36 ^f <i>10</i>	0.175 ^f <i>26</i>	1398.70	(7/2 ⁺)	784.71	7/2 ⁻			E _γ : poor fit, level-energy difference=613.99.

9

⁷⁷Ge β⁻ decay (11.211 h) **1974LeYO,2012Me04** (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
						Additional information 3. E _γ =614, I _γ =0.185 26; E _γ =614.43 10, I _γ =1.24 4 for the. E _γ =614.36 3, I _γ =0.165 17 (1974LeYO). E _γ =624.73 11, I _γ =0.374 13 (2012Me04). E _γ =624.76 9, I _γ =0.338 2 (1974LeYO). (625γ)(264γ)(θ): A ₂ =-0.37 3, A ₄ =+0.02 6. E _γ =631.87 10, I _γ =14.6 4 (2012Me04). E _γ =631.823 13, I _γ =12.92 6 (1974LeYO). E _γ =634.41 10, I _γ =4.18 11 (2012Me04). E _γ =634.389 15, I _γ =3.859 9 (1974LeYO). E _γ =639.27 15, I _γ =0.053 8 (2012Me04). E _γ =638.97 18, I _γ =0.075 1 (1974LeYO). E _γ =655.12 22, I _γ =0.029 8 (2012Me04). E _γ =655.28 23, I _γ =0.023 1 (1974LeYO). E _γ =659.92 15, I _γ =0.058 9 (2012Me04). E _γ =660.06 7, I _γ =0.057 1 (1974LeYO). E _γ =665.6 4, I _γ =0.014 7 (2012Me04). E _γ =665.4 7, I _γ =0.009 1 (1974LeYO). E _γ : poor fit, level-energy difference=673.48. E _γ =673.14 10, I _γ =1.45 4 (2012Me04) for doublet. E _γ =673.09 3, I _γ =0.247 25 (1974LeYO). E _γ =673.14 10, I _γ =1.45 4 (2012Me04) for the doublet. E _γ =673.09 3, I _γ =0.99 10 (1974LeYO). E _γ =680.44 14, I _γ =0.077 8 (2012Me04). E _γ =680.36 12, I _γ =0.072 1 (1974LeYO). E _γ =685.24 11, I _γ =0.181 10 (2012Me04) for doublet. E _γ =685.37 4, I _γ =0.124 13 (1974LeYO). E _γ =685.24 11, I _γ =0.181 10 (2012Me04) for doublet. E _γ =685.37 4, I _γ =0.047 5 (1974LeYO). E _γ =698.60 11, I _γ =0.445 17 (2012Me04). E _γ =698.538 25, I _γ =0.424 4 (1974LeYO). E _γ =705.26 11, I _γ =0.206 10 (2012Me04). E _γ =705.24 8, I _γ =0.198 2 (1974LeYO). E _γ =712.33 11, I _γ =1.70 5 (2012Me04). E _γ =712.35 3, I _γ =1.525 8 (1974LeYO). E _γ =714.39 10, I _γ =14.9 4 (2012Me04). E _γ =714.345 12, I _γ =13.26 7 (1974LeYO). E _γ =714.10 9 (1968Do05, curved-crystal data). E _γ =730.65 18, I _γ =0.041 6 (2012Me04). E _γ =730.4 3, I _γ =0.038 1 (1974LeYO). E _γ =743.61 11, I _γ =0.385 14 (2012Me04). E _γ =743.648 25, I _γ =0.329 2 (1974LeYO).
624.75 11	0.356 13	889.02	3/2 ⁻ ,5/2,7/2 ⁻	264.427	5/2 ⁻	
631.85 10	13.8 8	631.88	5/2 ⁺	0.0	3/2 ⁻	
634.40 10	4.02 16	634.48	5/2 ⁺ ,7/2 ⁻	0.0	3/2 ⁻	
639.12 15	0.064 11	1528.34	5/2 ⁺	889.02	3/2 ⁻ ,5/2,7/2 ⁻	
655.20 22	0.026 8	2000.19	5/2 ⁺	1345.19	(3/2 ⁻ ,5/2,7/2 ⁻)	
659.99 15	0.058 9	875.22	3/2 ⁻ ,5/2 ⁺	215.54	3/2 ⁻	
665.5 4	0.011 7	1279.99	(≤7/2)	614.48	3/2 ⁻	
673.12 ^f 10	0.247 ^{fb} 25	889.02	3/2 ⁻ ,5/2,7/2 ⁻	215.54	3/2 ⁻	
673.12 ^f 10	0.99 ^{fb} 10	1457.75	(5/2,7/2 ⁻)	784.71	7/2 ⁻	
680.40 14	0.075 8	875.22	3/2 ⁻ ,5/2 ⁺	194.70	3/2 ⁻	
685.31 ^f 11	0.124 ^{fb} 13	1319.76	7/2 ⁻	634.48	5/2 ⁺ ,7/2 ⁻	
685.31 ^f 11	0.047 ^{fb} 5	1560.47	5/2 ⁺	875.22	3/2 ⁻ ,5/2 ⁺	
698.57 11	0.434 17	1573.77	(3/2 ⁻ ,5/2,7/2 ⁻)	875.22	3/2 ⁻ ,5/2 ⁺	
705.25 11	0.202 10	1319.76	7/2 ⁻	614.48	3/2 ⁻	
712.34 11	1.61 8	2110.94	5/2 ⁺	1398.70	(7/2 ⁺)	
714.37 ^{&} 10	14.1 8	1189.83	7/2 ⁻	475.48	9/2 ⁺	
730.53 18	0.040 6	1345.19	(3/2 ⁻ ,5/2,7/2 ⁻)	614.48	3/2 ⁻	
743.63 11	0.357 28	1528.34	5/2 ⁺	784.71	7/2 ⁻	

