^{71}Zn β^- decay (4.140 h) 2017Kr01,1970Zo01,1970Ta07

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 188,1 (2023)	17-Jan-2023

Parent: ^{71}Zn: E=155.62 *6*; J$^\pi$=9/2$^+$; $T_{1/2}$=4.140 h *15*; Q(β^-)=2810.3 *28*; %β^- decay=100

^{71}Zn-E,J$^\pi$,$T_{1/2}$: From Adopted Levels of ^{71}Zn.

^{71}Zn-Q(β^-): From 2021Wa16.

2017Kr01: ^{71m}Zn source produced in ^{70}Zn(n,γ),E=thermal neutrons from TRIGA reactor at Oregon State. Measured Eγ, Iγ, half-life of ^{71m}Zn decay. Counting was done at different distances to account for sum lines from cascading transitions. Deduced levels, beta feedings and log *ft* values. Comparison with previous experimental and evaluated data.

1970Zo01: ^{71}Zn source was produced by ^{70}Zn(n,γ) with neutrons from the MIT reactor on an enriched ^{70}Zn target. Measured Eγ, Iγ, $\gamma\gamma$-coin with NaI and Ge(Li) detectors. Deduced levels, J, π, β-decay branching ratios, log *ft*. Comparisons with available data and theoretical calculations.

1970Ta07: ^{71}Zn source was produced by ^{70}Zn(n,γ) with thermal neutrons from McMaster University. Measured Eγ, Iγ, $\gamma\gamma$-coin with NaI(Tl) and Ge(Li) detectors. Deduced levels.

1969Co20: measured Eγ, Iγ, $\gamma\gamma$, $\gamma\gamma$(t). Total of 17 γ rays reported.

1967Li01: measured Eγ, Iγ, $\gamma\gamma$-coin, $\beta\gamma$(t), $\gamma\gamma$(t). Total of 14 γ rays reported.

$\gamma\gamma(\theta)$ and $\gamma\gamma$(t) measurements:

1978Kr06: measured $\gamma\gamma(\theta)$ for 15 $\gamma\gamma$-cascades using combinations of two Ge(Li) detectors, a NaI(Tl) detector, and a small Ge(Li) detector for low-energy γ rays.

1976Sa39: measured $\gamma\gamma(\theta)$ for 11 $\gamma\gamma$-cascades using Ge(Li) and NaI(Tl) detectors.

1975BeYD: measured $\gamma\gamma(\theta)$ for four $\gamma\gamma$-cascades, and also $\gamma\gamma(\theta$,H) using Ge(Li) and NaI(Tl) detectors.

1969Kh10: measured level lifetimes by $\gamma\gamma$(t) and $\beta\gamma$(t).

Other measurements:

Eγ, Iγ, $\gamma\gamma$-coin: 1969SiZT, 1964Ta08, 1964So01, 1962Gh01, 1955Le03.

β: 1964So01, 1961Th04.

$\beta\gamma$-coin: 1964So01, 1955Le03.

$\gamma\gamma(\theta)$: 1962Gh01.

1962Ma24: half-life of ^{71m}Zn decay and production yield.

The decay scheme given here is from 2017Kr01, 1970Zo01 and 1970Ta07, enhanced based on earlier decay schemes of 1969Co20 and 1967Li01.

^{71}Ga Levels

Note that a 1702-keV, 1/2$^+$ level proposed by 1970Zo01 is omitted here due to disagreement of energy and branching ratio of 1190.6-keV γ with data from a 1700-keV, 1/2$^+$ level populated in (n,n′γ), as pointed out by Prof. K. Krane (University of Oregon) on April 29, 2016.

E(level)†	J$^\pi$‡	$T_{1/2}$‡	Comments
0.0	3/2$^-$	stable	
389.978 *7*	1/2$^-$	0.40 ps *+28−12*	
487.389 *6*	5/2$^-$	62 ps *38*	$T_{1/2}$: values from this dataset: <0.1 ns (1967Li01), <0.5 ns (1969Co20).
511.558 *6*	3/2$^-$	1.5 ps *7*	$T_{1/2}$: values from this dataset: <0.1 ns (1967Li01), <0.5 ns (1969Co20). μ=0.95 *5* (1975BeYD), but no details are provided.
910.162 *11*	3/2$^-$	0.46 ps *22*	
964.689 *6*	5/2$^-$	1.3 ps *2*	
1107.490 *7*	7/2$^-$	0.48 ps *+14−10*	$T_{1/2}$: values from this dataset: <0.1 ns (1967Li01), <0.5 ns (1969Co20).
1395.267 *13*	7/2$^-$	0.77 ps *6*	
1476.006 *7*	5/2$^-$	>0.6 ps	
1493.856 *6*	9/2$^+$	154 ps *15*	$T_{1/2}$: from the Adopted Levels. μ=2.1 *3* (1975BeYD), but no details are provided.
1498.325 *13*	9/2$^-$		
1719.568 *12*	5/2$^-$	0.12 ps *+5−2*	

Continued on next page (footnotes at end of table)

^{71}Zn β^- decay (4.140 h) 2017Kr01,1970Zo01,1970Ta07 (continued)

^{71}Ga Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$‡	Comments
2082.451 *17*	(13/2+)		Level from 2017Kr01.
2247.264 *7*	7/2+	0.021 ps *+6−5*	
2450.649 *9*	7/2+		
2488.239 *12*	(7/2)+		
2600.873 *23*	(9/2)+		
2720.017 *13*	7/2+		
2804.911 *12*	(7/2)+		
2815.784 *12*	7/2+	0.19 ps *+13−6*	

† From a least-squares fit to Eγ data, excluding the energies of four γ rays as indicated, each of which has double placements. Reduced χ^2=2.3 is somewhat larger than critical χ^2=1.6, with only the 988.640γ and 1485.8γ deviating by about 3σ.
‡ From the Adopted Levels. Values of $T_{1/2}$ from decay studies mainly from βγ(t) and/or γγ(t) (1967Li01) in this dataset are given under comments or are the adopted values where indicated.

