^{113}Pd β^- decay 1988FoZY,1990Ro16

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 111, 1471 (2010)	1-May-2009

Parent: ^{113}Pd: E=0.0; $J^\pi=(5/2^+)$; $T_{1/2}$=93 s *5*; Q(β^-)=3340 *30*; %β^- decay=100.0

Activity: ^{235}U(n,f) on-line mass separator OSIRIS (1988FoZY).

Measured γ, Iγ, $\gamma\gamma$, γ(t), β, $\beta\gamma$, ce,Ge(Li), Si detector (1988FoZY).

^{249}Cf(n,F) radiochemical separation (1990Ro16), measured: γ, $\gamma\gamma$, $\gamma\gamma$(t).

Others: 1958Al90, 1968Kj01, 1970Ar19, 1975BrYM, 1981Me17.

Decay mode: 81.5% 20 of ^{113}Pd decay is via 5.37-h ^{113}Ag and 18.5% 20 is via 68.7-s ^{113}Ag, from Iγ(5.37-h ^{113}Ag)/Iγ(68.7-s ^{113}Ag) (1975BrYM). Other: from Iβ(5.37-h ^{113}Ag)/Iβ(68.7-s ^{113}Ag), 90% 5 of ^{113}Pd decay is via 5.37-h ^{113}Ag (1958Al90).

^{113}Ag Levels

E(level)	J^π[†]	$T_{1/2}$[‡]	Comments
0.0	$1/2^-$	5.37 h *5*	
43.53 *14*	$7/2^+$	68.7 s *16*	
139.30 *15*	$9/2^+$		
222.08[#] *13*	$3/2^+$	23 ns *2*	J^π: $3/2^+$.
270.82 *14*	$(3/2^-)$		J^π: $3/2^-$.
273.59 *16*	(1/2)	30 ns *+30−15*	J^π: $1/2^+$,$3/2^+$.
280.0[#]	$1/2^+$		
366.84 *20*	$(5/2^-)$		J^π: $5/2^-$.
369.80[#] *17*	$7/2^+$	<0.8 ns	
476.70[#] *14*	$5/2^+$	<0.5 ns	
526.16 *16*			
607.06 *23*			
611.31 *25*	$(3/2^-)$		
673.35 *23*			
781.79 *20*	$(5/2^-)$		
783.16 *14*	(3/2,5/2,7/2)		J^π: $5/2^+$,$7/2^+$.

[†] Adopted values. J^π given by 1988FoZY are shown under comments.

[‡] Levels>43 keV $T_{1/2}$ are from 1988FoZY, other from Adopted Levels.

[#] Band(A): intruder rotational band (1990Ro16) with α=17.23, E0=228.9 keV a=−1.92.

β^- radiations

E(decay)	E(level)	Iβ^-[†]	Log *ft*	Comments
(2.56×10^3 *3*)	783.16	7.2	6.1	av Eβ= 1054 *70*
(2.56×10^3 *3*)	781.79	0.46	7.3	av Eβ= 1054 *70*
(2.67×10^3 *3*)	673.35	0.36	7.5	av Eβ= 1105 *70*
(2.73×10^3 *3*)	607.06	0.41	7.5	av Eβ= 1136 *71*
(2.86×10^3 *3*)	476.70	0.59	7.4	av Eβ= 1197 *71*
(2.97×10^3 *3*)	369.80	0.9	7.3	av Eβ= 1247 *71*
(2.97×10^3 *3*)	366.84	0.84	7.3	av Eβ= 1248 *71*
(3.12×10^3 *3*)	222.08	1.14	7.3	av Eβ= 1316 *71*
(3.20×10^3 *3*)	139.30	1.89	7.1	av Eβ= 1355 *71*
(3.30×10^3 *3*)	43.53	86	5.5	av Eβ= 1400 *71*

[†] Absolute intensity per 100 decays.

^{113}Pd β^- decay 1988FoZY,1990Ro16 (continued)

$\gamma(^{113}Ag)$

Iγ normalization: from Σ I(γ+ce) to g.s.=81.5 *20* assuming Iβ(g.s.)=0. (ΔJ=2, Δπ=−). 1990Fo07 give Iγ(222γ)=2.3%.

