^{107}Rh β^- decay (21.7 min) 1969Gr18

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	NDS 109, 1383 (2008)	1-Mar-2008

Parent: ^{107}Rh: E=0.0; $J^\pi=7/2^+$; $T_{1/2}$=21.7 min *4*; Q(β^-)=1504 *12*; %β^- decay=100.0
Others: 1955Ba19, 1955Ne03, 1956Ma96, 1962Pi02, 1969WiZX.

^{107}Pd Levels

E(level)	J^π[†]	$T_{1/2}$	Comments
0.0	$5/2^+$	6.5×10^6 y *3*	
115.73 *12*	$1/2^+$	0.85 μs *10*	$T_{1/2}$: 0.85 μs *10* (452γ)(116γ)(t) 1969Gr18. Other: 1.0 μs *5* (116γ)(t) pulsed beam (1978Ho06).
302.76 *15*	$5/2^+$		
312.24 *14*	$7/2^+$		
348.20 *14*			
381.81 *13*	$3/2^+$		
392.46 *14*	$7/2^+$		
471.2 *3*	$(3/2)^+$		
567.65 *15*	$5/2^+$		
670.07 *11*	$5/2^+$		
1102.1 *4*	$(7/2^+)$		
1149?			

[†] From Adopted Levels.

β^- radiations

Others: 1943Bo03, 1955Ba19, 1956Ma96.

E(decay)[†]	E(level)	Iβ^-[‡#]	Log *ft*	Comments
(355 *12*)	1149?	0.08	6.0	av Eβ= 107 *14*
(402 *12*)	1102.1	0.23	5.8	av Eβ= 123 *14*
840 *40*	670.07	9 *1*	5.3 *1*	av Eβ= 285 *16* E(decay): 840 *40* (1962Pi02) β(670γ) coin.
940 *60*	567.65	1.8 *2*	6.1 *1*	av Eβ= 326 *17* E(decay): 940 *60* (1962Pi02) β(568γ) coin.
1140 *50*	392.46	7 *1*	5.8 *1*	av Eβ= 399 *17* E(decay): 1140 *50* (1962Pi02) β(392γ) coin.
(1192 *12*)	312.24	4.2 *6*	6.2 *1*	av Eβ= 433 *18*
1200 *50*	302.76	64 *5*	5.0 *1*	av Eβ= 437 *18* E(decay): 1200 *50* (1962Pi02) β(303γ) coin.
(1504 *12*)	0.0	13 *5*	6.1 *2*	av Eβ= 569 *18*

[†] Q(β^-)=1510 *40* (1962Pi02) derived from (840β)(670γ) coin, scin.
[‡] From I(γ+ce) imbalance at each level.
[#] Absolute intensity per 100 decays.

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$\gamma(^{107}Pd)$

Iγ normalization: based on absolute Iγ(303+312+322γ)=73% 6 scin (1962Pi02) βγ-coin.
I(K x ray)=1.16 *9* relative to I(302.77γ)=66 *5*.