β^- radiations

E(decay)	E(level)	Iβ−†‡	Log *ft*	Comments
(150.1 *28*)	2815.784	0.320 *5*	4.96 *3*	av Eβ=41.12 *84*
(161.0 *28*)	2804.911	0.372 *5*	4.99 *3*	av Eβ=44.38 *85*
(245.9 *28*)	2720.017	0.156 *4*	5.96 *2*	av Eβ=70.99 *91*
(365.1 *28*)	2600.873	0.97 *8*	5.74 *4*	av Eβ=111.23 *99* Iβ−: 2017Kr01 give 0.6 *2*.
(477.7 *28*)	2488.239	0.686 *10*	6.29 *1*	av Eβ=151.8 *11*
(515.3 *28*)	2450.649	0.780 *8*	6.35 *1*	av Eβ=165.8 *11*
(718.7 *28*)	2247.264	5.84 *6*	5.98 *1*	av Eβ=244.8 *12*
(1246.4 *28*)	1719.568	0.026 *4*	9.97[1u] *7*	av Eβ=489.3 *12*
(1467.6 *28*)	1498.325	0.279 *9*	8.49 *2*	av Eβ=565.9 *13*
(1472.1 *28*)	1493.856	85.2 *12*	6.009 *6*	av Eβ=567.9 *13* E(decay): measured endpoint=1460 *40*, average of values from 1964So01 and 1961Th04.
(1489.9# *28*)	1476.006	<0.2	>9.5[1u]	av Eβ=595.6 *13* Iβ−: other: <0.11 (2017Kr01).
(1570.7 *28*)	1395.267	0.096 *5*	9.07 *3*	av Eβ=612.3 *13*
(1858.4# *28*)	1107.490	<0.2	>9.1	av Eβ=743.8 *13* Iβ−: other: <0.6 (2017Kr01).
(2001.2 *28*)	964.689	0.7 *4*	9.7[1u] *3*	av Eβ=825.2 *13*
(2478.5 *28*)	487.389	4.6 *9*	9.46[1u] *8*	av Eβ=1045.1 *13*

† Deduced by evaluators from γ-transition intensity balances. Values are nearly the same in 2017Kr01, except in a few cases, small differences are commented. Note: γ-transition intensity balances give apparent β feedings of 0.14 *6* for the 390, 1/2− level; 0.9 *6* for the 511 level; and 0.040 *5* for the 910 level, whereas none is expected from 9/2+ parent to 1/2− or 3/2− daughter states. 2017Kr01 discussed possible scenarios for these imbalances, most likely being the unobserved γ feeding from higher levels. Note also that a total γ-intensity of ≈0.12 units is still unassigned.
‡ Absolute intensity per 100 decays.
# Existence of this branch is questionable.

γ(^{71}Ga)

Iγ normalization: Deduced from summed I(γ+ce) to g.s.=100%. %IT≤0.05 (1970Zo01), from an upper limit on Iγ(158γ).

A weak 1392.1 *9* γ ray with Iγ=0.06 *3* in 1970Ta07 and tentatively placed from a 2787.8 level is not confirmed in 2017Kr01, thus this γ and the level have been omitted.

E_γ[†]	I_γ[†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ[a]	α[d]	Comments
98.611 *25*	0.063 *3*	1493.856	9/2$^+$	1395.267	7/2$^-$	[E1]		0.0670	%Iγ=0.056 *3* α(K)=0.0599 *9*; α(L)=0.00612 *9*; α(M)=0.000888 *13* α(N)=4.51×10^{-5} *7* Eγ=98.5 *1*, Iγ=0.067 *7* (1970Zo01).
121.591 *10*	2.58 *5*	511.558	3/2$^-$	389.978	1/2$^-$	(M1(+E2))	−0.01 *+13−16*	0.041 *9*	%Iγ=2.30 *5* α(K)=0.037 *8*; α(L)=0.0039 *9*; α(M)=0.00057 *13* α(N)=3.0×10^{-5} *6* Eγ=121.48 *5*, Iγ=3.1 *3* (1970Zo01). Eγ=121.2 *2*, Iγ=3.4 *10* (1970Ta07). Eγ=122.2 *2*, Iγ=2.3 *5* (1969Co20). Eγ=122.0 *5*, Iγ=3 *1* (1967Li01). δ: −0.01 *+13−16* or −1.7 *+5−6* from $\gamma\gamma(\theta)$ (1978Kr06), but intensity balance at 389 level is in agreement with the lower value.
142.820 *10*	5.16 *10*	1107.490	7/2$^-$	964.689	5/2$^-$	(M1(+E2))	−0.05 *4*	0.0274 *10*	%Iγ=4.59 *10* α(K)=0.0244 *9*; α(L)=0.00257 *10*; α(M)=0.000375 *14* α(N)=2.00×10^{-5} *7* Eγ=142.60 *5*, Iγ=6.0 *6* (1970Zo01). Eγ=142.7 *2*, Iγ=5.7 *20* (1970Ta07). Eγ=143.4 *3*, Iγ=5.1 *11* (1969Co20). Eγ=143.0 *5*, Iγ=7 *2* (1967Li01). (143γ)(965γ)(θ): A_2=−0.17 *4*, A_4=−0.03 *5*; A_2=−0.18 *4* if A_4=0 (1978Kr06). δ: −0.05 *4* (1978Kr06) is the average of +0.01 *6* and −0.11 *6* from two different cascades. δ=−4.9 *+12−22* or >12 are also possible solutions but the lower values are in better agreement.
368.499[#] *22*	0.085 *4*	1476.006	5/2$^-$	1107.490	7/2$^-$	[M1+E2]		0.0042 *17*	α(K)=0.0037 *15*; α(L)=0.00039 *16*; α(M)=5.7×10^{-5} *23* α(N)=3.0×10^{-6} *12* %Iγ=0.076 *4*
386.371 *10*	100 *1*	1493.856	9/2$^+$	1107.490	7/2$^-$	(E1)[b]		1.25×10^{-3}	%Iγ=89.0 *11*

$^{71}_{31}$Ga$_{40}$-3

$\gamma(^{71}Ga)$ (continued)

