

⁷⁴Ga β⁻ decay (8.12 min) 1975Ta03,1971Ca06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh, Ameenah R. Farhan		NDS 107, 1923 (2006)	30-Apr-2006

Parent: ⁷⁴Ga: E=0.0; J^π=(3⁻); T_{1/2}=8.12 min 12; Q(β⁻)=5373 4; %β⁻ decay=100.0

1975Ta03 and 1971Ca06 report γ-ray data. The decay scheme is based on singles γ-ray information from both papers. No γγ data with semi detectors reported.

Others: 1976BuZG, 1972MoZD, 1972Er05, 1971DiZD, 1962Ei02 1960Ma12, 1959Yt23.

γγ data (scin detectors): 1962Ei02, 1959Yt23.

βγ: 1972Er05, 1962Ei02.

β⁻: 1972Er05, 1969SiZX, 1962Ei02, 1959Yt23.

T_{1/2} and production: 1975Ta03, 1971Ca06, 1967Vi08, 1962Ei02, 1960Ma12, 1959Yt23, 1958Ei02, 1958Le26, 1956Mo39.

⁷⁴Ge Levels

For lack of sufficient evidence the 2821.6 level proposed by 1971Ca06 has been omitted.

E(level)	J ^π @	E(level)	J ^π @	E(level)	J ^π @	E(level)	J ^π @
0.0	0 ⁺	2949.52 8	(3 ⁻)	3566.77 8	(2 ⁺ ,3,4 ⁺)	3995.10 [†] 11	(2 ⁺ ,3,4 ⁺)
595.85 3	2 ⁺	2973.9?‡ 3	(3)	3639.5# 2		4201.39 9	2 ⁺
1204.25 3	2 ⁺	3034.17 7	(3,4 ⁺)	3696.77 10	(3,4)	4222.9 3	(2 ⁺ ,3 ⁺ ,4 ⁺)
1463.72 5	4 ⁺	3080.9‡ 3	(3 ⁺)	3716.8 [†] 4	(1 ⁻ ,2 ⁺)	4235.33 [†] 13	(2,3,4) ⁺
1482.63 14	0 ⁺	3140.45 7	3 ⁻	3720.89 9	(3,4 ⁺)	4367.3?# 5	(1 ⁻ to 5 ⁻)
1697.19 5	(3) ⁺	3175.75 8	3 ⁻	3807.04# 12		4477.62# 8	
2165.27 6	(3,4) ⁺	3212.0?† 1		3828.25 10		4611.60 [†] 17	(2 ⁻ ,3 ⁻ ,4 ⁻)
2197.90 6	2 ⁺	3342.97 7	(3 ⁻ ,4 ⁺)	3895.06 6	(2,3,4 ⁺)	4698.30 13	(2 ⁻ ,3 ⁻ ,4 ⁻)
2536.54 6	3 ⁻	3381.88‡ 12	3 ⁻	3949.80 10	(2 ⁺ ,3,4 ⁺)		
2693.68 7	(3,4) ⁺	3478.12 8	(2,3) ⁺	3976.28 10	(2,3,4 ⁺)		

† From 1975Ta03 only.

‡ Proposed by evaluators on the basis of (n,γ) results.

From 1971Ca06 only.

@ From 'Adopted Levels'.

β⁻ radiations

E(decay)	E(level)	Iβ ⁻ †	Log ft	Comments
(675 4)	4698.30	1.37 6	5.05 2	av Eβ=226.7 16
(761 4)	4611.60	0.46 5	5.71 5	av Eβ=261.4 17
(895 4)	4477.62	5.97 16	4.86 2	av Eβ=316.4 17
(1006 4)	4367.3?	0.14 3	6.68 10	av Eβ=362.7 18
(1138 4)	4235.33	0.35 4	6.49 5	av Eβ=419.3 18
(1150 4)	4222.9	0.10 2	7.05 9	av Eβ=424.7 18
(1172 4)	4201.39	1.62 11	5.87 3	av Eβ=434.0 18
(1378 4)	3995.10	0.49 5	6.67 5	av Eβ=524.8 18
(1397 4)	3976.28	2.34 10	6.01 2	av Eβ=533.1 18
(1423 4)	3949.80	1.71 11	6.18 3	av Eβ=544.9 18
(1478 4)	3895.06	2.11 6	6.15 2	av Eβ=569.4 18
(1545 4)	3828.25	2.41 13	6.17 3	av Eβ=599.5 18
(1566 4)	3807.04	0.716 2	6.72 1	av Eβ=609.1 18
(1652 4)	3720.89	2.54 16	6.27 3	av Eβ=648.1 19
(1656 4)	3716.8	0.18 3	7.42 8	av Eβ=650.0 19

