^{106}Rh β^- decay (131 min) 1971Ta09,1966De11

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	D. De Frenne and A. Negret	NDS 109, 943 (2008)	1-May-2007

Parent: ^{106}Rh: E=137 *13*; J^π=(6)$^+$; $T_{1/2}$=131 min *2*; Q(β^-)=3541 *6*; %β^- decay=100.0

^{106}Rh-E: Adopted Value from Q(β^-)-Q(β^-)(g.s.).

1971Ta09: ^{106}Rh activity from ^{106}Pd(n,p) and ^{109}Ag(n,α). Measured: Eγ, Iγ, Eβ, $\gamma\gamma$. Deduced: ^{106}Pd levels, J^π, log *ft* and Q(β^-).

1966De11: ^{106}Rh activity from ^{106}Pd(d,2p) and ^{108}Pd(d,α). Measured: Eβ, Iβ, Eγ, Iγ, Ice, $\beta\gamma$, α, Q(β^-). Deduced: ^{106}Pd levels, J^π, log *ft*.

Others: 1955Ne03, 1958Ma39, 1960Se07, 1969An12.

$\gamma\gamma$ (see drawings) 1971Ta09 semi-scin spectra.

Q(β^-)=3677 *10* deduced from Eβ=920 *10* to 2757 excitation; see 1966De11.

^{106}Pd Levels

E(level)†	J^π‡	E(level)†	J^π‡	E(level)†	J^π‡	E(level)†	J^π‡
0.0	0$^+$	1557.80 *9*	3$^+$	2085.07 *13*	3$^-$	2757.94 *10*	5$^+$
511.52 *8*	2$^+$	1932.69 *12*	4$^+$	2306.78 *11*	4$^-$	2953.18 *12*	5$^+$
1127.89 *8*	2$^+$	2076.79 *23*	6$^+$	2351.98 *10*	4$^+$		
1228.78 *10*	4$^+$	2077.18 *16*	(4)$^+$	2366.50 *19*	(4)$^+$		

† From a least squares fit to the given gamma energies.

‡ From Adopted Levels, gammas.

β^- radiations

E(decay)	E(level)	Iβ^-†	Log *ft*	Comments
700 *50*	2953.18	14.5 *18*	5.61 *6*	av Eβ= 240 *4* E(decay): 700 *50* (1966De11) s, 790 *40* (1960Se07) scin.
920 *10*	2757.94	85 *10*	5.21 *6*	av Eβ= 318 *4* E(decay): 920 *10* (1966De11) s, 950 *30* (1960Se07) scin.
(1312 *14*)	2366.50	<4.4	>7.1	av Eβ= 483 *4*
(1326 *14*)	2351.98	<3.7	>7.2	av Eβ= 489 *4*
(1371 *14*)	2306.78	<3.4	>7.3	av Eβ= 509 *4*
(1593 *14*)	2085.07	<1.2	>8.0	av Eβ= 607 *4*
(1601 *14*)	2076.79	1.65 *19*	7.84 *6*	av Eβ= 610 *4* E(β^-) max=1700 *50* (1966De11) s, 1750 *50* (1971Ta09) scin, 1620 *20* (1960Se07) scin. Iβ^-: ≈0 from level intensity balance.
(1745 *14*)	1932.69	<2.9	>7.7	av Eβ= 675 *4*

† Absolute intensity per 100 decays.

γ(^{106}Pd)

Iγ normalization: for I(γ+ce)=100 to g.s.; IT decay unobserved.

ΔIγ: Only statistical uncertainty given. Evaluators added quadratically an uncertainty of 5% due to the systematic deviation of the gamma data compared to other similar experiments.

α(K)exp=ce(K)/Iγ normalized to α(K)(511.8γ)=0.00484 7 (E2 theory) I(ce(K)) data are from 1966De11.

For gamma branching-ratio data, see also 8.46-d ^{106}Ag decay.

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^{106}Rh β^- decay (131 min) 1971Ta09,1966De11 (continued)