E_γ[†]	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[a]	δ[a]	α[d]	Comments
									$\alpha(K)=0.001122$ *16*; $\alpha(L)=0.0001134$ *16*; $\alpha(M)=1.655\times10^{-5}$ *24* $\alpha(N)=8.82\times10^{-7}$ *13* Eγ=386.28 *5*, Iγ=100 (1970Zo01). Eγ=386.3 *2*, Iγ=100 *5* (1970Ta07). Eγ=386.8 *2*, Iγ=100 (1969Co20). Eγ=387.0 *10*, Iγ=100 (1967Li01). (386γ)[143γ](965γ)(θ): $A_2=-0.079$ *12*, $A_4=+0.016$ *15*; $A_2=-0.072$ *11* if $A_4=0$ (1978Kr06). δ(E2/M1)=−1.4 *1* (1969Kh10) for J=7/2$^-$ for 1494 level. δ(E2/M1)=+0.5 *1* (1969Kh10) based on 7/2 → 7/2 → 5/2 sequence for 387-620 cascade. (386γ)[143γ](965γ)(θ): $A_2=-0.11$ *3*, $A_4=-0.11$ *5* (1976Sa39). (386γ)[596γ](512γ)(θ): $A_2=+0.026$ *12*, $A_4=+0.008$ *18*; $A_2=+0.028$ *10* if $A_4=0$. (386γ)[596γ](512γ)(θ): $A_2=-0.042$ *13*, $A_4=-0.012$ *35* (1976Sa39). (386γ)[596γ](122γ)(θ): $A_2=+0.004$ *20*, $A_4=-0.003$ *24*; $A_2=+0.002$ *17* if $A_4=0$. (386γ)[596γ](122γ)(θ): $A_2=+0.031$ *14*, $A_4=+0.165$ *25* (1976Sa39). (386γ)[620γ](487γ)(θ): $A_2=+0.029$ *7*, $A_4=+0.020$ *12*; $A_2=+0.037$ *6* if $A_4=0$. (386γ)[620γ](487γ)(θ): $A_2=+0.023$ *6*, $A_4=-0.039$ *10* (1976Sa39). (386γ)(1107γ)+(1107γ)(386γ)(θ): $A_2=-0.016$ *10*, $A_4=-0.003$ *13*; $A_2=-0.020$ *8* if $A_4=0$ (1978Kr06). (386γ)(1107γ)+(1107γ)(386γ)(θ): $A_2=-0.01$ *4*, $A_4=+0.06$ *6* (1976Sa39). (386γ)(1107γ)+(1107γ)(386γ)(θ): $A_2=-0.017$ *19*, $A_4=+0.096$ *19* (1969Kh10). (386γ)(143γ)(θ): $A_2=+0.047$ *18*, $A_4=-0.014$ *27*; $A_2=+0.042$ *16* if $A_4=0$ (1978Kr06). (386γ)(143γ)(θ): $A_2=+0.039$ *11*, $A_4=-0.116$ *19* (1976Sa39). (386γ)(596γ)(θ): $A_2=-0.066$ *7*, $A_4=-0.003$ *11*; $A_2=-0.069$ *6* if $A_4=0$ (1978Kr06). (386γ)(596γ)(θ): $A_2=-0.062$ *9*, $A_4=-0.032$ *13* (1976Sa39). (386γ)(596γ)(θ): $A_2=-0.121$ *17*, $A_4=+0.03$ *3* (1975BeYD) gives δ(M2/E1)=0.12 *2* for 386γ with δ(M3/E2)=0.45 *5* for 596γ. (386γ)(620γ)(θ): $A_2=-0.108$ *7*, $A_4=+0.024$ *10*; $A_2=-0.098$ *6* if $A_4=0$ (1978Kr06). (386γ)(620γ)(θ): $A_2=-0.107$ *6*, $A_4=-0.043$ *10* (1976Sa39). (386γ)(620γ)(θ): $A_2=-0.205$ *17*, $A_4=-0.06$ *3* (1969Kh10). (386γ)(620γ)(θ): $A_2=-0.131$ *12*, $A_4=-0.031$ *20* (1975BeYD) giving δ(M2/E1)=0.12 *2* for 386γ with δ(E2/M1)=0.07 *2* for 620γ.

$^{71}_{31}Ga_{40}$-4

γ(^{71}Ga) (continued)

E_γ[†]	I_γ[†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ[a]	α[d]	Comments
389.979 *10*	2.99 *3*	389.978	1/2⁻	0.0	3/2⁻	(M1+E2)	0.0047 *+35−30*	0.00221	%Iγ=2.66 *3* α(K)=0.00198 *3*; α(L)=0.000202 *3*; α(M)=2.96×10^{-5} *5* α(N)=1.597×10^{-6} *23* Eγ=389.87 *5*, Iγ=2.8 *3* (1970Zo01). Eγ=389.6 *5*, Iγ=2.5 *10* (1970Ta07).
398.69[#] *5*	0.031 *2*	910.162	3/2⁻	511.558	3/2⁻	[M1+E2]		0.0033 *12*	α(K)=0.0029 *11*; α(L)=0.00031 *12*; α(M)=4.5×10^{-5} *17* α(N)=2.3×10^{-6} *9* %Iγ=0.0276 *18*
430.52[#] *7*	0.015 *2*	1395.267	7/2⁻	964.689	5/2⁻	[M1+E2]		0.0026 *9*	α(K)=0.0023 *8*; α(L)=0.00024 *9*; α(M)=3.5×10^{-5} *12* α(N)=1.9×10^{-6} *6* %Iγ=0.0134 *18*
453.145 *10*	1.31 *1*	964.689	5/2⁻	511.558	3/2⁻	[M1+E2]		0.0023 *7*	%Iγ=1.166 *13* α(K)=0.0020 *7*; α(L)=0.00021 *7*; α(M)=3.0×10^{-5} *10* α(N)=1.6×10^{-6} *5* Eγ=453.08 *7*, Iγ=1.2 *1* (1970Zo01). Eγ=453.2 *2*, Iγ=1.6 *2* (1970Ta07).
472.754[#] *22*	0.068 *3*	2720.017	7/2⁺	2247.264	7/2⁺				%Iγ=0.061 *3*
477.316[#] *26*	0.062 *2*	964.689	5/2⁻	487.389	5/2⁻	[M1+E2]		0.0019 *6*	α(K)=0.0017 *5*; α(L)=0.00018 *6*; α(M)=2.6×10^{-5} *8* α(N)=1.4×10^{-6} *4* %Iγ=0.0552 *18*
487.402 *10*	69.5 *7*	487.389	5/2⁻	0.0	3/2⁻	(M1+E2)	−0.024 *13*	1.32×10^{-3}	%Iγ=61.9 *4* α(K)=0.001180 *17*; α(L)=0.0001202 *17*; α(M)=1.760×10^{-5} *25* α(N)=9.51×10^{-7} *14* Eγ=487.34 *5*, Iγ=67 *3* (1970Zo01). Eγ=487.3 *2*, Iγ=65 *5* (1970Ta07). Eγ=488.0 *2*, Iγ=63 *13* (1969Co20). Eγ=488.0 *10*, Iγ=69 *5* (1967Li01). δ: −0.024 *13* or −3.1 *2* from γγ(θ) (1978Kr06); <0.12 deduced (1978Kr06) from known level lifetime and measured B(E2). δ(E2/M1)=+0.5 *1* (1969Kh10) based on 7/2 → 5/2 → 3/2 sequence for 620-487 cascade.
511.556 *12*	31.5 *3*	511.558	3/2⁻	0.0	3/2⁻	M1+E2	−0.37 *6*	0.00128 *4*	%Iγ=28.1 *3* α(K)=0.00115 *3*; α(L)=0.000117 *4*;

$^{71}_{31}Ga_{40}$-5

$\gamma(^{71}$Ga) (continued)