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⁷⁴Ga β⁻ decay (8.12 min) [1975Ta03,1971Ca06](#) (continued)

β⁻ radiations (continued)

E(decay)	E(level)	Iβ ^{-†}	Log ft	Comments
(1676 4)	3696.77	1.16 12	6.63 5	av Eβ=659.1 19
(1806 4)	3566.77	0.38 7	7.25 8	av Eβ=718.5 19
(1895 4)	3478.12	1.43 14	6.76 5	av Eβ=759.3 19
(1991 4)	3381.88	0.63 5	7.20 4	av Eβ=803.8 19
(2030 4)	3342.97	0.21 9	7.72 19	av Eβ=821.8 19
(2197 4)	3175.75	1.96 12	6.89 3	av Eβ=899.7 19
(2233 4)	3140.45	3.01 21	6.73 4	av Eβ=916.2 19
(2292 4)	3080.9	0.13 2	8.14 7	av Eβ=944.1 19
(2339 4)	3034.17	0.37 12	7.73 15	av Eβ=966.0 19
(2399 4)	2973.9?	0.23 3	7.98 6	av Eβ=994.3 19
2.45×10 ³ 10	2949.52	50 2	5.66 2	av Eβ=1005.8 19
				E(decay): from 1962Ei02 . Others: 1969SiZX , 1959Yt23 .
(2679 4)	2693.68	2.9 1	7.082 17	av Eβ=1126.6 19
(2836 4)	2536.54	1.0 4	7.65 18	av Eβ=1201.2 19
(3175 [‡] 4)	2197.90	0.4 1	8.26 11	av Eβ=1362.6 20
(3208 4)	2165.27	0.4 2	8.28 22	av Eβ=1378.3 20
(3676 4)	1697.19	5.8 4	7.38 3	av Eβ=1602.8 20
(3890 [‡] 4)	1482.63	<0.21	>8.9	av Eβ=1706.1 20
3.8×10 ³ 3	1463.72	2.3 6	7.90 12	av Eβ=1715.2 20
				E(decay): from 1962Ei02 . Other: 1969SiZX .
(4169 [‡] 4)	1204.25	<1.2	>8.3	av Eβ=1840.4 20
4.7×10 ³ 2	595.85	4.7 17	7.97 16	av Eβ=2134.7 20
				E(decay): from 1972Er05 . Other: 1959Yt23 .

[†] Absolute intensity per 100 decays.

[‡] Existence of this branch is questionable.

γ(⁷⁴Ge)

I_γ normalization: From decay scheme. No β⁻ feeding to g.s. expected. Conversion coefficients are negligible. 2949.8γ reported by [1971Ca06](#) most likely is a sum line.

E _γ [†]	I _γ ^{†f}	E _i (level)	J _i ^π	E _f	J _f ^π
233.2 [‡] 5	0.17 3	1697.19	(3) ⁺	1463.72	4 ⁺
258.8 [‡] 5	0.12 3	4235.33	(2,3,4) ⁺	3976.28	(2,3,4) ⁺
302.0 [‡] 7	0.12 4	3478.12	(2,3) ⁺	3175.75	3 ⁻
^x 365.0 [‡] 7	0.10 3				
444.2 [‡] 5	0.06 3	3478.12	(2,3) ⁺	3034.17	(3,4) ⁺
471.1 [‡] 5	0.42 5	3949.80	(2 ⁺ ,3,4 ⁺)	3478.12	(2,3) ⁺
484.9 [‡] 3	1.16 6	3828.25		3342.97	(3 ⁻ ,4 ⁺)
492.99 6	5.4 3	1697.19	(3) ⁺	1204.25	2 ⁺
497.56 15	1.05 10	3034.17	(3,4) ⁺	2536.54	3 ⁻
504.7 [‡] 5	0.11 3	4201.39	2 ⁺	3696.77	(3,4)
521.0 [‡] 5	0.13 3	3696.77	(3,4)	3175.75	3 ⁻
540.9 [‡] 5	0.17 3	3716.8	(1 ⁻ ,2 ⁺)	3175.75	3 ⁻
545.5 [‡] 5	0.07 2	3720.89	(3,4) ⁺	3175.75	3 ⁻
551.8 [‡] 5	0.12 3	3895.06	(2,3,4) ⁺	3342.97	(3 ⁻ ,4 ⁺)