7

⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04 (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[‡]</u>	<u>Comments</u>
745.77 10	1.93 13	1221.30	(11/2 ⁺)	475.48	9/2 ⁺		Eγ=745.80 10, Iγ=2.06 6 (2012Me04). Eγ=745.748 12, Iγ=1.792 9 (1974LeYO).
749.89 10	1.75 11	1971.17	7/2 ⁺ ,9/2 ⁺	1221.30	(11/2 ⁺)		Eγ=749.92 10, Iγ=1.87 5 (2012Me04). Eγ=749.861 12, Iγ=1.639 8 (1974LeYO).
766.75 10	1.55 8	1398.70	(7/2 ⁺)	631.88	5/2 ⁺	(D+Q)	(750γ)(746γ)(θ): A ₂ =-0.122 22, A ₄ =+0.13 4. Eγ=766.79 10, Iγ=1.64 5 (2012Me04). Eγ=766.715 13, Iγ=1.456 7 (1974LeYO). δ: δ=+0.2 +2 -1 for J(1399)=5/2. (767γ)(215γ)(θ): A ₂ =+0.084 23, A ₄ =-0.03 4. (767γ)(264γ)(θ): A ₂ =-0.35 3, A ₄ =0.00 6. (767γ)(367γ)(θ): A ₂ =+0.26 4, A ₄ =-0.03 7. (767γ)(416γ)(θ): A ₂ =+0.124 5, A ₄ =+0.003 9.
775.84 19	0.031 7	1560.47	5/2 ⁺	784.71	7/2 ⁻		Eγ=775.93 19, Iγ=0.033 7 (2012Me04). Eγ=775.75 30, Iγ=0.028 1 (1974LeYO).
781.29 10	2.00 12	1971.17	7/2 ⁺ ,9/2 ⁺	1189.83	7/2 ⁻		Eγ=781.31 10, Iγ=2.13 6 (2012Me04). Eγ=781.261 13, Iγ=1.879 9 (1974LeYO). (781γ)(367γ)(θ): A ₂ =-0.042 24, A ₄ =+0.05 5, (781γ)(416)(θ): A ₂ =-0.14 3, A ₄ =-0.03 6, (781γ)(558γ)(θ): A ₂ =-0.257 25, A ₄ =+0.03 4.
784.80 10	2.58 14	784.71	7/2 ⁻	0.0	3/2 ⁻		Eγ=784.83 10, Iγ=2.73 7 (2012Me04). Eγ=784.770 12, Iγ=2.438 12 (1974LeYO).
788.96 11	0.189 10	1573.77	(3/2 ⁻ ,5/2,7/2 ⁻)	784.71	7/2 ⁻		Eγ=789.00 11, Iγ=0.198 10 (2012Me04). Eγ=788.92 8, Iγ=0.180 1 (1974LeYO).
794.37 11	0.56 5	1058.68	(9/2 ⁻)	264.427	5/2 ⁻		Eγ=794.42 11, Iγ=0.617 18 (2012Me04). Eγ=794.328 18, Iγ=0.513 5 (1974LeYO). (794γ)(264γ)(θ): A ₂ =-0.34 3, A ₄ =+0.02 5.
798.82 12	0.100 11	2000.19	5/2 ⁺	1201.41	1/2 ⁺		Eγ=798.84 12, Iγ=0.111 8 (2012Me04). Eγ=798.80 7, Iγ=0.089 1 (1974LeYO).
802.92 13	0.066 13	2341.75	(5/2 ⁺)	1538.86	(1/2 ⁺ ,3/2,5/2 ⁺)		Eγ=803.00 13, Iγ=0.079 8 (2012Me04). Eγ=802.84 23, Iγ=0.052 1 (1974LeYO).
810.38 10	4.47 26	2000.19	5/2 ⁺	1189.83	7/2 ⁻	(D+Q)	Eγ=810.40 10, Iγ=4.73 12 (2012Me04). Eγ=810.352 12, Iγ=4.210 21 (1974LeYO). δ: δ=0.194 30 or 2.37 18. For (810γ)(367γ)(θ): A ₂ =-0.26 3, A ₄ =0.00 5, (810γ)(416γ)(θ): A ₂ =+0.201 23, A ₄ =0.00 4, (810γ)(558γ)(θ): A ₂ =+0.399 17, A ₄ =-0.04 3, and (810γ)(632γ)(θ): A ₂ =+0.15 4, A ₄ =+0.02 8.
813.40 11	0.261 11	2341.75	(5/2 ⁺)	1528.34	5/2 ⁺		Eγ=813.44 11, Iγ=0.277 11 (2012Me04). Eγ=813.36 8, Iγ=0.244 1 (1974LeYO).
823.25 12	1.19 7	1457.75	(5/2,7/2 ⁻)	634.48	5/2 ⁺ ,7/2 ⁻		Eγ=823.37 10, Iγ=1.26 4 (2012Me04). Eγ=823.13 4, Iγ=1.114 6 (1974LeYO). (823γ)(634γ)(θ): A ₂ =-0.17 3, A ₄ =+0.09 5.
825.80 [#] 12	0.120 [#] 8	1457.75	(5/2,7/2 ⁻)	631.88	5/2 ⁺		Eγ=825.4 8, Iγ=0.08 2 (1971Yt01).
843.22 11	0.405 19	1457.75	(5/2,7/2 ⁻)	614.48	3/2 ⁻		Eγ=843.26 11, Iγ=0.425 15 (2012Me04). Eγ=843.173 17, Iγ=0.386 2 (1974LeYO).

∞

⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04 (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[‡]</u>	<u>δ[‡]</u>	<u>Comments</u>
857.62 9	0.057 5	1732.80	(3/2 ⁻ ,5/2 ⁺)	875.22	3/2 ⁻ ,5/2 ⁺			E _γ ,I _γ : from 1974LeYO. Intensity uncertainty increased from 0.001 to 0.005. E _γ =858 1 (2012Me04).
875.23 10	1.54 9	875.22	3/2 ⁻ ,5/2 ⁺	0.0	3/2 ⁻			E _γ =875.26 10, I _γ =1.63 5 (2012Me04).
884.12 23	0.030 7	2341.75	(5/2) ⁺	1457.75	(5/2,7/2 ⁻)			E _γ =875.191 17, I _γ =1.451 7 (1974LeYO). E _γ =884.07 23, I _γ =0.030 7 (2012Me04).
889.3 6	0.019 7	889.02	3/2 ⁻ ,5/2,7/2 ⁻	0.0	3/2 ⁻			E _γ =884.17 16, I _γ =0.029 1 (1974LeYO). E _γ =889.4 6, I _γ =0.011 7 (2012Me04).
896.54 11	0.236 10	1528.34	5/2 ⁺	631.88	5/2 ⁺			E _γ =889.23 19, I _γ =0.026 1 (1974LeYO).
900.74 13	0.200 24	1165.00	5/2 ⁻	264.427	5/2 ⁻			E _γ =896.56 11, I _γ =0.245 10 (2012Me04).
907.01 10	1.87 10	1538.86	(1/2 ⁺ ,3/2,5/2 ⁺)	631.88	5/2 ⁺			E _γ =896.51 5, I _γ =0.227 1 (1974LeYO). E _γ =900.51 13, I _γ =0.175 14 (2012Me04).
913.85 11	0.73 5	1528.34	5/2 ⁺	614.48	3/2 ⁻			E _γ =900.97 11, I _γ =0.224 1 (1974LeYO). E _γ =907.03 10, I _γ =1.97 5 (2012Me04). E _γ =906.986 13, I _γ =1.764 9 (1974LeYO). (907γ)(215γ)(θ): A ₂ =-0.040 23, A ₄ =-0.02 4. (907γ)(367γ)(θ): A ₂ =-0.17 4, A ₄ =+0.04 7. (907γ)(416γ)(θ): A ₂ =+0.11 3, A ₄ =+0.08 5.
921.01 13	0.148 15	2110.94	5/2 ⁺	1189.83	7/2 ⁻			E _γ =913.90 11, I _γ =0.774 22 (2012Me04).
923.14 11	1.38 10	1398.70	(7/2 ⁺)	475.48	9/2 ⁺			E _γ =913.805 20, I _γ =0.678 3 (1974LeYO). (914γ)(420γ)(θ): A ₂ =-0.151 41, A ₄ =+0.13 7.
924 ^a 1		1538.86	(1/2 ⁺ ,3/2,5/2 ⁺)	614.48	3/2 ⁻			E _γ =920.98 13, I _γ =0.163 12 (2012Me04).
925.48 ^f 11	1.33 ^{fb} 13	1189.83	7/2 ⁻	264.427	5/2 ⁻			E _γ =921.04 8, I _γ =0.132 1 (1974LeYO).
925.48 ^f 11	0.119 ^{fb} 12	1560.47	5/2 ⁺	634.48	5/2 ⁺ ,7/2 ⁻			E _γ =923.13 11, I _γ =1.49 4 (2012Me04). E _γ =923.143 20, I _γ =1.279 6 (1974LeYO).
928.89 10	2.05 11	1560.47	5/2 ⁺	631.88	5/2 ⁺	(M1+E2)	-0.6 4	E _γ =925.51 11, I _γ =1.69 5 (2012Me04) for doublet. E _γ =925.473 16, I _γ =1.33 13 (1974LeYO). E _γ : poor fit, level-energy difference=925.98. E _γ =925.51 11, I _γ =1.69 5 (2012Me04) for doublet. E _γ =925.473 16, I _γ =0.119 12 (1974LeYO).
939.39 11	0.57 4	1573.77	(3/2 ⁻ ,5/2,7/2 ⁻)	634.48	5/2 ⁺ ,7/2 ⁻			E _γ : poor fit, level-energy difference=928.58. E _γ =928.92 10, I _γ =2.16 6 (2012Me04). E _γ =928.853 12, I _γ =1.937 10 (1974LeYO). δ: from (929γ)(215γ)(θ): A ₂ =+0.082 21, A ₄ =-0.06 4; (929γ)(367γ)(θ): A ₂ =+0.28 4, A ₄ =+0.09 7; (929γ)(416γ)(θ): A ₂ =-0.26 3, A ₄ =-0.01 5.
945.65 ^e 18	0.069 ^e 14	1560.47	5/2 ⁺	614.48	3/2 ⁻			E _γ =939.42 11, I _γ =0.608 20 (2012Me04).
945.65 ^{eg} 18	0.069 ^e 14	2110.94	5/2 ⁺	1165.00	5/2 ⁻			E _γ =939.350 15, I _γ =0.528 3 (1974LeYO). (939γ)(634γ)(θ): A ₂ =-0.13 5, A ₄ =-0.03 8.
								E _γ =945.57 18, I _γ =0.081 14 (2012Me04) for doublet. E _γ =945.73 7, I _γ =0.057 1 (1974LeYO) for doublet. E _γ =945.57 18, I _γ =0.081 14 (2012Me04) for doublet. E _γ =945.73 7, I _γ =0.057 1 (1974LeYO) for doublet.