E_γ [†]	I_γ [†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[d]	Comments
								α(M)=1.71×10^{-5} *5* α(N)=9.21×10^{-7} *25* Eγ=511.55 *5*, Iγ=30.5 *20* (1970Zo01). Eγ=511.4 *2*, Iγ=33 *3* (1970Ta07). Eγ=511.7 *2*, Iγ=28 *6* (1969Co20). Eγ=512.0 *10*, Iγ=32 *2* (1967Li01). δ: −0.37 *6* or −10 +*3*−*10* from γγ(θ) (1978Kr06); 0.09 *3* deduced (1978Kr06) from known level lifetime and measured B(E2); thus a preference for a lower δ value. Other: 0.28 *1* (1975BeYD) with δ(M3/E2)=0.45 *5* for 512γ, which seems unrealistic.
518.430[#] *18*	0.135 *2*	2600.873	(9/2)$^+$	2082.451	(13/2$^+$)	[E2]	0.0015 *4*	α(K)=0.0014 *4*; α(L)=0.00014 *4*; α(M)=2.1×10^{-5} *6* α(N)=1.1×10^{-6} *3* %Iγ=0.1202 *20*
520[f]	<0.01	910.162	3/2$^-$	389.978	1/2$^-$			%Iγ<0.0089 E_γ: from 1970Zo01 only, with Iγ≤0.02. This γ not seen by 2017Kr01, upper limit of Iγ<0.01 was given. As mentioned in 1970Zo01, this line may be contributed by the ^{71}Zn g.s. decay, where 910-keV level in ^{71}Ga is also populated.
527.71[@] *4*	0.050 *3*	2247.264	7/2$^+$	1719.568	5/2$^-$	[E1]		%Iγ=0.045 *3* Eγ=528.6 *3*, Iγ=0.05 *2* (1970Zo01, from 1494 level). Eγ=529.1 *5*, Iγ=0.07 *3* (1970Ta07, from 1494 level).
565.854 *12*	0.256 *3*	1476.006	5/2$^-$	910.162	3/2$^-$	[M1+E2]	0.0012 *3*	%Iγ=0.228 *3* α(K)=0.00108 *25*; α(L)=0.00011 *3*; α(M)=1.6×10^{-5} *4* α(N)=8.7×10^{-7} *19* Eγ=566.2 *2*, Iγ=0.21 *2* (1970Zo01). Eγ=566.0 *3*, Iγ=0.24 *6* (1970Ta07).
574.684 *17*	0.149 *2*	964.689	5/2$^-$	389.978	1/2$^-$	[E2]	1.42×10^{-3}	%Iγ=0.1327 *21* α(K)=0.001266 *18*; α(L)=0.0001306 *19*; α(M)=1.91×10^{-5} *3* α(N)=1.007×10^{-6} *14* Eγ=574.9 *2*, Iγ=0.12 *1* (1970Zo01). Eγ=575.0 *3*, Iγ=0.21 *6* (1970Ta07).
588.602[@] *17*	0.134 *2*	2082.451	(13/2$^+$)	1493.856	9/2$^+$	[E2]	1.32×10^{-3}	%Iγ=0.1193 *20* α(K)=0.001180 *17*; α(L)=0.0001216 *17*; α(M)=1.775×10^{-5} *25* α(N)=9.38×10^{-7} *14* Eγ=588.60 *2*, Iγ=0.054 *5* (1970Zo01, from 1498 level).
595.916 *10*	31.4 *3*	1107.490	7/2$^-$	511.558	3/2$^-$	E2[b]	1.27×10^{-3}	%Iγ=28.0 *4* α(K)=0.001138 *16*; α(L)=0.0001172 *17*; α(M)=1.711×10^{-5} *24*

γ(^{71}Ga) (continued)

E_γ[†]	I_γ[†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ[a]	α[d]	Comments
									α(N)=9.05×10^{-7} *13* Eγ=596.07 *7*, Iγ=30 *2* (1970Zo01). Eγ=595.9 *2*, Iγ=29 *3* (1970Ta07). Eγ=596.2 *2*, Iγ=28 *6* (1969Co20). Eγ=596.0 *10*, Iγ=31 *2* (1967Li01). (596γ)(122γ)(θ): A_2=−0.11 *5*, A_4=+0.02 *6*; A_2=−0.11 *4* if A_4=0 (1978Kr06). (596γ)(512γ)(θ): A_2=−0.018 *14*, A_4=+0.012 *23*; A_2=−0.012 *13* if A_4=0 (1978Kr06). (596γ)(512γ)(θ): A_2=−0.003 *13*, A_4=+0.006 *20* (1976Sa39). (596γ)(512γ)(θ): A_2=+0.16 *3*, A_4=+0.04 *4* (1975BeYD) gives δ(M3/E2)=0.45 *5*, which is unrealistic.
620.084 *10*	61.2 *6*	1107.490	7/2$^-$	487.389	5/2$^-$	M1+E2	+0.96 *24*	8.93×10^{-4} *22*	%Iγ=54.5 *7* α(K)=0.000799 *20*; α(L)=8.16×10^{-5} *21*; α(M)=1.19×10^{-5} *3* α(N)=6.40×10^{-7} *16* Eγ=620.19 *5*, Iγ=61 *3* (1970Zo01). Eγ=620.1 *2*, Iγ=57 *5* (1970Ta07). Eγ=620.4 *2*, Iγ=64 *13* (1969Co20). Eγ=620.0 *10*, Iγ=62 *4* (1967Li01). (620γ)(487γ)(θ): A_2=−0.192 *10*, A_4=+0.020 *16*; A_2=−0.187 *8* if A_4=0 (1978Kr06). δ(E2/M1)=−1.4 *1* (1969Kh10) based on 7/2 → 7/2 → 5/2 sequence for 387-620 cascade. δ(E2/M1)=+7.7 *13* or +0.4 *2* (1969Kh10) based on 7/2→5/2→3/2 sequence for 620-487 cascade. (620γ)(487γ)(θ): A_2=−0.199 *7*, A_4=+0.007 *10* (1976Sa39). (620γ)(487γ)(θ): A_2=+0.22 *3*, A_4=+0.07 *4* (1969Kh10). δ: +0.72 *+8−6* or +2.3 *3* (1978Kr06). The smaller value is preferred from comparison of δ values deduced from different $\gamma\gamma$ cascades. Other: 0.07 *2* (1975BeYD).
753.395 *10*	3.57 *4*	2247.264	7/2$^+$	1493.856	9/2$^+$	M1+E2	−0.085 *15*	5.05×10^{-4}	%Iγ=3.18 *4* α(K)=0.000452 *7*; α(L)=4.57×10^{-5} *7*; α(M)=6.69×10^{-6} *10* α(N)=3.63×10^{-7} *5* Eγ=753.41 *7*, Iγ=3.5 *3* (1970Zo01). Eγ=753.2 *1*, Iγ=3.4 *4* (1970Ta07). Eγ=753.2 *5*, Iγ=2.6 *6* (1969Co20). Eγ=752.0 *10*, Iγ=4 *1* (1967Li01). δ: −0.085 *15* or +12 *2* (1978Kr06). The lower value is preferred based on the systematics of hindrance of M1 transitions in this mass region. (753γ)(386γ)(θ): A_2=+0.043 *9*, A_4=−0.003 *12*; A_2=+0.041 *7*

γ(^{71}Ga) (continued)