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$^{74}\text{Ga} \beta^-$ decay (8.12 min) **1975Ta03,1971Ca06** (continued) $\gamma(^{74}\text{Ge})$ (continued)

E_γ †	I_γ †f	$E_i(\text{level})$	J_i^π	E_f	J_f^π
595.87 4	100	595.85	2 ⁺	0.0	0 ⁺
604.21 10	3.1 2	3140.45	3 ⁻	2536.54	3 ⁻
608.40 5	15.7 8	1204.25	2 ⁺	595.85	2 ⁺
639.00 10	0.90 5	3175.75	3 ⁻	2536.54	3 ⁻
652.5 ‡ 5	0.07 3	3828.25		3175.75	3 ⁻
701.52 10	0.84 12	2165.27	(3,4) ⁺	1463.72	4 ⁺
715.0 3	0.24 4	2197.90	2 ⁺	1482.63	0 ⁺
733.9 4	0.12 2	2197.90	2 ⁺	1463.72	4 ⁺
784.3 2	0.73 7	2949.52	(3 ⁻)	2165.27	(3,4) ⁺
809.3 3	0.32 7	3949.80	(2 ⁺ ,3,4 ⁺)	3140.45	3 ⁻
867.83 6	9.5 6	1463.72	4 ⁺	595.85	2 ⁺
886.71 15	0.37 8	1482.63	0 ⁺	595.85	2 ⁺
942.47 7	1.38 6	3140.45	3 ⁻	2197.90	2 ⁺
960.99 7	1.76 7	2165.27	(3,4) ⁺	1204.25	2 ⁺
975.1 3	0.29 3	3140.45	3 ⁻	2165.27	(3,4) ⁺
993.55 10	0.70 4	2197.90	2 ⁺	1204.25	2 ⁺
999.9 ^h 2	<0.28 ^h	3949.80	(2 ⁺ ,3,4 ⁺)	2949.52	(3 ⁻)
999.9 ^h 2	<0.28 ^h	4477.62		3478.12	(2,3) ⁺
1024.3 5	0.15 3	4201.39	2 ⁺	3175.75	3 ⁻
1024.3 ^h 5	<0.15 ^h	4367.3?	(1 ⁻ to 5 ⁻)	3342.97	(3 ⁻ ,4 ⁺)
1101.32 6	5.9 2	1697.19	(3) ⁺	595.85	2 ⁺
1131.52 14	0.95 6	4698.30	(2 ⁻ ,3 ⁻ ,4 ⁻)	3566.77	(2 ⁺ ,3,4 ⁺)
1134.5 ^h 3	<0.42 ^h	3828.25		2693.68	(3,4 ⁺)
1134.5 ^h 3	<0.42 ^h	4477.62		3342.97	(3 ⁻ ,4 ⁺)
1160.33 10	0.69 5	3696.77	(3,4)	2536.54	3 ⁻
1177.42 18	0.26 3	3342.97	(3 ⁻ ,4 ⁺)	2165.27	(3,4) ⁺
1184.4 2	0.30 3	3720.89	(3,4 ⁺)	2536.54	3 ⁻
1204.22 4	8.3 2	1204.25	2 ⁺	0.0	0 ⁺
^x 1293.9 5	0.27 4				
1312.84 11	0.67 9	3478.12	(2,3) ⁺	2165.27	(3,4) ⁺
1332.1 3	1.9 1	2536.54	3 ⁻	1204.25	2 ⁺
1337.18 ^{hi} 10	<1.75 ^h	3034.17	(3,4 ⁺)	1697.19	(3) ⁺
1337.18 ^h 10	<1.75 ^h	4477.62		3140.45	3 ⁻
1357.9 2	<0.35	3895.06	(2,3,4 ⁺)	2536.54	3 ⁻
1417.6 ^{&i} 7	0.12 1	4367.3?	(1 ⁻ to 5 ⁻)	2949.52	(3 ⁻)
1443.38 ^{hi} 7	<4.0 ^h	3140.45	3 ⁻	1697.19	(3) ⁺
1443.38 ^h 7	<4.02 ^h	4477.62		3034.17	(3,4 ⁺)
1471.7 2	0.21 2	4611.60	(2 ⁻ ,3 ⁻ ,4 ⁻)	3140.45	3 ⁻
1478.2 3	0.33 3	3175.75	3 ⁻	1697.19	(3) ⁺
1489.37 7	3.14 6	2693.68	(3,4 ⁺)	1204.25	2 ⁺
1510.2 3	0.25 3	2973.9?	(3)	1463.72	4 ⁺
1570.34 10	1.06 4	3034.17	(3,4 ⁺)	1463.72	4 ⁺
1601.97 20	0.32 3	2197.90	2 ⁺	595.85	2 ⁺
1617.2 [@] 3	0.14 2	3080.9	(3 ⁺)	1463.72	4 ⁺
1630.7 ‡ 10	0.10 8	3828.25		2197.90	2 ⁺
1676.77 14	0.79 4	3140.45	3 ⁻	1463.72	4 ⁺
1744.9 2	5.25 10	2949.52	(3 ⁻)	1204.25	2 ⁺
^x 1806.5 3	0.30 5				
1829.75 16	2.07 5	3034.17	(3,4 ⁺)	1204.25	2 ⁺
1940.63 7	5.9 3	2536.54	3 ⁻	595.85	2 ⁺
1971.0 4	0.22 5	3175.75	3 ⁻	1204.25	2 ⁺
1999.3 2	0.44 4	3696.77	(3,4)	1697.19	(3) ⁺

