^{111}Ag β^- decay (7.45 d) 1971Na02,1975Sh29,1976ShYW

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 110, 1239 (2009)	1-Feb-2008

Parent: ^{111}Ag: E=0.0; J^π=1/2$^-$; $T_{1/2}$=7.45 d *1*; Q(β^-)=1036.8 *14*; %β^- decay=100.0

Others: 1950Jo53, 1964Sa21, 1968Mc04, 1969Sc12, 1970Hn04, 1971LaZS, 1974HeYW, 1974ShZQ, 1974BuZU, 1975PuZZ.

^{111}Cd Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	1/2$^+$	stable	
245.42	5/2$^+$	84.5 ns *4*	$T_{1/2}$: see Adopted Levels.
342.13	3/2$^+$	59 ps *12*	$T_{1/2}$: from $\beta\gamma$(t) (1970Ra16) scin. E(level): branching: Iγ(97γ)/Iγ(342γ)=0.03 *1* av of 0.042 *1* (1970Hn04), 0.038 (1974BuZU), 0.034 *2* (1975PuZZ), 0.018 *2* (1975Sh29), 0.016 (1974HeYW) via ^{111}Ag g.s. decay (690β)(340γ)(θ); deduced nuclear matrix element (1960Ha29) (690β)(340γ,CP)(θ); deduced nuclear matrix element (1966De03).
620.2	5/2$^+$		
754.7	3/2$^+$		
864.8	3/2$^+$		
866.7	(3/2$^+$)		

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(170.1 *14*)	866.7	0.013	8.4	av Eβ= 43.6 *9*
(172.0 *14*)	864.8	0.009	8.6	av Eβ= 44.2 *9*
(282.1 *14*)	754.7	0.004	9.7	av Eβ= 77.7 *10*
(416.6 *14*)	620.2	0.022	9.5[1u]	av Eβ= 140.2 *11* E(decay): 425 *10* (1971Na02). Iβ^-: 0.9% (1971Na02), higher value than adopted but no uncertainty.
(694.7 *14*)	342.13	7.1 *5*	7.8 *1*	av Eβ= 223.5 *12* E(decay): 697 *2* (1977Re12) s, $\beta\gamma$; 695 *3* (1971Na02) s, F-K analysis; others: 1967Le06, 1958Ro62, 1950St60. E(decay): 697β shape-factor analyses: 1977Re12, 1971Na02, 1967Le06, 1958Ro62. Iβ^-: 6.8% *6* (1976Th07), 6.0% (1971Na02), 6.5% (1950St60).
(791.4 *14*)	245.42	1.0 *2*	9.2[1u] *1*	av Eβ= 278.9 *12* E(decay): 793 *15* (1958Ro62) scin, $\beta\gamma$; 790 (1971Na02) Iβ; 1.1% (1971Na02).
1035 *2*	0.0	92 *5*	7.3 *2*	av Eβ= 360.4 *13* E(decay): 1035 *2* (1971Na02) s, 1028 *3* (1967Le06) s, 1044 *20* (1958Ro62) scin 1035β shape-factor analysis (1971Na02).

[†] Absolute intensity per 100 decays.

$\gamma(^{111}Cd)$

Iγ normalization: from Iγ(342γ)/decay=0.0668 *33* (1977Ne10) 4$\pi\beta\gamma$.

E$_\gamma$[†]	I$_\gamma$[#&]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[‡]	δ	α[a]	Comments
96.75 *2*	1.73 *9*	342.13	3/2$^+$	245.42	5/2$^+$	M1+E2	0.12 *4*	0.531 *11*	α(K)= 0.453; α(L)= 0.0585; α(M)=0.01124; α(N+..)=0.00234 E$_\gamma$: from (1975Sh29).

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^{111}Ag β^- decay (7.45 d) 1971Na02,1975Sh29,1976ShYW (continued)

$\gamma(^{111}Cd)$ (continued)