E_γ [†]	I_γ [†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [a]	δ [a]	α [d]	Comments
									if A_4=0 (1978Kr06). (753γ)(386γ)(θ): A_2=+0.09 *3*, A_4=−0.05 *5* (1976Sa39). (753γ)(386γ)(θ): A_2=−0.105 *19*, A_4=+0.04 *3* (1975BeYD) giving δ(E2/M1)=0.07 *2* for 753γ and δ(M2/E1)=0.07 *2* for 386γ.
771.265 *10*	2.35 *2*	2247.264	7/2$^+$	1476.006	5/2$^-$	[E1]			%Iγ=2.092 *24* Eγ=771.26 *7*, Iγ=2.2 *2* (1970Zo01). Eγ=771.2 *1*, Iγ=2.0 *3* (1970Ta07). Eγ=771.3 *5*, Iγ=1.2 *3* (1969Co20). Eγ=772.0 *10*, Iγ=2.0 *5* (1967Li01).
^{x}834.59[#] *4*	0.020 *1*								%Iγ=0.0178 *9*
852.02[#] *5*	0.021 *3*	2247.264	7/2$^+$	1395.267	7/2$^-$				%Iγ=0.019 *3*
883.80[#] *7*	0.010 *1*	1395.267	7/2$^-$	511.558	3/2$^-$	[E2]		4.37×10^{-4}	α(K)=0.000391 *6*; α(L)=3.97×10^{-5} *6*; α(M)=5.81×10^{-6} *9* α(N)=3.11×10^{-7} *5* %Iγ=0.0089 *9*
907.92[#] *3*	0.089 *2*	1395.267	7/2$^-$	487.389	5/2$^-$	[M1+E2]		0.00037 *4*	α(K)=0.00034 *3*; α(L)=3.4×10^{-5} *4*; α(M)=5.0×10^{-6} *5* α(N)=2.67×10^{-7} *24* %Iγ=0.0792 *19*
910.181 *21*	0.276 *3*	910.162	3/2$^-$	0.0	3/2$^-$	(M1+E2)	0.09 *5*	3.39×10^{-4}	%Iγ=0.246 *3* α(K)=0.000303 *5*; α(L)=3.06×10^{-5} *5*; α(M)=4.48×10^{-6} *7* α(N)=2.43×10^{-7} *4* Eγ=910.1 *2*, Iγ=0.33 *3* (1970Zo01). Eγ=909.5 *2*, Iγ=0.32 *6* (1970Ta07).
952.352 *29*	0.039 *2*	2450.649	7/2$^+$	1498.325	9/2$^-$				%Iγ=0.0347 *18* Eγ=951.8 *3*, Iγ=0.011 *1* (1970Zo01).
956.785 *15*	0.282 *3*	2450.649	7/2$^+$	1493.856	9/2$^+$				%Iγ=0.251 *3* Eγ=956.7 *2*, Iγ=0.21 *2* (1970Zo01). Eγ=956.8 *2*, Iγ=0.29 *6* (1970Ta07).

γ(^{71}Ga) (continued)

E_γ [†]	I_γ [†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [a]	δ [a]	α [d]	Comments
964.670[e] *10*	4.95[e‡] *40*	964.689	5/2⁻	0.0	3/2⁻	M1+E2	+1.3 *3*	3.33×10^{-4} *9*	%Iγ=4.4 *4* α(K)=0.000298 *8*; α(L)=3.02×10^{-5} *8*; α(M)=4.41×10^{-6} *11* α(N)=2.38×10^{-7} *6* Eγ=964.7 *1*, Iγ=4.6 *5* (1970Zo01). Eγ=964.6 *1*, Iγ=5.0 *5* (1970Ta07). Eγ=964.5 *5*, Iγ=3.9 *12* (1969Co20). Eγ=963.0 *15*, Iγ=5 *1* (1967Li01). Eγ=964.693 *8*, deduced from level-energy difference, in good agreement with the measured Eγ value for the doublet. Total Iγ=5.35 *5* for the doublet. δ: +4.2 *+14−10* or +0.58 *+9−8* from 1978Kr06. From lifetime arguments for 965 level given by 1978Kr06, larger value is somewhat preferred.
964.670[e&] *10*	0.40[e‡] *40*	1476.006	5/2⁻	511.558	3/2⁻				%Iγ=0.4 *4* Eγ=964.6 *3*, Iγ=0.5 *3* (1970Zo01). Eγ=964.441 *7*, deduced from level-energy difference, deviates by 0.230 keV from the measured Eγ value for the doublet. (965γ)(512γ)(θ): A_2=+0.020 *15*, A_4=−0.07 *3*; A_2=+0.018 *14* if A_4=0.
974.659 *12*	0.442 *4*	2450.649	7/2⁺	1476.006	5/2⁻				%Iγ=0.394 *5* Eγ=974.7 *2*, Iγ=0.38 *4* (1970Zo01). Eγ=974.7 *2*, Iγ=0.36 *7* (1970Ta07).
[x]977.466[#] *23*	0.049 *2*								%Iγ=0.0436 *18*
982.292[#] *10*	0.012 *5*	1493.856	9/2⁺	511.558	3/2⁻	[E3]		7.09×10^{-4}	α(K)=0.000633 *9*; α(L)=6.57×10^{-5} *10*; α(M)=9.60×10^{-6} *14* α(N)=5.10×10^{-7} *8* %Iγ=0.011 *5*
988.640 *10*	1.46 *1*	1476.006	5/2⁻	487.389	5/2⁻	(M1+E2)	+0.17 *5*	2.87×10^{-4}	%Iγ=1.300 *14* α(K)=0.000257 *4*; α(L)=2.59×10^{-5} *4*; α(M)=3.79×10^{-6} *6* α(N)=2.06×10^{-7} *3* Eγ=988.6 *2*, Iγ=1.3 *1* (1970Zo01, Eγ=998.6 in Table 1 is a misprint). Eγ=988.6 *1*, Iγ=1.2 *2* (1970Ta07). Eγ=987.8 *5*, Iγ=0.9 *2* (1969Co20). Eγ=987.0 *15*, Iγ=1.0 *5* (1967Li01). δ: +0.20 *3* or −2.8 *2* (1978Kr06) for J(1476 level)=5/2. (989γ)(487γ)(θ): A_2=−0.085 *14*, A_4=+0.030 *16*; A_2=−0.073 *13* if A_4=0 (1978Kr06).

γ(^{71}Ga) (continued)