⁷⁷Ge β⁻ decay (11.211 h) **1974LeYO,2012Me04** (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
959.26 11	0.146 16	1573.77	(3/2 ⁻ ,5/2,7/2 ⁻)	614.48	3/2 ⁻	E _γ =959.27 11, I _γ =0.162 10 (2012Me04). E _γ =959.24 4, I _γ =0.130 1 (1974LeYO).
966.74 [#] 22	0.062 [#] 13	2424.53	(7/2 ⁻)	1457.75	(5/2,7/2 ⁻)	E _γ =966.4 10, I _γ =0.07 2 (1971Yt01). γ not in 1974LeYO.
970.34 [#] 19	0.049 [#] 8	1165.00	5/2 ⁻	194.70	3/2 ⁻	E _γ =970.1 1, I _γ =0.050 15 (1971Yt01); E _γ =970 (1974LeYO).
974 ^a		1189.83	7/2 ⁻	215.54	3/2 ⁻	
985.76 11	0.211 27	1201.41	1/2 ⁺	215.54	3/2 ⁻	E _γ =985.79 11, I _γ =0.238 19 (2012Me04). E _γ =985.73 5, I _γ =0.183 1 (1974LeYO).
996.56 11	0.205 11	2341.75	(5/2) ⁺	1345.19	(3/2 ⁻ ,5/2,7/2 ⁻)	E _γ =996.56 11, I _γ =0.215 11 (2012Me04). E _γ =996.55 3, I _γ =0.195 1 (1974LeYO).
1007.46 25	0.026 6	1201.41	1/2 ⁺	194.70	3/2 ⁻	E _γ : poor fit, level-energy difference=1006.70. E _γ =1007.45 25, I _γ =0.026 6 (2012Me04). E _γ =1007.47 20, I _γ =0.025 1 (1974LeYO).
1021.9 3	0.018 6	2341.75	(5/2) ⁺	1319.76	7/2 ⁻	E _γ =1021.9 3, I _γ =0.024 6 (2012Me04). E _γ =1021.9 5, I _γ =0.011 1 (1974LeYO).
1030 ^{ag}		2195.9?	1/2 ⁻	1165.00	5/2 ⁻	
1052.56 13	0.071 13	1528.34	5/2 ⁺	475.48	9/2 ⁺	E _γ =1052.58 13, I _γ =0.085 8 (2012Me04). E _γ =1052.54 15, I _γ =0.058 1 (1974LeYO).
1055.8 ^e 4	0.020 ^e 7	1319.76	7/2 ⁻	264.427	5/2 ⁻	E _γ =1055.8 4, I _γ =0.020 7 (2012Me04). E _γ =1055 (1974LeYO).
1055.8 ^{eg} 4	0.020 ^e 7	2513.48	(7/2) ⁺	1457.75	(5/2,7/2 ⁻)	E _γ =1055.8 4, I _γ =0.020 7 (2012Me04) for doublet. E _γ =1055 (1974LeYO).
1061.77 12	0.303 23	2341.75	(5/2) ⁺	1279.99	(≤7/2)	E _γ =1061.85 12, I _γ =0.326 20 (2012Me04). E _γ =1061.699 23, I _γ =0.279 1 (1974LeYO).
1080.84 11	0.50 5	1345.19	(3/2 ⁻ ,5/2,7/2 ⁻)	264.427	5/2 ⁻	E _γ =1080.86 11, I _γ =0.546 19 (2012Me04). E _γ =1080.82 8, I _γ =0.447 2 (1974LeYO). (1081γ)(264γ)(θ): A ₂ =+0.06 4, A ₄ =+0.06 6.
1085.23 10	12.0 7	1560.47	5/2 ⁺	475.48	9/2 ⁺	E _γ =1085.27 10, I _γ =12.7 4 (2012Me04). E _γ =1085.188 13, I _γ =11.22 6 (1974LeYO).
1104.26 13	0.072 9	1319.76	7/2 ⁻	215.54	3/2 ⁻	E _γ =1104.28 13, I _γ =0.081 7 (2012Me04). E _γ =1104.23 7, I _γ =0.063 1 (1974LeYO).
1114.85 11	0.208 16	2513.48	(7/2) ⁺	1398.70	(7/2 ⁺)	E _γ =1114.90 11, I _γ =0.224 10 (2012Me04). E _γ =1114.80 3, I _γ =0.191 1 (1974LeYO).
1125.02 11	0.237 19	2000.19	5/2 ⁺	875.22	3/2 ⁻ ,5/2 ⁺	E _γ =1125.05 11, I _γ =0.256 11 (2012Me04). E _γ =1124.99 3, I _γ =0.218 1 (1974LeYO).
1130.1 4	0.017 6	1345.19	(3/2 ⁻ ,5/2,7/2 ⁻)	215.54	3/2 ⁻	E _γ =1130.1 4, I _γ =0.017 6 (2012Me04). E _γ =1130 (1974LeYO).
1134.76 14	0.061 9	1350.29	(3/2 ⁻ ,5/2,7/2 ⁻)	215.54	3/2 ⁻	E _γ =1134.74 14, I _γ =0.070 7 (2012Me04). E _γ =1134.77 10, I _γ =0.051 1 (1974LeYO).
1151.90 11	0.377 15	2341.75	(5/2) ⁺	1189.83	7/2 ⁻	E _γ =1151.96 11, I _γ =0.392 14 (2012Me04). E _γ =1151.837 23, I _γ =0.362 2 (1974LeYO).
1155.52 26	0.031 6	1350.29	(3/2 ⁻ ,5/2,7/2 ⁻)	194.70	3/2 ⁻	E _γ =1155.66 26, I _γ =0.025 6 (2012Me04). E _γ =1155.37 17, I _γ =0.036 2 (1974LeYO).