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$^{74}\text{Ga}\beta^{-}$ decay (8.12 min) 1975Ta03,1971Ca06 (continued) $\gamma(^{74}\text{Ge})$ (continued)

E_{γ}^{\dagger}	$I_{\gamma}^{\dagger f}$	$E_i(\text{level})$	J_i^{π}	E_f	J_f^{π}
2004.6 ^{hai} 2	<0.54 ^h	4201.39	2 ⁺	2197.90	2 ⁺
2004.6 ^h 2	<0.54 ^h	4698.30	(2 ⁻ ,3 ⁻ ,4 ⁻)	2693.68	(3,4 ⁺)
2014.45 10	1.41 9	3478.12	(2,3) ⁺	1463.72	4 ⁺
2023.9 2	0.49 7	3720.89	(3,4 ⁺)	1697.19	(3) ⁺
2036.2 4	0.18 4	4201.39	2 ⁺	2165.27	(3,4) ⁺
2074.14 25	0.29 4	4611.60	(2 ⁻ ,3 ⁻ ,4 ⁻)	2536.54	3 ⁻
2097.91 12	0.94 9	2693.68	(3,4 ⁺)	595.85	2 ⁺
2109.8 ^{@i} 6	0.12 4	3807.04		1697.19	(3) ⁺
2131.5 4	0.22 1	3828.25		1697.19	(3) ⁺
2138.62 10	0.91 4	3342.97	(3 ⁻ ,4 ⁺)	1204.25	2 ⁺
2197.85 ^{bc} 10	0.54 4	2197.90	2 ⁺	0.0	0 ⁺
2197.95 ^d 10	0.36 3	3895.06	(2,3,4 ⁺)	1697.19	(3) ⁺
2231.9 [‡] 5	0.11 10	3696.77	(3,4)	1463.72	4 ⁺
2257.06 9	1.91 15	3720.89	(3,4 ⁺)	1463.72	4 ⁺
2279.05 9	2.55 10	3976.28	(2,3,4 ⁺)	1697.19	(3) ⁺
2353.61 8	48.7 15	2949.52	(3 ⁻)	595.85	2 ⁺
2362.36 13	0.18 2	3566.77	(2 ⁺ ,3,4 ⁺)	1204.25	2 ⁺
2438.45 14	0.30 3	3034.17	(3,4 ⁺)	595.85	2 ⁺
2486.3 4	0.08 4	3949.80	(2 ⁺ ,3,4 ⁺)	1463.72	4 ⁺
2504.2 2	0.71 8	4201.39	2 ⁺	1697.19	(3) ⁺
2580.07 10	1.39 7	3175.75	3 ⁻	595.85	2 ⁺
2616.67 ⁱ 9	0.26 2	3212.0?		595.85	2 ⁺
2625.3 ^{&i} 4	0.08 1	3828.25		1204.25	2 ⁺
2690.96 9	1.09 3	3895.06	(2,3,4 ⁺)	1204.25	2 ⁺
2737.86 16	0.11 1	4201.39	2 ⁺	1463.72	4 ⁺
2747.13 10	0.91 5	3342.97	(3 ⁻ ,4 ⁺)	595.85	2 ⁺
2771.8 4	0.12 2	3976.28	(2,3,4 ⁺)	1204.25	2 ⁺
2785.97 11	0.69 5	3381.88	3 ⁻	595.85	2 ⁺
2790.79 10	0.53 5	3995.10	(2 ⁺ ,3,4 ⁺)	1204.25	2 ⁺
2970.92 10	1.18 4	3566.77	(2 ⁺ ,3,4 ⁺)	595.85	2 ⁺