E_γ [†]	I_γ [†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [a]	α [d]	Comments
								%Iγ=1.300 *14* α(K)=0.000257 *4*; α(L)=2.59×10^{-5} *4*; α(M)=3.79×10^{-6} *6* α(N)=2.06×10^{-7} *3* Eγ=988.6 *2*, Iγ=1.3 *1* (1970Zo01, Eγ=998.6 in Table 1 is a misprint). Eγ=988.6 *1*, Iγ=1.2 *2* (1970Ta07). Eγ=987.8 *5*, Iγ=0.9 *2* (1969Co20). Eγ=987.0 *15*, Iγ=1.0 *5* (1967Li01). δ: +0.20 *3* or −2.8 *2* (1978Kr06) for J(1476 level)=5/2. (989γ)(487γ)(θ): A_2=−0.085 *14*, A_4=+0.030 *16*; A_2=−0.073 *13* if A_4=0 (1978Kr06).
994.395 *19*	0.075 *3*	2488.239	(7/2)$^+$	1493.856	9/2$^+$			%Iγ=0.067 *3* Eγ=994.6 *3*, Iγ=0.032 *4* (1970Zo01). Eγ=993.7 *7*, Iγ=0.12 *6* (1970Ta07).
1006.439[@] *10*	0.85 *1*	1493.856	9/2$^+$	487.389	5/2$^-$	[M2]	6.28×10^{-4}	%Iγ=0.757 *11* α(K)=0.000562 *8*; α(L)=5.74×10^{-5} *8*; α(M)=8.40×10^{-6} *12* α(N)=4.55×10^{-7} *7* Eγ=1006.5 *2*, Iγ=0.8 *2* (1970Zo01, tentatively from 1494 level). Eγ=1006.5 *1*, Iγ=0.81 *20* (1970Ta07, from 1494 level). Eγ=1007.0 *10* (1969Co20, from 1494 level).
1010.926 *15*	0.506 *9*	1498.325	9/2$^-$	487.389	5/2$^-$	Q		%Iγ=0.451 *9* Eγ=1011.4 *2*, Iγ=0.73 *7* (1970Zo01). Eγ=1011.4 *2*, Iγ=0.67 *20* (1970Ta07). Eγ=1008.0 *25*, Iγ=2 *1* (1967Li01, possible doublet).
1012.231 *22*	0.280 *8*	2488.239	(7/2)$^+$	1476.006	5/2$^-$			%Iγ=0.249 *7*
[x]1083.58[#] *6*	0.009 *1*							%Iγ=0.0080 *9*
1085.381[@] *25*	0.042 *2*	2804.911	(7/2)$^+$	1719.568	5/2$^-$			%Iγ=0.0374 *18* Eγ=1085.3 *8*, Iγ=0.044 *7* (1970Zo01, tentatively placed from 1476 level). Eγ=1086.9 *7*, Iγ=0.09 *4* (1970Ta07), from 1476 level).
1093.02[@] *6*	0.011 *1*	2488.239	(7/2)$^+$	1395.267	7/2$^-$			%Iγ=0.0098 *9* Eγ=1093.5 *7*, Iγ=0.10 *4* (1970Ta07, unplaced).
1102.46[#] *5*	0.028 *2*	2600.873	(9/2)$^+$	1498.325	9/2$^-$			%Iγ=0.0249 *18*
1107.334[e&] *10*	2.06[e‡] *9*	1107.490	7/2$^-$	0.0	3/2$^-$	[E2]	2.56×10^{-4}	%Iγ=1.83 *8* α(K)=0.000228 *4*; α(L)=2.31×10^{-5} *4*; α(M)=3.37×10^{-6} *5* α(N)=1.82×10^{-7} *3*; α(IPF)=1.001×10^{-6} *14* Eγ=1107.4 *2*, Iγ=2.2 *3* (1970Zo01). Eγ=1107.2 *2*, Iγ=2.9 *5* (1970Ta07). Eγ=1108.2 *10* (1969Co20). Eγ=1107.0 *15*, Iγ=3 *1* (1967Li01). Eγ=1107.480 *7*, deduced from level-energy difference, deviates by 0.154 keV from the measured Eγ value for the doublet. Total Iγ=2.99 *3* for the doublet.

$^{71}_{31}$Ga$_{40}$-10

$\gamma(^{71}$Ga) (continued)

E_γ [†]	I_γ [†c]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [a]	δ [a]	Comments
1107.334 [e&] *10*	0.93 [e‡] *9*	2600.873	(9/2)$^+$	1493.856	9/2$^+$	(E2+M1)	+3 *+10−1*	%Iγ=0.83 *8* Eγ=1107.008 *22*, deduced from level-energy difference, deviates by 0.326 keV from the measured Eγ value for the doublet. δ: +3 *+10−1* for J(2601)=9/2 (1978Kr06). Other: +0.08 *7* or +4.3 *+18−10* for J(2601)=11/2 (1978Kr06).
1139.752 *12*	0.250 *3*	2247.264	7/2$^+$	1107.490	7/2$^-$			%Iγ=0.223 *3* Eγ=1139.8 *3*, Iγ=0.22 *3* (1970Zo01). Eγ=1139.8 *8*, Iγ=0.21 *5* (1970Ta07). Eγ=1140.4 *10* (1969Co20).
[x]1190.63 *4*	0.018 *1*							%Iγ=0.0160 *9* Eγ=1190.6 *8*, Iγ=0.012 *3* (1970Zo01). This γ was placed by 1970Zo01 from a 1702.1, 1/2$^+$ level based on a comparison with the decay of a 1700-keV level in (n,n′γ) work of 1969Ve03 where a strong 1188γ and a weaker 1700γ from this level were reported. As noted in 2017Kr01, later (n,n′γ) data from 1984Ar09 are inconsistent with those in 1969Ve03, reporting gamma rays of 1188.2 and 1699.2 keV, with a larger intensity for the latter, and that the energy and intensity of the 1190.6 γ ray in ^{71}Zn β^- decay were inconsistent with improved (n,n′γ) data from 1984Ar09 (also 1977SmZI). For this reason 1190.6γ is kept as an unplaced γ ray.
1208.005 *22*	0.037 *1*	1719.568	5/2$^-$	511.558	3/2$^-$			%Iγ=0.0329 *9* Eγ=1208.0 *5*, Iγ=0.023 *4* (1970Zo01).
1226.152 *30*	0.026 *1*	2720.017	7/2$^+$	1493.856	9/2$^+$			%Iγ=0.0232 *9* Eγ=1226.5 *6*, Iγ=0.020 *3* (1970Zo01).
1232.181 *24*	0.035 *1*	1719.568	5/2$^-$	487.389	5/2$^-$			%Iγ=0.0312 *9* Eγ=1232.80 *6*, Iγ=0.030 *4* (1970Zo01).
1243.989 *17*	0.066 *2*	2720.017	7/2$^+$	1476.006	5/2$^-$			%Iγ=0.0588 *18* Eγ=1244.2 *8*, Iγ=0.066 *9* (1970Zo01).
1282.562 *15*	0.284 *3*	2247.264	7/2$^+$	964.689	5/2$^-$			%Iγ=0.253 *3* Eγ=1282.7 *3*, Iγ=0.29 *3* (1970Zo01). Eγ=1282.8 *6*, Iγ=0.24 *5* (1970Ta07). Eγ=1283.4 *10*, Iγ=0.2 *1* (1969Co20).
1306.565 *21*	0.126 *2*	2804.911	(7/2)$^+$	1498.325	9/2$^-$			%Iγ=0.1122 *20* Eγ=1306.7 *2*, Iγ=0.12 *1* (1970Zo01). Eγ=1306.7 *10*, Iγ=0.13 *5* (1970Ta07, unplaced).
1311.016 *22*	0.124 *2*	2804.911	(7/2)$^+$	1493.856	9/2$^+$			%Iγ=0.1104 *20* Eγ=1311.4 *2*, Iγ=0.11 *1* (1970Zo01). Eγ=1311.3 *10*, Iγ=0.14 *5* (1970Ta07).
1321.891 *14*	0.249 *4*	2815.784	7/2$^+$	1493.856	9/2$^+$			%Iγ=0.222 *4* Eγ=1322.2 *2*, Iγ=0.25 *3* (1970Zo01). Eγ=1322.2 *6*, Iγ=0.26 *3* (1970Ta07).