⁷⁷Ge β⁻ decay (11.211 h) **1974LeYO,2012Me04** (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[‡]</u>	<u>Comments</u>
1164.72 15	0.073 18	1165.00	5/2 ⁻	0.0	3/2 ⁻		E _γ =1164.79 15, I _γ =0.054 6 (2012Me04). E _γ =1164.65 11, I _γ =0.091 1 (1974LeYO).
1186.52 13	0.081 11	1971.17	7/2 ⁺ ,9/2 ⁺	784.71	7/2 ⁻		E _γ =1186.53 13, I _γ =0.092 7 (2012Me04). E _γ =1186.52 9, I _γ =0.069 1 (1974LeYO).
1193.30 10	5.03 27	1457.75	(5/2,7/2 ⁻)	264.427	5/2 ⁻		E _γ =1193.33 10, I _γ =5.30 13 (2012Me04). E _γ =1193.263 13, I _γ =4.764 24 (1974LeYO). (1193γ)(264γ)(θ): A ₂ =-0.372 10, A ₄ =-0.002 19 (1974LeYO). For the same cascade 1975Ch32 give A ₂ =+0.643 4, A ₄ =+0.051 6. Note severe disagreement in the sign and magnitude of A ₂ value.
1201.43 14	0.142 13	1201.41	1/2 ⁺	0.0	3/2 ⁻		E _γ =1201.43 14, I _γ =0.134 13 (2012Me04). E _γ =1201.43 10, I _γ =0.151 1 (1974LeYO).
1215.43 11	0.252 16	2000.19	5/2 ⁺	784.71	7/2 ⁻		E _γ =1215.45 11, I _γ =0.269 11 (2012Me04). E _γ =1215.418 23, I _γ =0.236 1 (1974LeYO).
1234.60 15	0.053 6	2424.53	(7/2 ⁻)	1189.83	7/2 ⁻		E _γ =1234.64 15, I _γ =0.053 6 (2012Me04). E _γ =1234.55 11, I _γ =0.052 1 (1974LeYO).
1242.23 11	0.79 5	1457.75	(5/2,7/2 ⁻)	215.54	3/2 ⁻		E _γ =1242.27 11, I _γ =0.840 24 (2012Me04). E _γ =1242.183 15, I _γ =0.738 4 (1974LeYO).
1263.91 10	1.68 11	1528.34	5/2 ⁺	264.427	5/2 ⁻	(E1)	(1242γ)(215γ)(θ): A ₂ =-0.031 26, A ₄ =-0.03 5. E _γ =1263.95 10, I _γ =1.79 5 (2012Me04). E _γ =1263.862 15, I _γ =1.573 8 (1974LeYO).
1279.99 11	0.344 22	1279.99	(≤7/2)	0.0	3/2 ⁻		δ: -1.41 6 or -0.079 13 from (1264γ)(264γ)(θ): A ₂ =-0.430 20, A ₄ =-0.03 3. E _γ =1280.02 11, I _γ =0.366 13 (2012Me04). E _γ =1279.957 20, I _γ =0.322 2 (1974LeYO).
1295.61 ^f 11	0.166 ^{fb} 17	1560.47	5/2 ⁺	264.427	5/2 ⁻		E _γ : poor fit, level-energy difference=1296.03. E _γ =1295.51 11, I _γ =0.339 15 (2012Me04) for doublet. E _γ =1295.71 8, I _γ =0.166 17 (1974LeYO).
1295.61 ^f 11	0.111 ^{fb} 11	2354.22	(7/2 ⁻)	1058.68	(9/2 ⁻)		E _γ =1295.51 11, I _γ =0.339 15 (2012Me04) for doublet. E _γ =1295.71 8, I _γ =0.111 11 (1974LeYO).
1309.32 11	0.96 6	1573.77	(3/2 ⁻ ,5/2,7/2 ⁻)	264.427	5/2 ⁻		E _γ =1309.37 11, I _γ =1.02 3 (2012Me04). E _γ =1309.271 16, I _γ =0.902 5 (1974LeYO).
1312.84 11	0.70 3	1528.34	5/2 ⁺	215.54	3/2 ⁻	(D+Q)	(1309γ)(264γ)(θ): A ₂ =-0.37 3, A ₄ =+0.02 5. E _γ =1312.88 11, I _γ =0.732 21 (2012Me04). E _γ =1312.802 16, I _γ =0.664 3 (1974LeYO).
1319.71 11	0.553 17	1319.76	7/2 ⁻	0.0	3/2 ⁻		δ: -5.86 17 or -1.03 11 from (1313γ)(215γ)(θ): A ₂ =-0.09 3, A ₄ =-0.01 5. E _γ =1319.76 11, I _γ =0.548 17 (2012Me04). E _γ =1319.662 17, I _γ =0.558 3 (1974LeYO).
1323.25 23	0.032 5	1538.86	(1/2 ⁺ ,3/2,5/2 ⁺)	215.54	3/2 ⁻		E _γ =1323.17 23, I _γ =0.033 5 (2012Me04). E _γ =1323.33 10, I _γ =0.030 1 (1974LeYO).
1326.07 13	0.081 9	2110.94	5/2 ⁺	784.71	7/2 ⁻		E _γ =1326.08 13, I _γ =0.090 7 (2012Me04). E _γ =1326.05 8, I _γ =0.071 1 (1974LeYO).
1339.28 11	0.141 13	1971.17	7/2 ⁺ ,9/2 ⁺	631.88	5/2 ⁺		E _γ =1339.37 11, I _γ =0.154 8 (2012Me04). E _γ =1339.19 3, I _γ =0.127 1 (1974LeYO).
1354.29 17	0.035 8	2543.96	(5/2,7/2 ⁻)	1189.83	7/2 ⁻		E _γ =1354.26 17, I _γ =0.043 6 (2012Me04). E _γ =1354.31 19, I _γ =0.027 1 (1974LeYO).

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[‡]</u>	<u>Comments</u>
1358.4 3	0.043 11	1573.77	(3/2 ⁻ ,5/2,7/2 ⁻)	215.54	3/2 ⁻		E _γ =1358.08 20, I _γ =0.032 5 (2012Me04). E _γ =1358.74 21, I _γ =0.054 1 (1974LeYO).
1365 ^a 1		2424.53	(7/2 ⁻)	1058.68	(9/2 ⁻)		
1368.45 10	5.99 20	2000.19	5/2 ⁺	631.88	5/2 ⁺	(D+Q)	E _γ : from 2012Me04. E _γ =1368.45 10, I _γ =5.79 15 (2012Me04). E _γ =1368.4 5 (1971Yt01). E _γ =1368, I _γ =6.2 6 (1974LeYO). δ: δ=-21 12 or 0.52 5. From (1368γ)(215γ)(θ): A ₂ =-0.012, A ₄ =0, (1368γ)(264γ)(θ): A ₂ =+0.051 18, A ₄ =-0.02 3, (1368γ)(367γ)(θ): A ₂ =-0.09 2, A ₄ =+0.02 4, (1368γ)(416γ)(θ): A ₂ =+0.048 17, A ₄ =-0.1 3, (1368γ)(632γ)(θ): A ₂ =+0.13 3, A ₄ =0.00 5.
1385.81 23	0.018 4	2000.19	5/2 ⁺	614.48	3/2 ⁻		E _γ =1385.83 23, I _γ =0.022 4 (2012Me04). E _γ =1385.78 21, I _γ =0.014 1 (1974LeYO).
1397.3 ^{ag} 3	0.014 ^a 1	1397.65?	(5/2 ⁻ ,7/2 ⁻)	0.0	3/2 ⁻		
1411.2 ^{#g} 3	0.013 [#] 4	2195.9?	1/2 ⁻	784.71	7/2 ⁻	[M3]	E _γ =1411.2 3, I _γ =0.013 4 (2012Me04). E _γ =1411 (1974LeYO).
1452.67 11	0.238 13	2341.75	(5/2) ⁺	889.02	3/2 ⁻ ,5/2,7/2 ⁻		E _γ =1452.74 11, I _γ =0.251 11 (2012Me04). E _γ =1452.59 4, I _γ =0.224 1 (1974LeYO).
1454.93 20	0.067 7	2513.48	(7/2) ⁺	1058.68	(9/2 ⁻)		E _γ =1455.09 20, I _γ =0.066 7 (2012Me04). E _γ =1454.76 15, I _γ =0.068 1 (1974LeYO).
1465.4 ^f 3	0.111 ^{fb} 11	2341.75	(5/2) ⁺	875.22	3/2 ⁻ ,5/2 ⁺		E _γ : poor fit, level-energy difference=1466.5. E _γ =1465.07 16, I _γ =0.133 18 (2012Me04) for doublet. E _γ =1465.75 9, I _γ =0.111 11 (1974LeYO).
1465.4 ^f 3	0.110 ^{fb} 11	2354.22	(7/2 ⁻)	889.02	3/2 ⁻ ,5/2,7/2 ⁻		E _γ =1465.07 16, I _γ =0.133 18 (2012Me04) for doublet. E _γ =1465.75 8, I _γ =0.110 11 (1974LeYO).
1476.56 11	0.475 26	2110.94	5/2 ⁺	634.48	5/2 ⁺ ,7/2 ⁻		E _γ =1476.60 11, I _γ =0.501 17 (2012Me04). E _γ =1476.524 22, I _γ =0.449 2 (1974LeYO).
1479.03 ^f 11	0.158 ^{fb} 16	2110.94	5/2 ⁺	631.88	5/2 ⁺		E _γ =1479.07 11, I _γ =0.453 16 (2012Me04) for doublet. E _γ =1478.980 23, I _γ =0.158 16 (1974LeYO).
1479.03 ^f 11	0.236 ^{fb} 26	2354.22	(7/2 ⁻)	875.22	3/2 ⁻ ,5/2 ⁺		E _γ =1479.07 11, I _γ =0.453 16 (2012Me04) for doublet. E _γ =1478.980 23, I _γ =0.236 26 (1974LeYO).
1495.64 11	0.99 6	1971.17	7/2 ⁺ ,9/2 ⁺	475.48	9/2 ⁺		E _γ =1495.68 11, I _γ =1.05 3 (2012Me04). E _γ =1495.597 17, I _γ =0.924 5 (1974LeYO).
1528.33 13	0.093 7	1528.34	5/2 ⁺	0.0	3/2 ⁻		E _γ =1528.46 12, I _γ =0.100 7 (2012Me04). E _γ =1528.20 4, I _γ =0.086 1 (1974LeYO).
1538.83 11	0.281 17	1538.86	(1/2 ⁺ ,3/2,5/2 ⁺)	0.0	3/2 ⁻		E _γ =1538.90 11, I _γ =0.298 11 (2012Me04). E _γ =1538.763 20, I _γ =0.264 1 (1974LeYO).
1557.03 22	0.024 4	2341.75	(5/2) ⁺	784.71	7/2 ⁻		E _γ =1557.03 22, I _γ =0.024 4 (2012Me04). E _γ =1557.03 17, I _γ =0.023 1 (1974LeYO).
1569.37 12	0.106 7	2354.22	(7/2 ⁻)	784.71	7/2 ⁻		E _γ =1569.34 12, I _γ =0.105 7 (2012Me04). E _γ =1569.39 9, I _γ =0.106 1 (1974LeYO).
1573.74 11	1.31 9	1573.77	(3/2 ⁻ ,5/2,7/2 ⁻)	0.0	3/2 ⁻		E _γ =1573.80 11, I _γ =1.40 4 (2012Me04). E _γ =1573.688 20, I _γ =1.220 6 (1974LeYO).