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α[‡]	Comments
80.06 *30*	0.05 *1*	392.46	$7/2^+$	312.24	$7/2^+$			
96.6[#] *5*	0.009	567.65	$5/2^+$	471.2	$(3/2)^+$			I_γ: from γγ.
102.4[#] *5*	≈0.02	670.07	$5/2^+$	567.65	$5/2^+$			
115.65 *20*	0.52 *4*	115.73	$1/2^+$	0.0	$5/2^+$	E2	0.84	α(K)= 0.662; α(L)= 0.1415; α(M)= 0.0271; α(N+..)=0.00473 E_γ: others: 115.7 (1978Fr16), 115.6 (1978Ho06), 115.8 (1976Kl01). Mult.: α(K)exp=0.70 *9* (1969Gr18) K x ray/Iγ via (452γ)(K x ray,116γ)(t).
175.3[#] *5*	0.07 *1*	567.65	$5/2^+$	392.46	$7/2^+$			
198.7[#] *5*	0.04 *1*	670.07	$5/2^+$	471.2	$(3/2)^+$			
219.4 *5*	0.10 *2*	567.65	$5/2^+$	348.20				
232.37 *30*	0.21 *3*	348.20		115.73	$1/2^+$			
266.06 *20*	0.28 *2*	381.81	$3/2^+$	115.73	$1/2^+$			
277.58 *20*	1.70 *12*	670.07	$5/2^+$	392.46	$7/2^+$			
288.28 *20*	0.73 *5*	670.07	$5/2^+$	381.81	$3/2^+$			
302.77 *20*	66 *5*	302.76	$5/2^+$	0.0	$5/2^+$	M1,(E2)		E_γ: others: 302.79 *37* (1969WiZX) semi, 302.86 *6* (1979Bo26) cryst. Mult.: α(K)exp≤0.016 (1969Gr18) is compatible with dipole radiation. (303γ)(θ) via (α,nγ) favors M1+E2 mixture. α(K)=0.017 (M1), 0.0059 (E1), 0.025 (E2).
312.21 *20*	4.8 *4*	312.24	$7/2^+$	0.0	$5/2^+$			E_γ: others: 312.9 (1978Fr16), 312.8 (1976Kl01).
321.84 *20*	2.26 *16*	670.07	$5/2^+$	348.20				
348.21 *20*	2.27 *16*	348.20		0.0	$5/2^+$			E_γ: other: 348.39 *22* (1969WiZX) semi.
357.84 *20*	0.41 *3*	670.07	$5/2^+$	312.24	$7/2^+$			
367.31 *20*	1.91 *14*	670.07	$5/2^+$	302.76	$5/2^+$			E_γ: other: 367.45 *34* (1969WiZX) semi.
381.86 *20*	0.65 *5*	381.81	$3/2^+$	0.0	$5/2^+$			
392.47 *20*	8.8 *6*	392.46	$7/2^+$	0.0	$5/2^+$			E_γ: other: 392.68 *34* (1969WiZX) semi.
431.7[#] *5*	0.026 *6*	1102.1	$(7/2^+)$	670.07	$5/2^+$			
451.88 *20*	0.51 *4*	567.65	$5/2^+$	115.73	$1/2^+$			
471.2 *3*	0.12 *1*	471.2	$(3/2)^+$	0.0	$5/2^+$			
[x]511.7 *5*	0.03 *2*							
[x]521.2 *6*	0.02 *1*							
554.4 *3*	0.078 *6*	670.07	$5/2^+$	115.73	$1/2^+$			
567.70 *20*	1.15 *8*	567.65	$5/2^+$	0.0	$5/2^+$			
[x]643.9 *8*	0.032 *4*							E_γ: a 643.3γ deexcites $11/2^+$, 956-keV state via (α,nγ).
670.05 *20*	2.22 *16*	670.07	$5/2^+$	0.0	$5/2^+$			
[x]696.7 *8*	0.012 *3*							
709.5 *5*	0.075 *6*	1102.1	$(7/2^+)$	392.46	$7/2^+$			
720.4[#] *6*	0.013 *2*	1102.1	$(7/2^+)$	381.81	$3/2^+$			
753.8[#] *8*	0.013 *3*	1102.1	$(7/2^+)$	348.20				
789.9 *4*	0.089 *7*	1102.1	$(7/2^+)$	312.24	$7/2^+$			
836.5[#] *10*	0.015 *3*	1149?		312.24	$7/2^+$			
845.4[#] *10*	0.025 *3*	1149?		302.76	$5/2^+$			
[x]863.4 *10*	0.037 *3*							
1101.9[#] *10*	0.011 *3*	1102.1	$(7/2^+)$	0.0	$5/2^+$			

Continued on next page (footnotes at end of table)

^{107}Rh β^- decay (21.7 min) 1969Gr18 (continued)

$\gamma(^{107}Pd)$ (continued)

E_γ	I_γ[†]	E_i(level)	E_f	J^π_f
[x]1120.0 *10*	0.024 *4*			
1148.5[#] *10*	0.039 *4*	1149?	0.0	$5/2^+$

[†] For absolute intensity per 100 decays, multiply by 1.00 *5*.
[‡] 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.
[x] γ ray not placed in level scheme.

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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