$^{71}_{31}$Ga$_{40}$-11

γ(^{71}Ga) (continued)

E_γ[†]	I_γ[†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[a]	α[d]	Comments
1339.80 *6*	0.012 *1*	2815.784	7/2$^+$	1476.006	5/2$^-$			%Iγ=0.0107 *9* Eγ=1339.7 *4*, Iγ=0.011 *2* (1970Zo01).
1343.129 *21*	0.048 *2*	2450.649	7/2$^+$	1107.490	7/2$^-$			%Iγ=0.0427 *18* Eγ=1343.7 *4*, Iγ=0.049 *6* (1970Zo01).
1380.713 *15*	0.391 *4*	2488.239	(7/2)$^+$	1107.490	7/2$^-$			%Iγ=0.348 *5* Eγ=1380.8 *2*, Iγ=0.39 *4* (1970Zo01). Eγ=1380.5 *3*, Iγ=0.32 *6* (1970Ta07).
1395.254 *19*	0.093 *1*	1395.267	7/2$^-$	0.0	3/2$^-$	E2	2.06×10^{-4}	%Iγ=0.0828 *11* α(K)=0.0001381 *20*; α(L)=1.391×10^{-5} *20*; α(M)=2.03×10^{-6} *3* α(N)=1.099×10^{-7} *16*; α(IPF)=5.20×10^{-5} *8* Eγ=1395.2 *4*, Iγ=0.09 *1* (1970Zo01). Eγ=1396.4 *9*, Iγ=0.10 *5* (1970Ta07).
^{x}1409.26 *4*	0.011 *1*							%Iγ=0.0098 *9* Eγ=1409.1 *10*, Iγ=0.007 *2* (1970Zo01). Earlier placement from 2805 level by 1970Zo01 is not supported by 2017Kr01, based on level-energy differences.
1475.972 *14*	0.68 *1*	1476.006	5/2$^-$	0.0	3/2$^-$	(M1+E2)		%Iγ=0.605 *10* Eγ=1476.0 *2*, Iγ=0.65 *6* (1970Zo01). Eγ=1475.9 *3*, Iγ=0.57 *11* (1970Ta07). Eγ=1475.6 *10*, Iγ=0.5 *2* (1969Co20). Eγ=1475.0 *20*, Iγ: weak (1967Li01).
1485.874 *19*	0.057 *1*	2450.649	7/2$^+$	964.689	5/2$^-$			%Iγ=0.0508 *10* Eγ=1485.8 *4*, Iγ=0.050 *5* (1970Zo01). Eγ=1486.4 *8*, Iγ=0.05 *3* (1970Ta07). E_γ: somewhat poor fit, level-energy difference gives Eγ=1485.940 *10*.
1493.802[e] *19*	0.070[e‡] *4*	1493.856	9/2$^+$	0.0	3/2$^-$	[E3]	2.72×10^{-4}	%Iγ=0.062 *4* α(K)=0.000215 *3*; α(L)=2.19×10^{-5} *3*; α(M)=3.20×10^{-6} *5* α(N)=1.725×10^{-7} *25*; α(IPF)=3.21×10^{-5} *5* Eγ=1493.8 *4*, Iγ=0.054 *6* (1970Zo01). Eγ=1493.6 *8*, Iγ=0.05 *3* (1970Ta07). Eγ=1493.848 *8*, deduced from level-energy difference, in good agreement with the measured Eγ value for the doublet. Total Iγ=0.076 *2* for the doublet.
1493.802[e&f] *19*	0.006[e‡] *4*	2600.873	(9/2)$^+$	1107.490	7/2$^-$			%Iγ=0.005 *4* Eγ=1493.366 *23*, deduced from level-energy difference, deviates by 0.435 keV from the measured Eγ value for the doublet.
^{x}1503.44 *4*	0.015 *1*							%Iγ=0.0134 *9* Eγ=1503.8 *5*, Iγ=0.013 *3* (1970Zo01).
1612.55 *4*	0.015 *1*	2720.017	7/2$^+$	1107.490	7/2$^-$			%Iγ=0.0134 *9* Eγ=1612.2 *5*, Iγ=0.013 *3* (1970Zo01).

γ(^{71}Ga) (continued)

E_γ [†]	I_γ [†c]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[a]	δ[a]	α[d]	Comments
1697.35 *6*	0.008 *1*	2804.911	(7/2)$^+$	1107.490	7/2$^-$				%Iγ=0.0071 *9* Eγ=1697.6 *3*, Iγ=0.005 *1* (1970Zo01).
1708.311 *19*	0.092 *1*	2815.784	7/2$^+$	1107.490	7/2$^-$				%Iγ=0.0819 *11* Eγ=1708.2 *5*, Iγ=0.09 *1* (1970Zo01). Eγ=1707.1 *10*, Iγ=0.07 *3* (1970Ta07).
1719.574 *23*	0.049 *1*	1719.568	5/2$^-$	0.0	3/2$^-$	M1+E2	+1.4 *5*	2.67×10^{-4} *10*	%Iγ=0.0436 *10* α(K)=8.97×10^{-5} *15*; α(L)=9.00×10^{-6} *16*; α(M)=1.315×10^{-6} *23* α(N)=7.14×10^{-8} *12*; α(IPF)=0.000167 *8* Eγ=1719.2 *7*, Iγ=0.04 *1* (1970Zo01).
1759.865 *18*	0.104 *2*	2247.264	7/2$^+$	487.389	5/2$^-$				%Iγ=0.0926 *19* Eγ=1759.6 *2*, Iγ=0.10 *1* (1970Zo01, Iγ=1.0 *1* in Table 1 of 1970Zo01 is a misprint as pointed out by K. Krane (Oregon) in an email communication of April 29, 2016 to the evaluators, the value should be 0.10 *1*, also confirmed by W.B. Walters (Maryland) in an email reply of May 6, 2016). Eγ=1758.4 *15* (1969Co20).
1840.183 *22*	0.050 *1*	2804.911	(7/2)$^+$	964.689	5/2$^-$				%Iγ=0.0445 *10* Eγ=1840.0 *4*, Iγ=0.050 *5* (1970Zo01).
1905.65 *8*	0.006 *1*	2815.784	7/2$^+$	910.162	3/2$^-$	[M2]		2.57×10^{-4}	%Iγ=0.0053 *9* α(K)=0.0001304 *19*; α(L)=1.313×10^{-5} *19*; α(M)=1.92×10^{-6} *3* α(N)=1.046×10^{-7} *15*; α(IPF)=0.0001116 *16* Eγ=1905.2 *7*, Iγ=0.0048 *6* (1970Zo01).
1963.41 *7*	0.008 *1*	2450.649	7/2$^+$	487.389	5/2$^-$				%Iγ=0.0071 *9* Eγ=1963.8 *7*, Iγ=0.006 *1* (1970Zo01).
2000.75 *10*	0.006 *1*	2488.239	(7/2)$^+$	487.389	5/2$^-$	[E1,M2]		6.73×10^{-4} *11*	%Iγ=0.0053 *9* α(K)=3.96×10^{-5} *10*; α(L)=3.95×10^{-6} *10*; α(M)=5.77×10^{-7} *14* α(N)=3.13×10^{-8} *8*; α(IPF)=0.000629 *10* Eγ=2000.9 *8*, Iγ=0.004 *1* (1970Zo01).
2317.54 *4*	0.068 *2*	2804.911	(7/2)$^+$	487.389	5/2$^-$				%Iγ=0.0605 *19* Eγ=2317.7 *6*, Iγ=0.07 *1* (1970Zo01).
2488.37 *9*	0.008 *1*	2488.239	(7/2)$^+$	0.0	3/2$^-$	[M2,E3]		4.04×10^{-4} *25*	%Iγ=0.0071 *9* α(K)=7.35×10^{-5} *21*; α(L)=7.38×10^{-6} *20*; α(M)=1.08×10^{-6} *3* α(N)=5.88×10^{-8} *17*; α(IPF)=0.00032 *3* Eγ=2489.4 *8*, Iγ=0.005 *1* (1970Zo01).