⁷⁷Ge β⁻ decay (11.211 h) **1974LeYO,2012Me04** (continued)

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
1581 ^{ag}		2195.9?	1/2 ⁻	614.48	3/2 ⁻	
1624.4 3	0.021 10	2513.48	(7/2) ⁺	889.02	3/2 ⁻ ,5/2,7/2 ⁻	Eγ=1624.6 3, Iγ=0.031 6 (2012Me04). Eγ=1624.14 14, Iγ=0.010 2 (1974LeYO).
1639.6 3	0.014 4	2424.53	(7/2) ⁻	784.71	7/2 ⁻	Eγ=1639.7 3, Iγ=0.015 4 (2012Me04). Eγ=1639.5 5, Iγ=0.012 3 (1974LeYO).
1643.1 4	0.028 11	1837.72	(≤7/2)	194.70	3/2 ⁻	Eγ=1643.5 3, Iγ=0.016 4 (2012Me04). Eγ=1642.6 4, Iγ=0.039 1 (1974LeYO).
1709.86 11	0.61 4	2341.75	(5/2) ⁺	631.88	5/2 ⁺	Eγ=1709.90 11, Iγ=0.653 19 (2012Me04). Eγ=1709.812 23, Iγ=0.569 3 (1974LeYO).
1719.72 11	0.77 3	2354.22	(7/2) ⁻	634.48	5/2 ⁺ ,7/2 ⁻	Eγ=1719.78 11, Iγ=0.802 24 (2012Me04). Eγ=1719.656 22, Iγ=0.739 4 (1974LeYO).
1722.28 14	0.110 15	2354.22	(7/2) ⁻	631.88	5/2 ⁺	Eγ=1722.40 14, Iγ=0.125 10 (2012Me04). Eγ=1722.16 6, Iγ=0.095 1 (1974LeYO).
1727.24 11	0.286 12	2341.75	(5/2) ⁺	614.48	3/2 ⁻	Eγ=1727.30 11, Iγ=0.298 11 (2012Me04). Eγ=1727.18 3, Iγ=0.274 1 (1974LeYO).
1735.80 14	0.064 7	2000.19	5/2 ⁺	264.427	5/2 ⁻	Eγ=1735.94 14, Iγ=0.057 5 (2012Me04). Eγ=1735.66 7, Iγ=0.071 1 (1974LeYO).
1759.7 4	0.020 14	2543.96	(5/2,7/2 ⁻)	784.71	7/2 ⁻	Eγ=1759.7 4, Iγ=0.028 14 (2012Me04). Eγ=1759.6 3, Iγ=0.011 7 (1974LeYO).
1784.40 ^a 13	0.014 ^a 1	2000.19	5/2 ⁺	215.54	3/2 ⁻	
1792.48 24	0.06 3	2424.53	(7/2) ⁻	631.88	5/2 ⁺	Eγ=1792.53 24, Iγ=0.0276 8 (2012Me04). Eγ=1792.43 20, Iγ=0.089 2 (1974LeYO).
1810.29 14	0.072 5	2424.53	(7/2) ⁻	614.48	3/2 ⁻	Eγ=1810.38 14, Iγ=0.073 5 (2012Me04). Eγ=1810.20 18, Iγ=0.070 1 (1974LeYO).
1828.7 5	0.014 4	2463.3	(5/2,7/2,9/2 ⁺)	634.48	5/2 ⁺ ,7/2 ⁻	Eγ=1828.4 5, Iγ=0.010 4 (2012Me04). Eγ=1829.04 22, Iγ=0.018 5 (1974LeYO).
1831.5 3	0.035 16	2463.3	(5/2,7/2,9/2 ⁺)	631.88	5/2 ⁺	Eγ=1831.7 3, Iγ=0.018 4 (2012Me04). Eγ=1831.23 15, Iγ=0.051 1 (1974LeYO).
1846.50 11	0.333 16	2110.94	5/2 ⁺	264.427	5/2 ⁻	Eγ=1846.59 11, Iγ=0.349 12 (2012Me04). Eγ=1846.41 3, Iγ=0.317 2 (1974LeYO). (1864γ)(264γ)(θ): A ₂ =+0.17 6, A ₄ =-0.11 10.
1878.76 18	0.075 7	2354.22	(7/2) ⁻	475.48	9/2 ⁺	Eγ=1878.91 18, Iγ=0.082 7 (2012Me04). Eγ=1878.60 7, Iγ=0.068 1 (1974LeYO).
1881.57 24	0.030 6	2513.48	(7/2) ⁺	631.88	5/2 ⁺	Eγ=1881.66 24, Iγ=0.036 6 (2012Me04). Eγ=1881.48 20, Iγ=0.024 3 (1974LeYO).
1911.93 14	0.048 5	2543.96	(5/2,7/2 ⁻)	631.88	5/2 ⁺	Eγ=1911.95 14, Iγ=0.052 5 (2012Me04). Eγ=1911.91 11, Iγ=0.044 1 (1974LeYO).
1929.43 14	0.050 5	2543.96	(5/2,7/2 ⁻)	614.48	3/2 ⁻	Eγ=1929.44 14, Iγ=0.050 5 (2012Me04). Eγ=1929.41 11, Iγ=0.049 2 (1974LeYO).
1948.87 24	0.018 3	2424.53	(7/2) ⁻	475.48	9/2 ⁺	Eγ=1949.11 22, Iγ=0.020 3 (2012Me04). Eγ=1948.63 23, Iγ=0.015 2 (1974LeYO).
2000.19 11	1.10 6	2000.19	5/2 ⁺	0.0	3/2 ⁻	Eγ=2000.27 11, Iγ=1.16 4 (2012Me04). Eγ=2000.10 3, Iγ=1.038 5 (1974LeYO).

