^{115}Cd β^- decay (44.56 d) 1973Se06,1975Bo29,1978He08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 113, 2391 (2012)	1-Sep-2012

Parent: ^{115}Cd: E=181.0 *5*; J^π=11/2$^-$; $T_{1/2}$=44.56 d *24*; Q(β^-)=1448.7 *17*; %β^- decay=100.0

Others: 1959Jo31, 1963Sh14, 1963Va06, 1963Hu06, 1964Bo19, 1964Ra03, 1965Sa13, 1966Gr14, 1968Mo09, 1969MoZS, 1973Is03, 1974HeYW.

%β^-=100; %IT=0, Iγ(E5)/Iγ(934γ)≤1×10^{-5} (1973Se06).

$\gamma\gamma(\theta)$: 1963Va06, 1964Pa18, 1973St13, 1973Ko23, 1973Se06, 1975Bo29.

^{115}In Levels

E(level)	J^π[†]	$T_{1/2}$[†]	Comments
0.0	9/2$^+$	4.41×10^{14} y *25*	
336.253 *18*	1/2$^-$	4.486 h *4*	
597.151 *24*	3/2$^-$	≤0.25 ns	
828.608[‡] *18*	3/2$^+$	5.78 ns *6*	
933.838[‡] *4*	7/2$^+$	57 ps *5*	$T_{1/2}$: from (484γ)(934γ)(t) scin (1973Se06). Other:≤130 ps (1967Mc13). Branching: Iγ(105γ)/Iγ(934γ)=0.0022 *1* (1978He08), 0.0024 *4* (1973Se06), 0.0023 *4* (1973Is03).
941.429 *11*	5/2$^+$		
1078.17 *7*	5/2$^+$		Branching: Iγ(1078γ):Iγ(480γ):Iγ(136γ)=100:18.7 *3*:1.2 *2* (1976Tu02, Coul. ex.).
1132.578 *9*	11/2$^+$		
1290.596 *10*	13/2$^+$		Branching: Iγ(158γ)/Iγ(1290γ)=0.0191 *4* (1978He08), 0.0222 *27* (1973Se06).
1418.272 *9*	(9/2)$^+$		Branching: Iγ(477γ):Iγ(484γ):Iγ(1418γ)=0.034 *7*:100:0.63 *3* (1978He08), 0.06 *3*:100:0.61 *7* (1973Se06).
1448.786 *6*	9/2$^+$		Branching: Iγ(1449γ):Iγ(515γ):Iγ(507γ):Iγ(316γ)=100:0.6 *2*:1.5 *1*:14.6 *6* (1978He08), 100:–:2.4 *13*:18 *3* (1973Se06).
1478.5?			
1486.109 *11*			

[†] From Adopted Levels, except as noted.

[‡] Band(A): 1/2(431) band; α=12.9, a=−1.92. E(5/2)=1017 keV, E(9/2)=1272 keV. Calculations by 1975Di12 indicate a potential energy minimum at prolate β_2≈0.2 for 1/2[431] orbital.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(143.6 *18*)	1486.109	≈0.0007	≈10.3	av Eβ=37.7 *12*
(180.9 *18*)	1448.786	≈0.02	≈9.2	av Eβ=48.5 *12*
(211.4 *18*)	1418.272	≈0.3	≈8.2	av Eβ=57.6 *13*
(339.1 *18*)	1290.596	≈0.9	≈8.4	av Eβ=98.0 *14* E(decay): β(1290γ): 320 *5* (1975Bo29) semi-semi, 335 *10* (1959Jo31) scin-scin; β shape factor indicates allowed or nonunique first-forbidden transition.
(497.1 *18*)	1132.578	≈0.06	≈10.2	av Eβ=152.3 *15*
679 *6*	933.838	≈1.7	≈9.5[1u]	av Eβ=244.0 *15* E(decay): β(934γ): 679 *6* (1975Bo29), 680 *10* (1963Sh14), 687 *8* (1959Jo31); β shape factors indicate unique first-forbidden transition (1975Bo29,1963Sh14,1959Jo31).
1620 *10*	0.0	97	8.8	av Eβ=617.6 *18* E(decay): 1620 *10* (1963Sh14) s, 1631 *16* (1959Jo31) scin, 1630 *10* (1952Ha24) s; nonlinear F-K plot observed (1963Sh14).