E_γ [†]	I_γ [#&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ	α [a]	Comments
245.40 *2*	18.5 *10*	245.42	$5/2^+$	0.0	$1/2^+$	E2		0.064	I_γ: from I(ce) data of 1975Sh29. Directly measured values are: 4.2 *1* (1970Hn04), 1.6 (1974HeYW), 3.8 (1974BuZU), 3.4 *2* (1975PuZZ), 1.8 *2* (1975Sh29). Mult.: from α(K)exp=0.25 *4*, L1/L2=100/8.5 *22* (1975Sh29). α(K)= 0.0535; α(L)=0.00834; α(M)=0.00161; α(N+..)=0.00032 E_γ: other: 245.43 *4* (1974ShZQ). I_γ: weighted av: 19.1 *13* (1975PuZZ), 16.9 (1974HeYW), 15.8 *6* (1974ShZQ), 18.4 *4* (1975Sh29),20.6 *2* (1970Hn04). Mult.: from K:L1:L2:L3=100:8.7 *2*:2.4 *1*:2.1 *1* (1975Sh29).
278.3 *4*	0.008 *2*	620.2	$5/2^+$	342.13	$3/2^+$				E_γ: from 1970Hn04. 1975Sh29 report 276.8 *2*. Eγ=278.04 *5* in (n,n$'\gamma$). I_γ: from 1970Hn04. Others: 0.038 *19* (1975Sh29), <0.02 (1975PuZZ).
342.13 *2*	100	342.13	$3/2^+$	0.0	$1/2^+$	M1+E2	+0.36 *2*	0.0186 *2*	α(K)exp=0.0157 *8* (1975Sh29) α(K)=0.01604 *19*; α(L)=0.00207 *5*; α(M)=0.00040 E_γ: from 1974HeYW. Others: 342.13 *2* (1975Sh29), 342.24 *4* (1974ShZQ). I_γ: absolute Iγ/decay=0.0668 *33* (1977Ne10) $4\pi\beta\gamma$, 0.068 *6* (1976Th07), 0.046 *5* (1970Hn04), 0.060 *15* (1958Ro62). Mult.: deduced from α(K)exp, α(L)exp, and L-subshell ratio data K:L1:L2:L3=90 *2*:10 *1*:1.6 *2*:0.67 *6* (1975Sh29). δ: from adopted γ's. +0.74 *+10−7* from L1/L3 ratio, sign from $\gamma(\theta)$ (1958Mc02) Coul. ex. penetration effects may account for exp L1/L2/L3 ratios (1975Sh29). Incompatible with predictions.
374.6 *2*	0.047 *2*	620.2	$5/2^+$	245.42	$5/2^+$				E_γ: weighted av: 374.6 (1974BuZU) and 374.4 *4* (1970Hn04). Other: 373.9 *2* (1975Sh29), Eγ=374.75 *5* in (n,n$'\gamma$). I_γ: weighted av: 0.048 *2* (1970Hn04), 0.043 *4* (1975PuZZ), 0.04 (1974BuZU).
509.4	0.02	754.7	$3/2^+$	245.42	$5/2^+$				E_γ: Eγ,Iγ reported only by 1974BuZU.
522.4 *4*	0.014 *2*	864.8	$3/2^+$	342.13	$3/2^+$				I_γ: weighted av from 1975Sh29, 1975PuZZ, and 1970Hn04. The values for 1975PuZZ and 1970Hn04 are deduced.
524.3 *4*	0.031 *2*	866.7	$(3/2^+)$	342.13	$3/2^+$				E_γ: from 1970Hn04, 1974BuZU, 1975PuZZ. Other: 524.3 *4* (1976ShYW).

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^{111}Ag β^- decay (7.45 d) 1971Na02,1975Sh29,1976ShYW (continued)

$\gamma(^{111}Cd)$ (continued)

E_γ[†]	I_γ[#&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[a]	Comments
619.3 *4*	0.008 *4*	864.8	$3/2^+$	245.42	$5/2^+$	(M1,E2)	0.004	α(K)exp=0.0072 *25* (1976ShYW) I_γ: from Iγ/Iγ(865γ)=0.36 *19* in (^{3}He,2nγ). Other: 0.070 *15* (1976ShYW).
620.3 *4*	0.164 *12*	620.2	$5/2^+$	0.0	$1/2^+$	E2	0.0037	α(K)=0.00317; α(L)=0.00040 α(K)exp=0.0016 *5* E_γ: others: 620.1 *3* (1977Kr14), 64.8-s ^{111}Ag decay. I_γ: triplet Iγ(619γ+620γ+622γ)=0.42 *4* (1975Sh29).
622.0 *4*	0.09 *3*	866.7	$(3/2^+)$	245.42	$5/2^+$	(M1,E2)	0.004	α(K)exp=0.0056 *25* (1975Sh29) I_γ: from Iγ/Iγ(524γ)=2.9 *10* in (n,n$'\gamma$). Mult.: from adopted γ's.
754.6	0.04	754.7	$3/2^+$	0.0	$1/2^+$			E_γ: Eγ,Iγ reported only by 1974BuZU.
865.1 *4*	0.023 *4*	864.8	$3/2^+$	0.0	$1/2^+$	(M1,E2)	0.0017	α(K)exp=0.0044 *22* (1975Sh29) I_γ: from Iγ(865γ/Iγ(865+867γ's)=0.30 *6* (1976ShYW) and Iγ(865+867γ's) =0.077 *2* (1970Hn04). Others: Iγ(865+867γ's)=0.077 *10*(1975PuZZ) and Iγ(865γ)=0.050 *11* (1976ShYW) and Iγ(861γ)=0.116 *15* (1976ShYW).
867.0 *4*	0.054 *4*	866.7	$(3/2^+)$	0.0	$1/2^+$	(M1,E2)[@]	0.0017	α(K)exp=2.3×10^{-3} *14* (1975Sh29) E_γ: Others: 866.6 *2* (1975PuZZ), 867.0 *4* (1976ShYW), 866.7 *4* (1970Hn04). I_γ: see 865γ. Others: 0.116 *15* (1976ShYW), 0.08 (1974BuZU).

† From 1975Sh29 and 1976ShYW, except where noted otherwise.

‡ α(K)exp=ce(K)/Iγ normalized to α(K)(245γ)=0.0536 (E2 theory). Rel I(ce) measurements of 1975Sh29, 1976ShYW are normalized to I(ce(K) 245γ)=1.0.

From sources as indicated.

@ From adopted γ's.

& For absolute intensity per 100 decays, multiply by 0.0668 *33*.

a 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.

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Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 decays through this branch