γ(⁷⁷As) (continued)

<u>E_γ[†]</u>	<u>I_γ^{†c}</u>	<u>E_i(level)</u>	<u>J_i^π</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
2037.87 12	0.122 8	2513.48	(7/2) ⁺	475.48	9/2 ⁺	Eγ=2037.97 12, Iγ=0.130 7 (2012Me04). Eγ=2037.76 5, Iγ=0.114 1 (1974LeYO).
2077.30 11	0.46 3	2341.75	(5/2) ⁺	264.427	5/2 ⁻	Eγ=2077.39 11, Iγ=0.493 16 (2012Me04). Eγ=2077.20 3, Iγ=0.432 2 (1974LeYO). (2077γ)(264γ)(θ): A ₂ =-0.38 5, A ₄ =-0.04 9.
2089.72 11	0.50 5	2354.22	(7/2) ⁻	264.427	5/2 ⁻	Eγ=2089.84 11, Iγ=0.548 17 (2012Me04). Eγ=2089.60 3, Iγ=0.443 2 (1974LeYO). (2090γ)(264γ)(θ): A ₂ =+0.084 5I, A ₄ =+0.11 9.
2126.24 11	0.393 15	2341.75	(5/2) ⁺	215.54	3/2 ⁻	Eγ=2126.32 11, Iγ=0.408 14 (2012Me04). Eγ=2126.15 3, Iγ=0.378 2 (1974LeYO). (2126γ)(215γ)(θ): A ₂ =-0.07 5, A ₄ =+0.11 9.
2248.6 4	0.031 3	2513.48	(7/2) ⁺	264.427	5/2 ⁻	Eγ=2249.03 15, Iγ=0.028 3 (2012Me04). Eγ=2248.12 14, Iγ=0.033 4 (1974LeYO).
2280.0 3	0.011 3	2543.96	(5/2,7/2) ⁻	264.427	5/2 ⁻	Eγ=2279.9 3, Iγ=0.0087 18 (2012Me04). Eγ=2280.0 6, Iγ=0.014 2 (1974LeYO).
2328.22 16	0.038 4	2543.96	(5/2,7/2) ⁻	215.54	3/2 ⁻	Eγ=2328.38 15, Iγ=0.035 4 (2012Me04). Eγ=2328.05 22, Iγ=0.041 2 (1974LeYO).
2341.74 11	0.94 6	2341.75	(5/2) ⁺	0.0	3/2 ⁻	Eγ=2341.84 11, Iγ=1.01 3 (2012Me04). Eγ=2341.63 4, Iγ=0.875 4 (1974LeYO).
2353.4 ^a 7	0.009 ^d 1	2354.22	(7/2) ⁻	0.0	3/2 ⁻	Additional information 4.

[†] Unweighted averages of values from 2012Me04 and 1974LeYO, unless otherwise stated. The uncertainties are assigned based on data in 2012Me04. The uncertainties quoted by 1974LeYO are generally too low to be realistic, these appear to be statistical only. There is overall good agreement between the γ-ray energies and intensities in the two studies: 1974LeYO and 2012Me04. The measured values from the two studies are listed under “document” records in the ENSDF file.

[‡] From γγ(θ) data in 1974LeYO, parities are deduced from comparison with RUL. Same values are given in Adopted Gammas.

From 2012Me04.

@ From curved-crystal data (1968Do05). Corresponding values from 2012Me04 and 1974LeYO are in good agreement.

& Unweighted average of values from 2012Me04, 1974LeYO and curved-crystal data from 1968Do05.

^a From 1974LeYO, γ not reported in 2012Me04.

^b From 1974LeYO.

^c For absolute intensity per 100 decays, multiply by 0.533 5.

^d 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.

^e Multiply placed with undivided intensity.

^f Multiply placed with intensity suitably divided.

^g Placement of transition in the level scheme is uncertain.

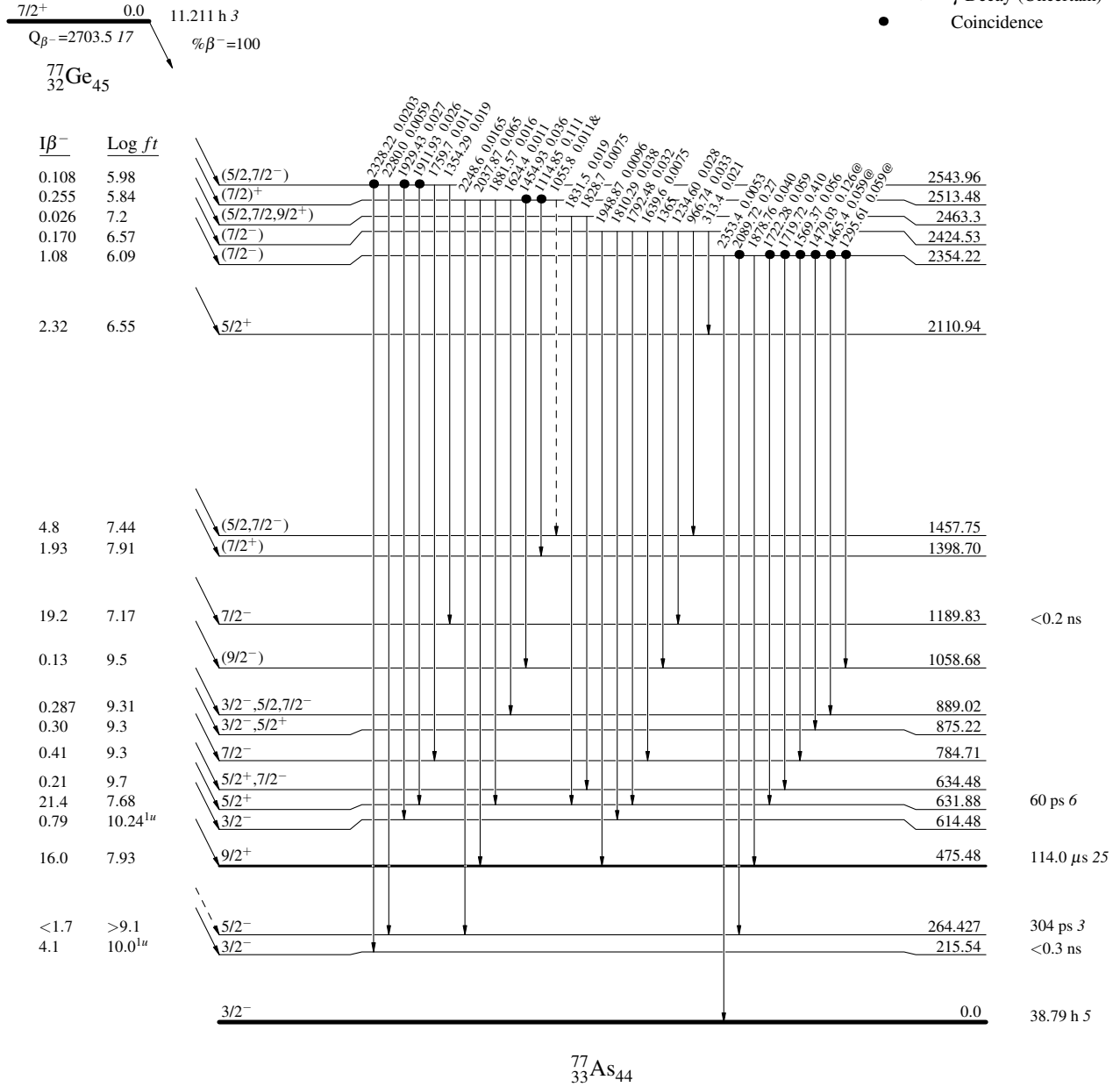
⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04

Decay Scheme

Intensities: I_(γ+ce) per 100 parent decays
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - - - γ Decay (Uncertain)
- Coincidence