E_γ[†]	I_γ[†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	α[@]	Comments
43.6 *2*	0.15	43.53	7/2$^+$	0.0	1/2$^-$	E3	1047	α(K)exp=90 *40*; α(L)exp=700 *300* α(K)= 95.5; α(L)= 745; α(M)= 155.3 B(E3)(W.u.)=0.074 *4*
49.6 *2*	0.04	526.16		476.70	5/2$^+$			
51.5 *2*	0.01	273.59	(1/2)	222.08	3/2$^+$			
57.9 *3*		280.0	1/2$^+$	222.08	3/2$^+$			E_γ,I_γ: from 1990Ro16. Iγ(280)=100 *4*, Iγ(57.9)=1.2 *6*.
95.74 *20*	6.5	139.30	9/2$^+$	43.53	7/2$^+$	M1	0.478	α(K)exp=0.46 *4* α(K)= 0.415; α(L)= 0.0515; α(M)=0.00975; α(N+..)=0.00196
96.0 *3*	0.50	366.84	(5/2$^-$)	270.82	(3/2$^-$)			
147.73 *20*	0.35	369.80	7/2$^+$	222.08	3/2$^+$	E2	0.362	α(K)exp=0.38 *15* α(K)= 0.294; α(L)= 0.0557; α(M)=0.01075; α(N+..)=0.00200 B(E2)(W.u.)>1.1×10^2
178.5	0.02	222.08	3/2$^+$	43.53	7/2$^+$	[E2]		B(E2)(W.u.)=0.034 *4* E_γ,I_γ: from 1990Ro16.
205.87 *20*	0.08	476.70	5/2$^+$	270.82	(3/2$^-$)			
222.06 *20*	2.4	222.08	3/2$^+$	0.0	1/2$^-$	E1	0.0166	α(K)exp≤0.03 α(K)=0.01450; α(L)=0.00172; α(M)=0.00032 B(E1)(W.u.)=1.12×10^{-6} *10*
230.49 *20*	0.27	369.80	7/2$^+$	139.30	9/2$^+$			
254.61 *20*	0.43	476.70	5/2$^+$	222.08	3/2$^+$			
257.1 *3*	0.27	783.16	(3/2,5/2,7/2)	526.16				
270.81 *20*	1.1	270.82	(3/2$^-$)	0.0	1/2$^-$			
273.6 *2*	0.04	273.59	(1/2)	0.0	1/2$^-$			
280.0 *2*		280.0	1/2$^+$	0.0	1/2$^-$			
326.28 *20*	0.21	369.80	7/2$^+$	43.53	7/2$^+$			
336.3 *3*	0.11	607.06		270.82	(3/2$^-$)			
337.32 *20*	0.04	476.70	5/2$^+$	139.30	9/2$^+$			
366.8 *3*	0.66	366.84	(5/2$^-$)	0.0	1/2$^-$			
386.9 *2*	0.28	526.16		139.30	9/2$^+$			
414.9 *3*	0.14	781.79	(5/2$^-$)	366.84	(5/2$^-$)			
433.4 *2*	0.11	476.70	5/2$^+$	43.53	7/2$^+$			
472.1 *3*	0.11	611.31	(3/2$^-$)	139.30	9/2$^+$			
482.6 *2*	1.7	526.16		43.53	7/2$^+$			
510.9 *3*	0.21	781.79	(5/2$^-$)	270.82	(3/2$^-$)			
534.2 *3*	0.18	673.35		139.30	9/2$^+$			
567.7 *3*	1.6	611.31	(3/2$^-$)	43.53	7/2$^+$			
607.0 *3*	0.23	607.06		0.0	1/2$^-$			
643.7 *3*	6.0	783.16	(3/2,5/2,7/2)	139.30	9/2$^+$			
673.2 *3*	0.07	673.35		0.0	1/2$^-$			
739.63 *3*	4.8	783.16	(3/2,5/2,7/2)	43.53	7/2$^+$			
781.9 *3*	0.07	781.79	(5/2$^-$)	0.0	1/2$^-$			