2997.2 5	0.11 1	4201.39	2 ⁺	1204.25	2 ⁺
3018.8 4	0.07 1	4222.9	(2 ⁺ ,3 ⁺ ,4 ⁺)	1204.25	2 ⁺
3030.3 [‡] 5	<0.18	4235.33	(2,3,4) ⁺	1204.25	2 ⁺
^x 3031.7 2	0.21 5				
^x 3036.1 [#] 5	0.05 1				
3043.6 ^{#i} 4	0.05 1	3639.5		595.85	2 ⁺
^x 3109.9 [‡] 7	0.03 2				
3211.11 ^{gei} 11	<0.78	3212.0?		0.0	0 ⁺
3211.11 ^g 11	<0.78	3807.04		595.85	2 ⁺
3232.34 11	0.65 8	3828.25		595.85	2 ⁺
^x 3240.0 3	0.07 2				
3274.1 12	0.03 1	4477.62		1204.25	2 ⁺
3298.93 10	0.38 4	3895.06	(2,3,4 ⁺)	595.85	2 ⁺
3354.03 12	0.76 6	3949.80	(2 ⁺ ,3,4 ⁺)	595.85	2 ⁺
3605.35 12	0.39 5	4201.39	2 ⁺	595.85	2 ⁺
3626.7 4	0.035 15	4222.9	(2 ⁺ ,3 ⁺ ,4 ⁺)	595.85	2 ⁺
3639.45 ^{hi} 13	<0.08 ^h	3639.5		0.0	0 ⁺
3639.45 ^h 13	0.08 ^h 2	4235.33	(2,3,4) ⁺	595.85	2 ⁺
^x 3706.9 [#] 6	0.03 1				
3717.1 7	0.03 1	3716.8	(1 ⁻ ,2 ⁺)	0.0	0 ⁺
^x 3762.22 15	0.09 2				
^x 3818.0 5	0.05 1				

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$^{74}\text{Ga} \beta^-$ decay (8.12 min) 1975Ta03,1971Ca06 (continued) $\gamma(^{74}\text{Ge})$ (continued)

E_γ^\dagger	$I_\gamma^{\dagger f}$	$E_i(\text{level})$	J_i^π	E_f	J_f^π
3895.0 ^{#i} 4	0.04 1	3895.06	(2,3,4 ⁺)	0.0	0 ⁺
^x 3946.7 [#] 6	0.03 1				
3992.4 ⁱ 10	0.03 1	3995.10	(2 ⁺ ,3,4 ⁺)	0.0	0 ⁺

[†] Weighted averages of 1975Ta03 and 1971Ca06.

[‡] From 1975Ta03 only.

[#] From 1971Ca06 only. $I_\gamma < 0.03$ in 1975Ta03.

[@] Seen by 1971Ca06 only. $I_\gamma < 0.1$ (1975Ta03).

[&] Seen by 1971Ca06 only. $I_\gamma < 0.05$ (1975Ta03).

^a Poor fit with 4202 levels.

^b From decay scheme (1971Ca06). Energy of doublet=2197.0 5 (1975Ta03).

^c $I_\gamma = 0.90$ (1971Ca06), 0.70 11 (1975Ta03).

^d From level scheme (1971Ca06). See comment for 2197.85 γ .