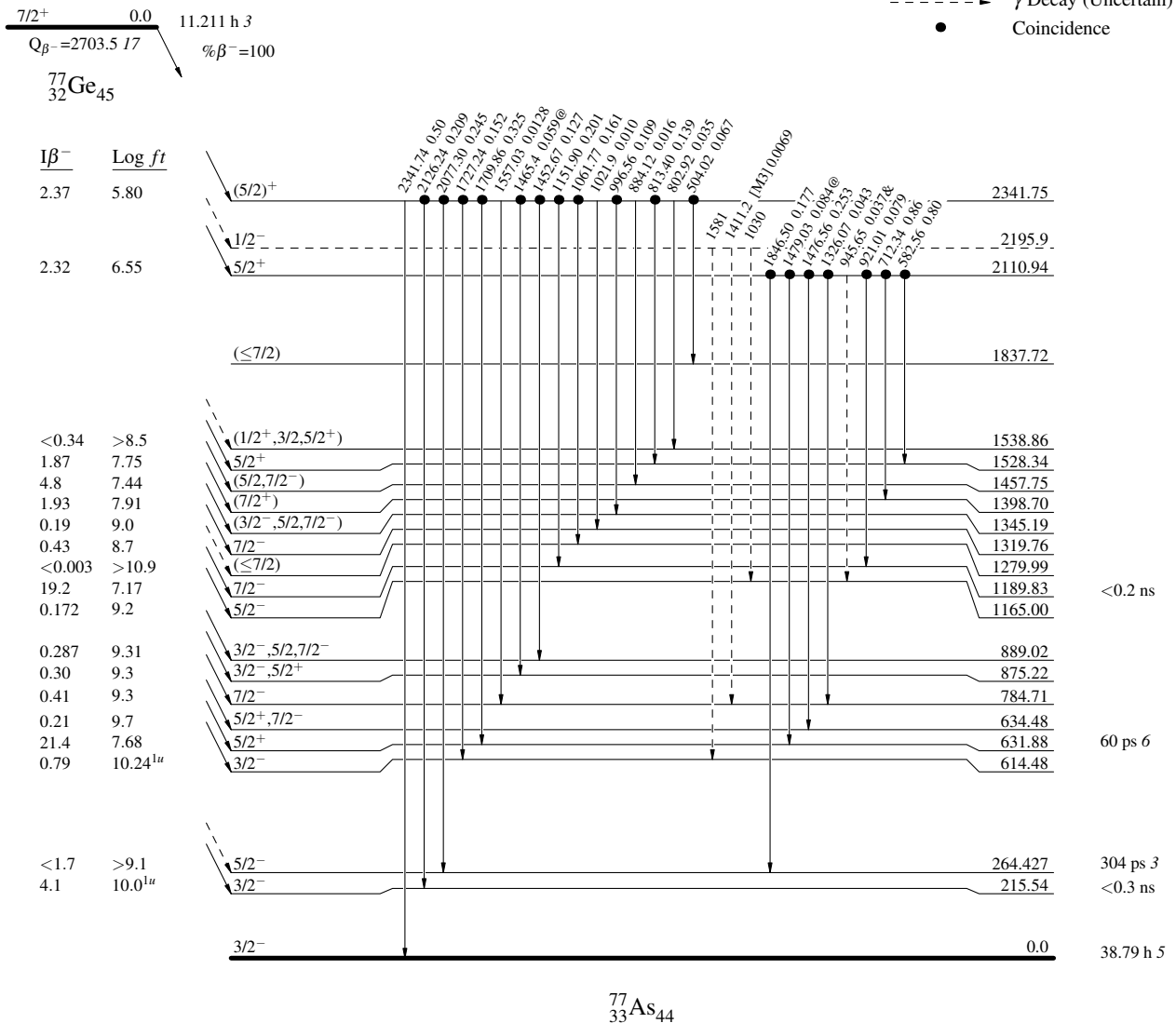
⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04

Decay Scheme (continued)

Intensities: I_(γ+ce) per 100 parent decays
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - - - γ Decay (Uncertain)
- Coincidence



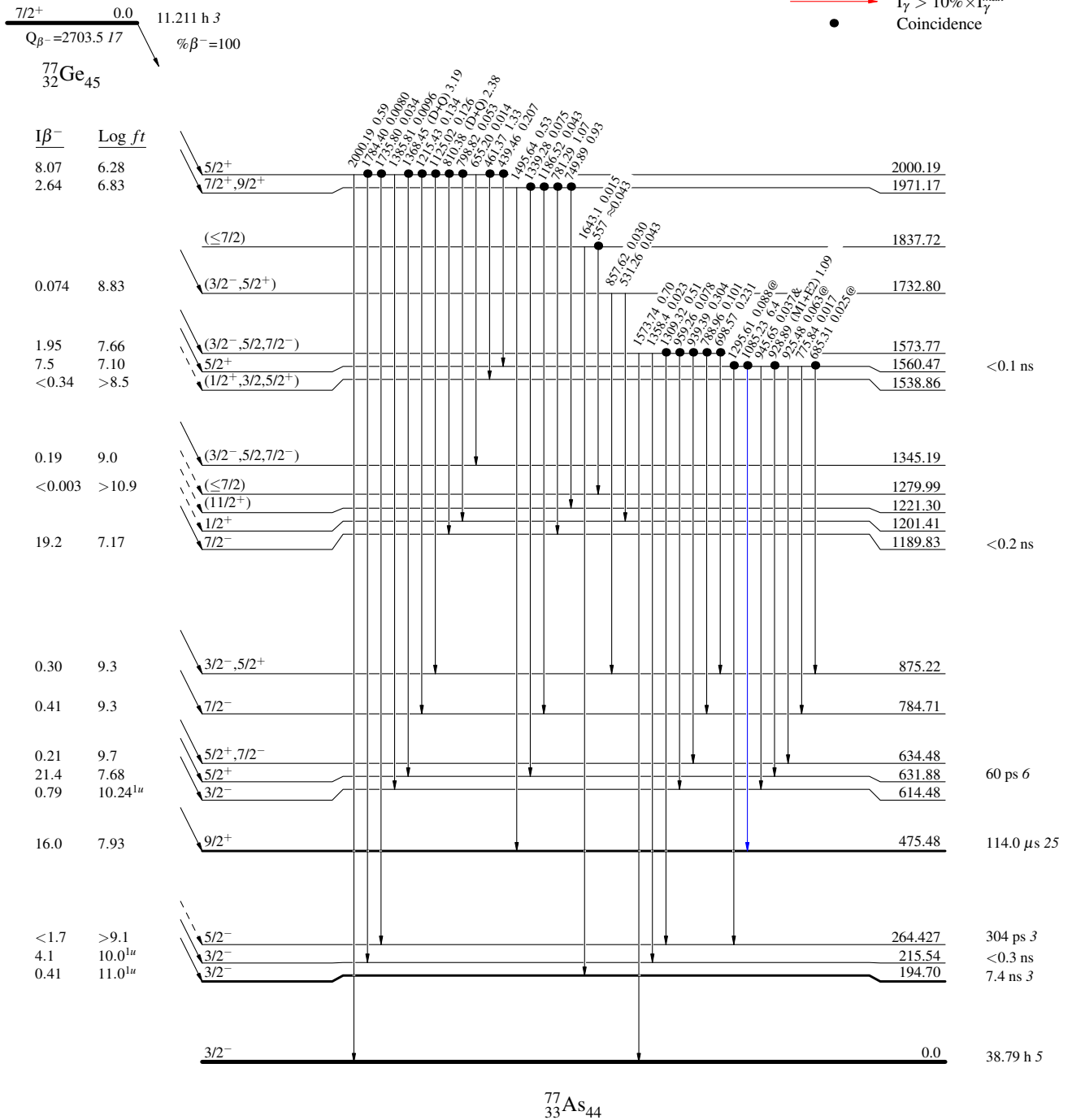
⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04

Decay Scheme (continued)

Intensities: I_(γ+ce) per 100 parent decays
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- Coincidence