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^{115}Cd β^- decay (44.56 d) 1973Se06,1975Bo29,1978He08 (continued)

β^- radiations (continued)

E(decay)	E(level)	Comments
		Iβ⁻: 97% (1963Sh14),≈98% (1952Ha24). ΔIβ: Uncertainty not stated by 1963Sh14. Longitudinal pol 1620β studied (1963Ku20).

† Absolute intensity per 100 decays.

γ(^{115}In)

Iγ normalization: from Σ I(γ+ce) to g.s.=3 *1* (uncertainty assigned by evaluators), β^- to g.s.=97%.
Eγ,Iγ measurements are from 1978He08, except as noted; I(ce(K)) from 1973Is03.
α(K)exp=ce(K)/Iγ normalized to α(K)(336γ)=0.866 (M4 theory).

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ	α[@]	Comments
105.200 *25*	2.21 *9*	933.838	7/2$^+$	828.608	3/2$^+$	E2		1.290	α(K)=0.965 *14*; α(L)=0.263 *4*; α(M)=0.0529 *8*; α(N+..)=0.00943 *14* α(N)=0.00909 *13*; α(O)=0.000345 *5* α(K)exp=1.0 *1*
(136.3)	0.0002 *CA*	1078.17	5/2$^+$	941.429	5/2$^+$				
158.027 *20*	8.51 *9*	1290.596	13/2$^+$	1132.578	11/2$^+$	M1+E2	+0.02 *1*	0.144	α(K)=0.12460 *7*; α(L)=0.01561; α(M)=0.00302; α(N+..)=0.00066 α(K)exp=0.17 *2* δ: from (158γ)(1132γ)(θ): +0.02 *1* (1973St13), +0.03 *1* (1973Se06). Other: 1964Pa18.
231.440 *20*	0.44 *3*	828.608	3/2$^+$	597.151	3/2$^-$	E1[‡]		0.01639	α(K)=0.01427 *20*; α(L)=0.001726 *25*; α(M)=0.000333 *5*; α(N+..)=6.46×10^{-5} *9* α(N)=6.04×10^{-5} *9*; α(O)=4.22×10^{-6} *6*
260.89 *3*	0.46 *4*	597.151	3/2$^-$	336.253	1/2$^-$	M1+E2[‡]	−0.09 *6*	0.0379 *2*	α(K)=0.03285 *18*; α(L)=0.00405 *5*; α(M)=0.00078; α(N+..)=0.00017
316.201 *17*	1.24 *5*	1448.786	9/2$^+$	1132.578	11/2$^+$	M1[‡]		0.023	α(K)=0.01996; α(L)=0.00243; α(M)=0.00047; α(N+..)=0.00010 Mult.: δ=0.00 *4* from (316γ)(1132γ)(θ): 1973Se06, 1973St13.
336.241 *25*	2.47 *8*	336.253	1/2$^-$	0.0	9/2$^+$	M4[‡]		1.081	α(K)=0.856 *12*; α(L)=0.181 *3*; α(M)=0.0369 *6*; α(N+..)=0.00704 *10* α(N)=0.00664 *10*;

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^{115}Cd β^- decay (44.56 d) 1973Se06,1975Bo29,1978He08 (continued)

$\gamma(^{115}In)$ (continued)