^e Poor fit with this level.

^f For absolute intensity per 100 decays, multiply by 0.918 2.

^g Multiply placed.

^h Multiply placed with undivided intensity.

ⁱ Placement of transition in the level scheme is uncertain.

^x γ ray not placed in level scheme.

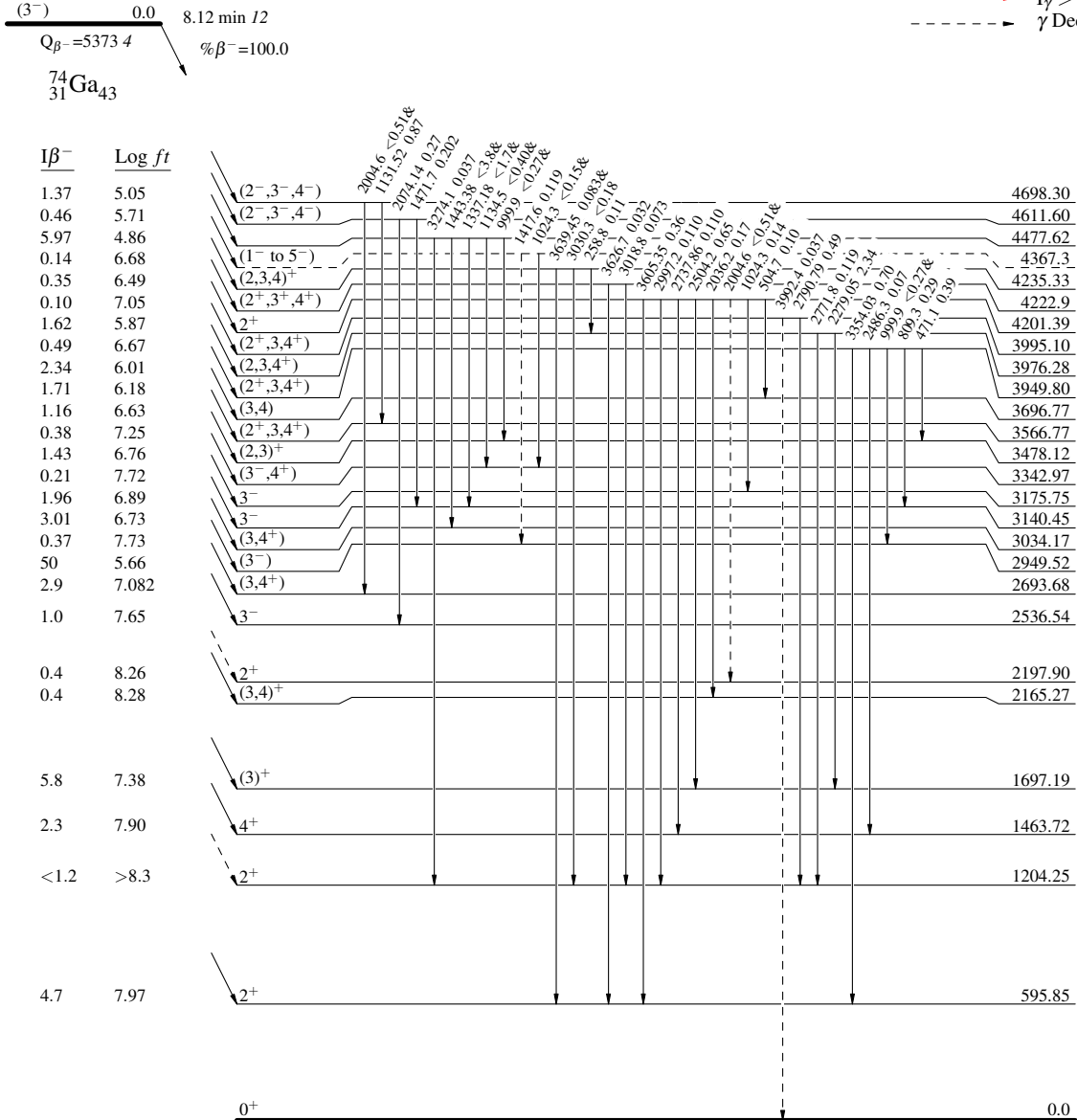
⁷⁴Ga β⁻ decay (8.12 min) 1975Ta03,1971Ca06