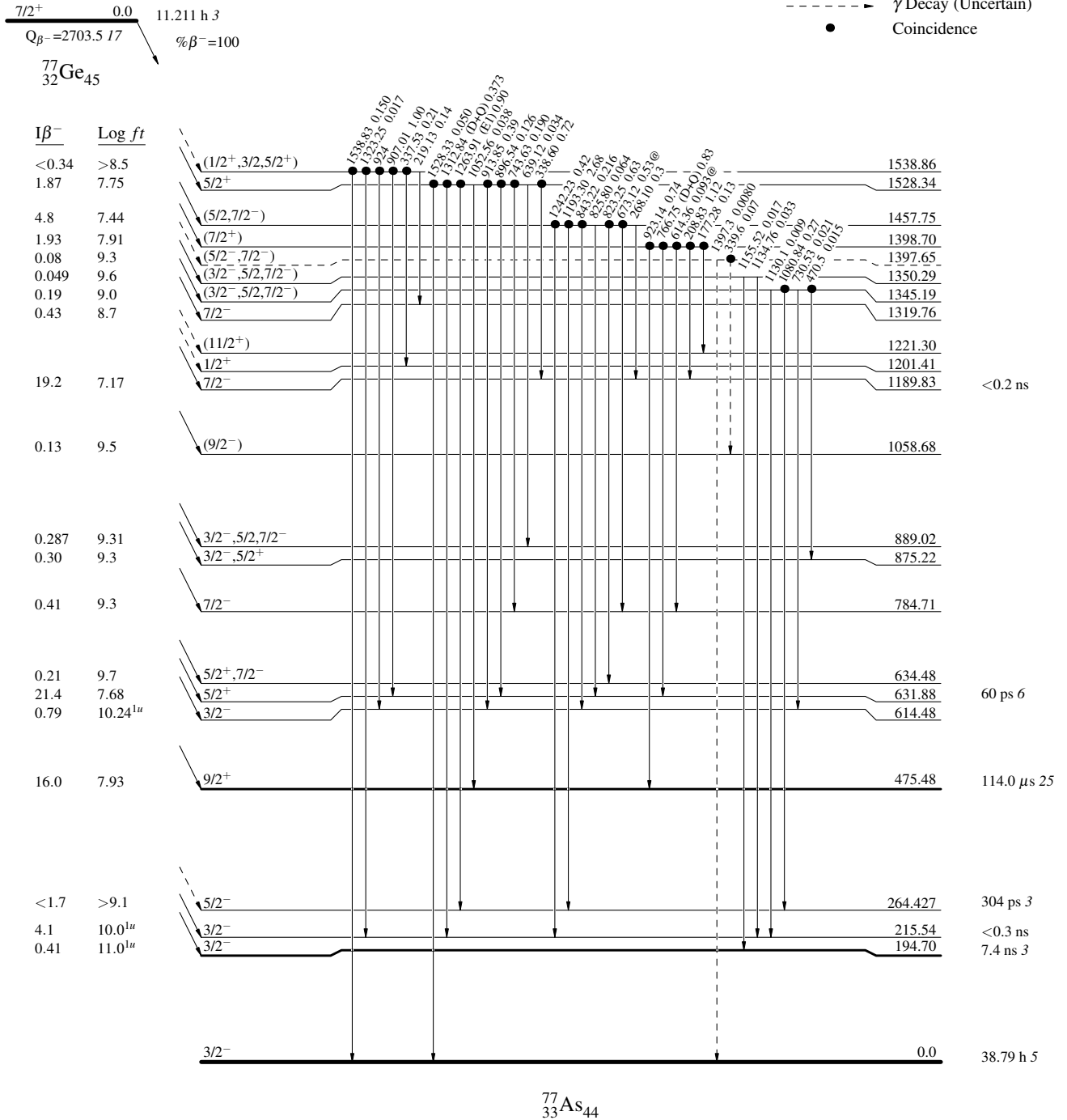
⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04

Decay Scheme (continued)

Intensities: I_(γ+ce) per 100 parent decays
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- - - - - γ Decay (Uncertain)
- Coincidence



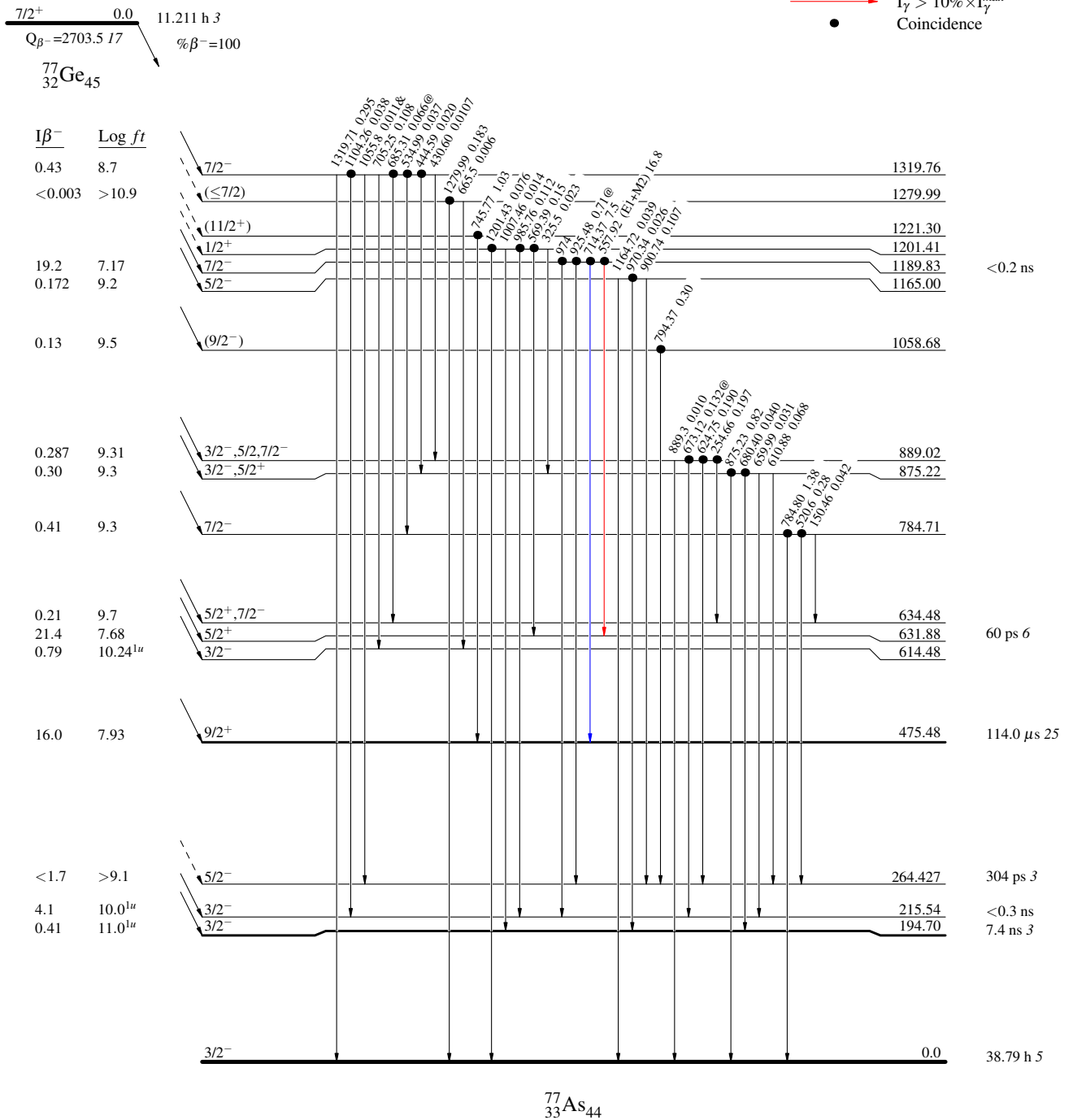
⁷⁷Ge β⁻ decay (11.211 h) 1974LeYO,2012Me04

Decay Scheme (continued)

Intensities: I_(γ+ce) per 100 parent decays
 & Multiply placed: undivided intensity given
 @ Multiply placed: intensity suitably divided

Legend

- I_γ < 2% × I_γ^{max}
- I_γ < 10% × I_γ^{max}
- I_γ > 10% × I_γ^{max}
- Coincidence



$^{77}\text{Ge} \beta^-$ decay (11.211 h) 1974LeYO,2012Me04

Decay Scheme (continued)

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

Legend

- $I_{\gamma} < 2\% \times I_{\gamma}^{max}$
- $I_{\gamma} < 10\% \times I_{\gamma}^{max}$
- $I_{\gamma} > 10\% \times I_{\gamma}^{max}$
- Coincidence