E_γ	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ	Comments
								α(O)=0.000392 *6* E_γ: from 1974HeYW. Others: 336.23 *5* (1967Ba18), 336.25 *10* (1967Mu08), 336.301 *15* (1978He08).
344.6 *1*	0.02 *1*	941.429	$5/2^+$	597.151	$3/2^-$	[E1]		α(K)=0.00494; α(L)=0.00059; α(M)=0.00011 E_γ: other: 344.2 (1976Tu02, Coul. ex.).
(353.6)	0.06 *CA*	1486.109		1132.578	$11/2^+$			I_γ: from Iγ(353γ)/Iγ(1486γ)=0.22 (1976Tu02, Coul. ex.).
370.61 *7*	0.004 *2*	1448.786	$9/2^+$	1078.17	$5/2^+$			
476.67 *15*	0.05 *1*	1418.272	$(9/2)^+$	941.429	$5/2^+$			
(480.5)	0.004 *CA*	1078.17	$5/2^+$	597.151	$3/2^-$			
484.471 *15*	145 *1*	1418.272	$(9/2)^+$	933.838	$7/2^+$	M1+E2	+4.0 *2*	α(K)=0.00660; α(L)=0.00088; α(M)=0.00017 α(K)exp=0.0062 *9* E_γ: other: 484.35 *15* (1973Se06). δ: from (484γ)(934γ)(θ): 1955Va04, 1963Va06, 1964Pa18, 1973Ko23, 1973Se06, 1973St13, 1975Bo29; see 1977Kr13 evaluation.
492.351 *5*	4.8 *1*	828.608	$3/2^+$	336.253	$1/2^-$	E1[‡]		α(K)=0.00204; α(L)=0.00024
507.36 *6*	0.13 *1*	1448.786	$9/2^+$	941.429	$5/2^+$			
515.05 *7*	0.05 *2*	1448.786	$9/2^+$	933.838	$7/2^+$			
544.7[&] *2*	0.03	1478.5?		933.838	$7/2^+$			I_γ: 0.043 *9* doublet apportioned via branching Iγ(545γ)/Iγ(1486γ)= 0.047 (1976Tu02, Coul. ex.).
544.7 *2*	0.01	1486.109		941.429	$5/2^+$			
933.838 *4*	1000 *3*	933.838	$7/2^+$	0.0	$9/2^+$	M1(+E2)	+0.02 *5*	α(K)=0.00148; α(L)=0.00017 α(K)exp=0.0013 *1* E_γ: others: 933.81 *4* (1974HeYW), 933.6 *1* (1973Se06). δ: +0.02 *5* (1975Ro32) oriented 44.6-d ^{115}Cd decay, 934γ(θ).
941.420 *11*	0.12 *1*	941.429	$5/2^+$	0.0	$9/2^+$	E2[‡]		α(K)=0.00121; α(L)=0.00015 E_γ: from ^{115}Cd g.s. decay. Others: 941.68 *12* (1978He08), 941.2 *5* (1973Se06).
1078.2 *5*	0.02 *2*	1078.17	$5/2^+$	0.0	$9/2^+$			E_γ: other: 1077.7 (1976Tu02, Coul. ex.).
1132.573 *11*	42.8 *5*	1132.578	$11/2^+$	0.0	$9/2^+$	M1+E2[‡]	+0.51 *4*	α(K)=0.00093; α(L)=0.00011 E_γ: others: 1132.61 *5* (1974HeYW), 1132.5 *1* (1973Se06).
1290.585 *11*	445 *7*	1290.596	$13/2^+$	0.0	$9/2^+$	E2[‡]		α(K)=0.00061 E_γ: others: 1290.64 *5* (1974HeYW), 1290.5 *1* (1973Se06).
1418.243 *11*	0.92 *4*	1418.272	$(9/2)^+$	0.0	$9/2^+$			
1448.776 *6*	8.5 *1*	1448.786	$9/2^+$	0.0	$9/2^+$	M1+E2[‡]	≈−8	α(K)=0.00049
1478.5[&] *3*	0.005 *3*	1478.5?		0.0	$9/2^+$			
1486.099 *11*	0.28 *1*	1486.109		0.0	$9/2^+$			

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^{115}Cd β^- decay (44.56 d) 1973Se06,1975Bo29,1978He08 (continued)

$\gamma(^{115}In)$ (continued)

† Deduced from α(K)exp.
‡ From adopted gammas.
# For absolute intensity per 100 decays, multiply by 0.0020 *7*.
@ 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.
& Placement of transition in the level scheme is uncertain.