Decay Scheme

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

Legend

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



⁷⁴Ge₃₂

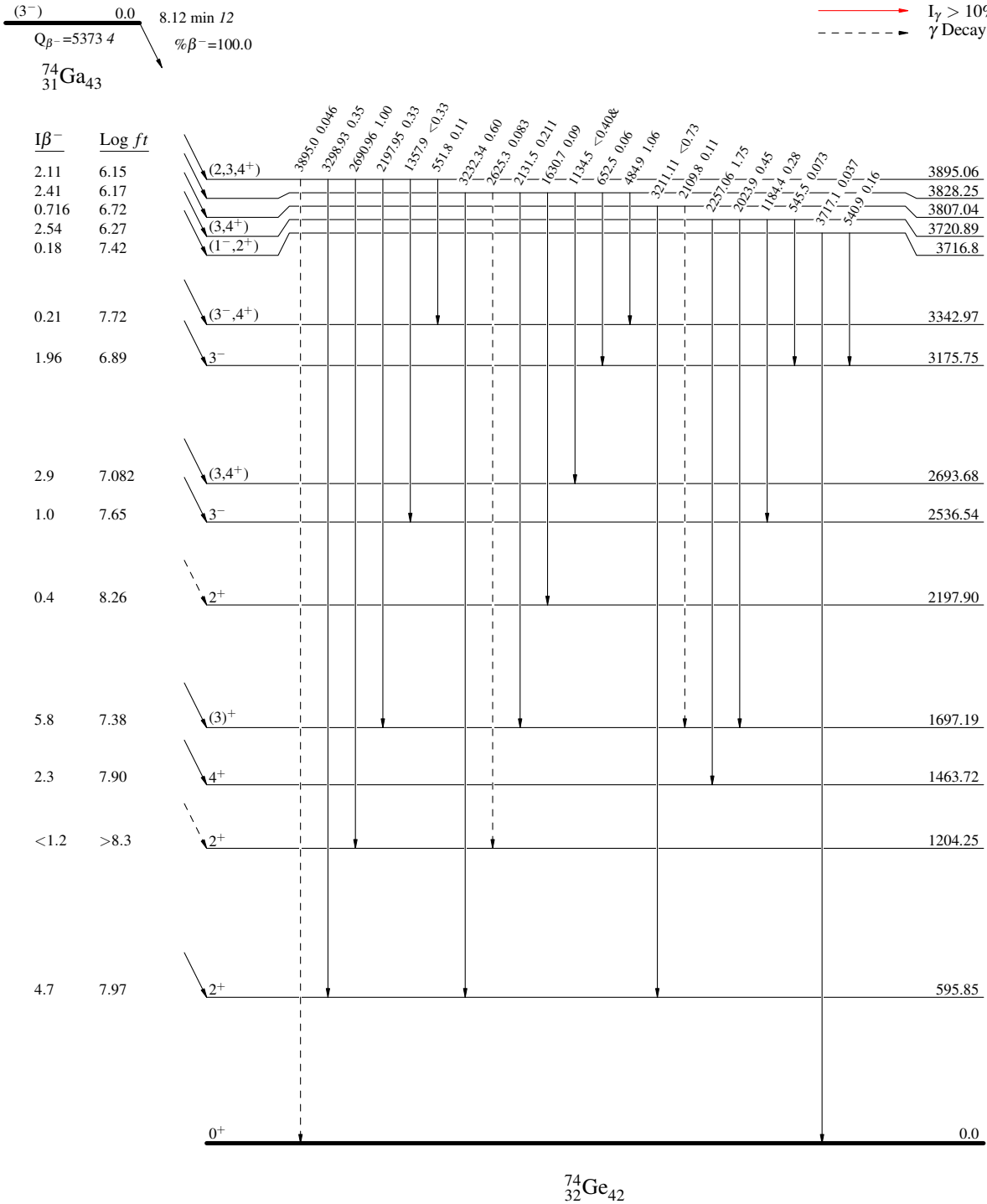
$^{74}\text{Ga} \beta^-$ decay (8.12 min) 1975Ta03,1971Ca06

Decay Scheme (continued)

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

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - - γ Decay (Uncertain)