[†] From 1988FoZY.
[‡] From α(K)exp (1988FoZY). The conversion coefficients were determined by simultaneous measurements of γ and ce.
[#] For absolute intensity per 100 decays, multiply by ≈1.0.
[@] 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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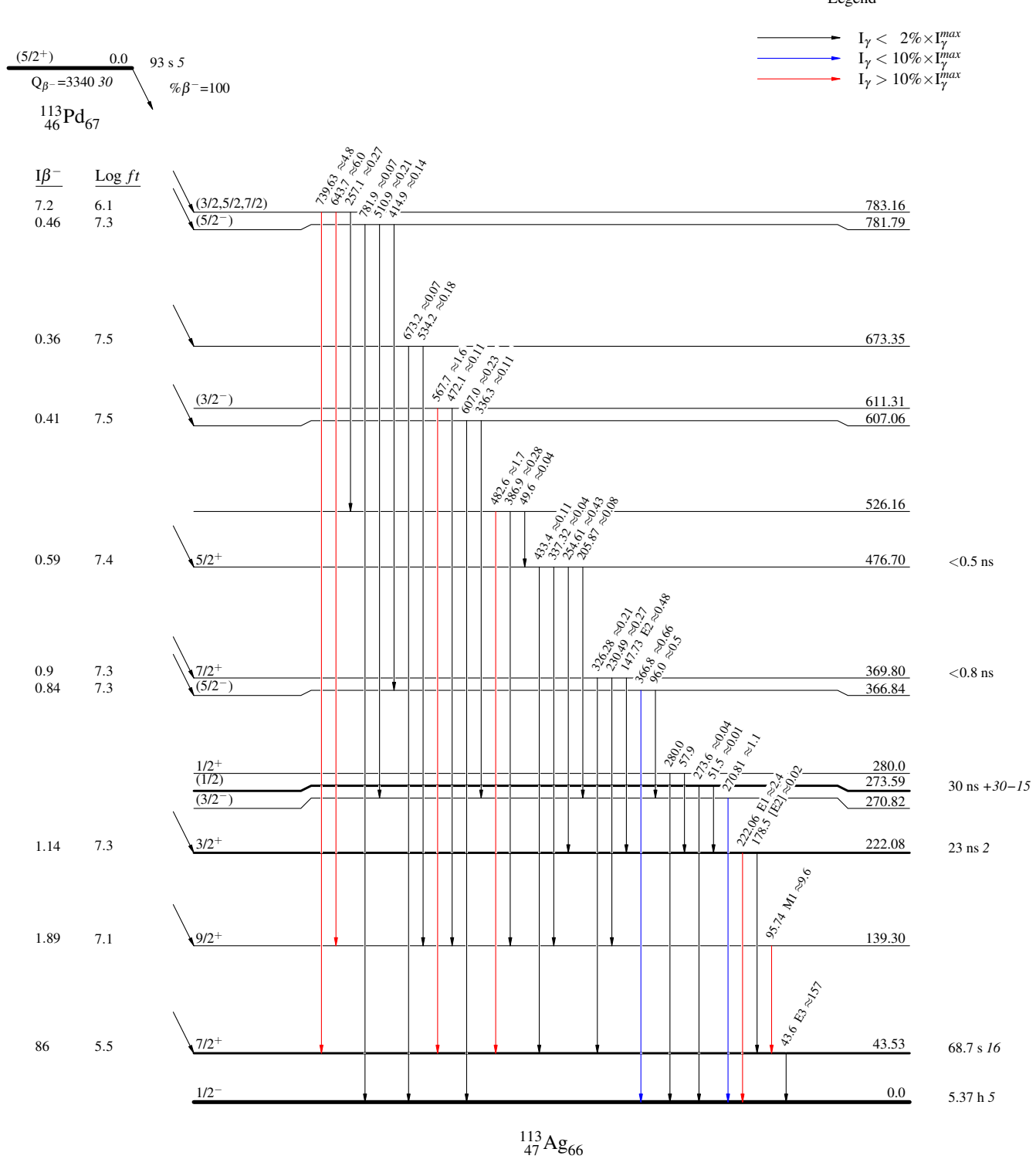
Decay Scheme

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



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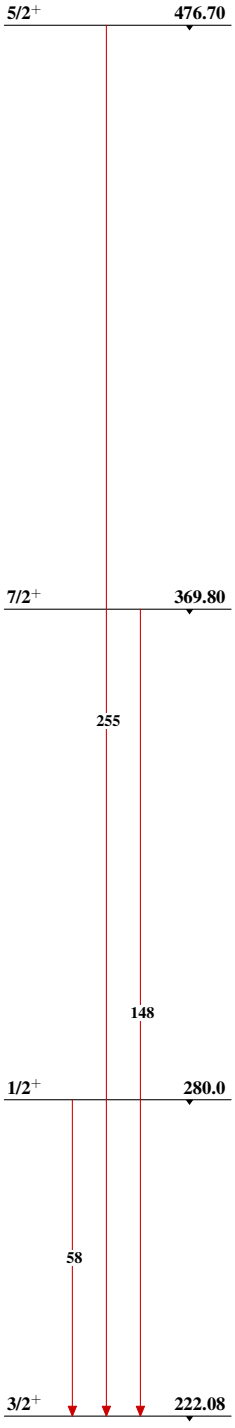
Band(A): Intruder rotational band (1990Ro16) with α=17.23, E0=228.9 keV a=−1.92



$^{113}_{47}Ag_{66}$