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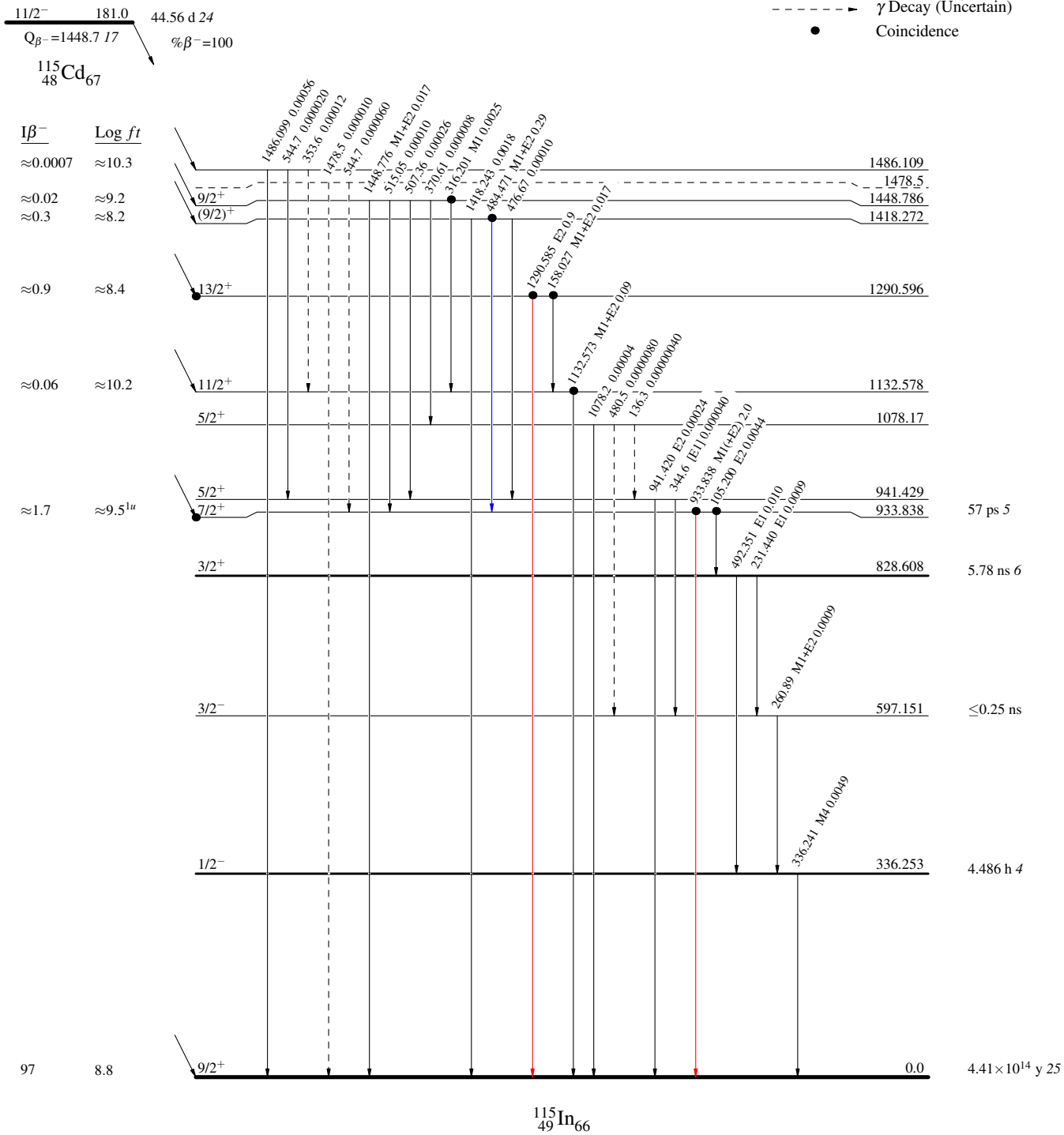
Decay Scheme

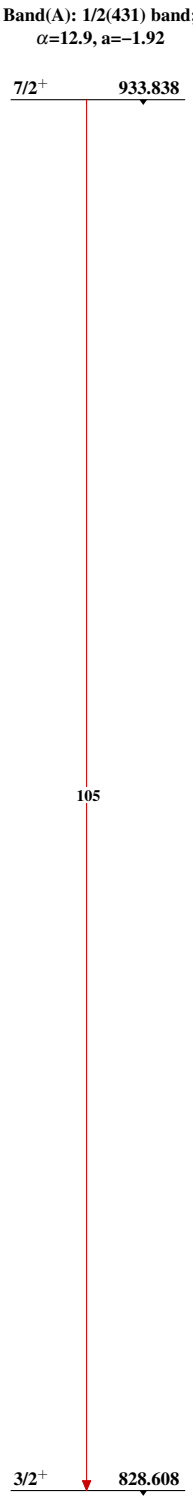
Intensities: I_γ per 100 parent decays

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)
- Coincidence



$^{115}_{49}In_{66}$

^{115}Cd β^- decay (44.56 d) 1973Se06,1975Bo29,1978He08



$^{115}_{49}In_{66}$