† From 2017Kr01. Values from 1970Zo01, 1970Ta07, 1969Co20 and 1967Li01 are listed under comments, but not used in the evaluation, as data from 2017Kr01 are much more precise than in any of the previous studies.

‡ Intensities of the 964.7γ, 1107.3γ and 1493.8γ doublets divided in two components each based on level and gamma energies, as well as compared with γγ-coin data from 1970Zo01.

$^{71}_{31}$Ga$_{40}$-13

$\gamma(^{71}Ga)$ (continued)

[#] This γ ray reported by 2017Kr01 only.

[@] Revised placement of γ transition in 2017Kr01.

[&] Eγ value not included in the least-squares fit procedure due to poor agreement. Note that this γ is doubly placed.

[a] From Adopted Gammas. Arguments and values from decay studies in this dataset are given under comments, which are mainly from $\gamma\gamma(\theta)$ in 1978Kr06.

[b] 1978Kr06 assumed E1 for 386γ and E2 for 596γ in the analysis of their $\gamma\gamma(\theta)$ data. Measured A_2=−0.071 for 386-596 cascade supports these assumptions.

[c] For absolute intensity per 100 decays, multiply by 0.8903 *69*.

[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.

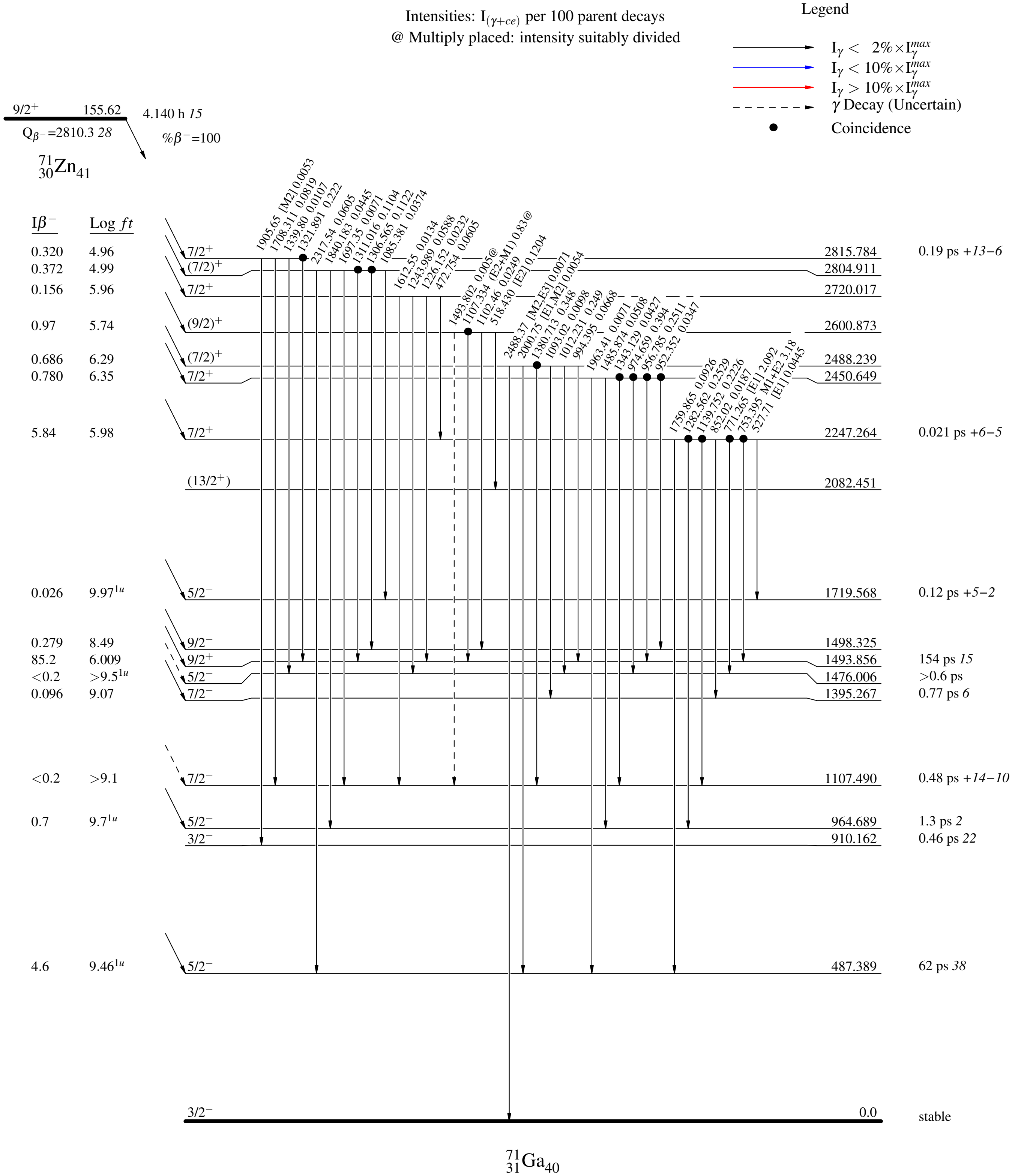
[e] Multiply placed with intensity suitably divided.

[f] Placement of transition in the level scheme is uncertain.

[x] γ ray not placed in level scheme.

^{71}Zn β^- decay (4.140 h) 2017Kr01,1970Zo01,1970Ta07

Decay Scheme



$^{71}Zn\ \beta^-$ decay (4.140 h) 2017Kr01,1970Zo01,1970Ta07

Decay Scheme (continued)

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

@ Multiply placed: intensity suitably divided