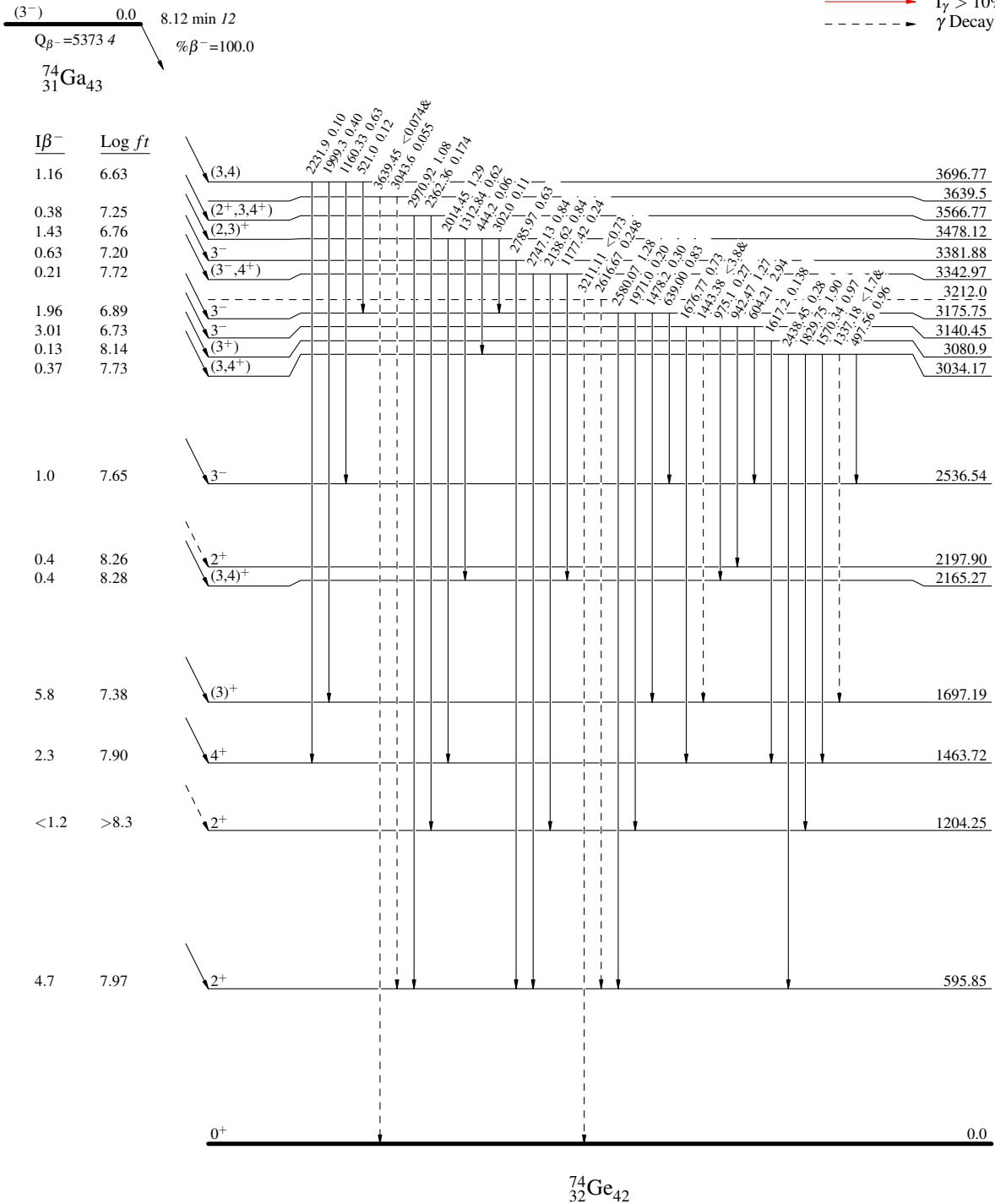
^{74}Ga β^- decay (8.12 min) 1975Ta03,1971Ca06

Decay Scheme (continued)

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

Legend

- $I_\gamma < 2\% \times I_\gamma^{max}$
- $I_\gamma < 10\% \times I_\gamma^{max}$
- $I_\gamma > 10\% \times I_\gamma^{max}$
- - - - -→ γ Decay (Uncertain)






^{74}Ga β^- decay (8.12 min) 1975Ta03,1971Ca06

Decay Scheme (continued)

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

Legend

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