$\gamma(^{106}Pd)$ (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	α [@]	Comments
195.1 *4*	0.7 *1*	2953.18	5+	2757.94	5+	M1(+E2)	0.061	
221.8 *1*	7.5 *4*	2306.78	4−	2085.07	3−	M1+E2	0.0444 *1*	α(K)=0.03809 *18*; α(L)=0.00462 *7*; α(M)=0.00087; α(N+..)=0.00015 α(K)exp=0.034 *5*
228.6 *3*	2.4 *16*	2306.78	4−	2077.18	(4)+	E1	0.015	
x319.6 *4*	1.0 *2*							
328.3 *4*	1.4 *2*	1557.80	3+	1228.78	4+	E2(+M1)	0.022	
374.5	0.32 *3*	1932.69	4+	1557.80	3+			Iγ: from Iγ(374γ)/Iγ(804γ)=0.021 *3* (1973In08, ^{106}Ag decay).
390.8 *4*	4.1 *3*	2757.94	5+	2366.50	(4)+	M1+E2	0.0126	α(K)=0.01083; α(L)=0.00143; α(M)=0.00027 α(K)exp=0.015 *6*
406.0 *1*	13.6 *8*	2757.94	5+	2351.98	4+	M1+E2	0.0110 *1*	α(K)=0.00950; α(L)=0.00124; α(M)=0.00023 α(K)exp=0.010 *5*
419.2 *4*	0.7 *2*	2351.98	4+	1932.69	4+			
429.4 *1*	15.5 *24*	1557.80	3+	1127.89	2+	M1+E2	0.00930 *1*	α(K)=0.00813; α(L)=0.00106; α(M)=0.00020 α(K)exp=0.009 *5*
(433.9)	0.2 *CA*	2366.50	(4)+	1932.69	4+			
450.8 *1*	28.3 *15*	2757.94	5+	2306.78	4−	E1		α(K)=0.00216; α(L)=0.00027 α(K)exp=0.002 *10*
x473.2 *4*	1.0 *5*							
511.7 *1*	100 *5*	511.52	2+	0.0	0+	E2		α(K)=0.00484; α(L)=0.00061 α(K)exp=0.0049 *11* (1966De11)
586.0 *4*	1.0 *1*	2953.18	5+	2366.50	(4)+	M1,E2		
601.2 *3*	3.5 *2*	2953.18	5+	2351.98	4+	M1+E2		
616.1 *1*	23.6 *16*	1127.89	2+	511.52	2+	M1+E2		α(K)=0.00296; α(L)=0.00035 α(K)exp=0.0029 *5*
645.8 *2*	3.2 *2*	2953.18	5+	2306.78	4−	E1		
680.6 *3*	2.2 *1*	2757.94	5+	2077.18	(4)+	M1,E2		Transition to J(final)=6+ is inferred from I(γ+ce) balance.
703.1 *2*	5.2 *5*	1932.69	4+	1228.78	4+	M1+E2		
717.2 *1*	33.8 *18*	1228.78	4+	511.52	2+	E2		α(K)=0.00195; α(L)=0.00024 α(K)exp=0.0015 *6*
748.5 *1*	22.6 *12*	2306.78	4−	1557.80	3+	E1		
793.8 *2*	6.6 *11*	2351.98	4+	1557.80	3+	M1+E2		
804.6 *2*	15.2 *13*	1932.69	4+	1127.89	2+	E2		
808.4 *2*	8.7 *5*	2366.50	(4)+	1557.80	3+	M1+E2		
825.0 *1*	15.9 *9*	2757.94	5+	1932.69	4+	M1+E2		
848.0[a] *2*	1.9[a] *CA*	2076.79	6+	1228.78	4+			Doublet Iγ(848γ)=4.2 *5* minus Iγ=2.3 component via 4+, 2077-keV state.
848.0[a] *2*	2.3[a] *CA*	2077.18	(4)+	1228.78	4+	E2		Iγ: from Iγ(1565γ)/Iγ(848γ)=0.31 (1973In08, ^{106}Ag decay).
(956.2)	0.56 *CA*	2085.07	3−	1127.89	2+			
1020.5 *3*	2.3 *2*	2953.18	5+	1932.69	4+	M1,E2		
1046.7 *1*	35.5 *18*	1557.80	3+	511.52	2+	M1+E2		α(K)=0.00080 α(K)exp=0.00068 *16*
(1122)	0.8 *CA*	2351.98	4+	1228.78	4+			Iγ: from Iγ(1122γ)/Iγ(1223γ)=0.081 *9* (1973In08, ^{106}Ag decay).
1127.7 *1*	16 *1*	1127.89	2+	0.0	0+	E2		α(K)=0.0008 α(K)exp=0.00053 *16*
(1136.8)	0.5 *CA*	2366.50	(4)+	1228.78	4+			
(1200.5 *1*)	13.3 *7*	2757.94	5+	1557.80	3+	E2		α(K)=0.00059 α(K)exp=0.00069 *22*

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^{106}Rh β^- decay (131 min) 1971Ta09,1966De11 (continued)

$\gamma(^{106}$Pd) (continued)

E_γ [†]	I_γ [†&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	α [@]	Comments
1224.2 *1*	9.5 *8*	2351.98	4^+	1127.89	2^+	E2		α(K)=0.00057 α(K)exp=0.00061 *16*
1395.5 *1*	3.3 *4*	2953.18	5^+	1557.80	3^+	[E2]		α(K)=0.00043 α(K)exp=0.0007 *3*
1529.4 *1*	20.5 *18*	2757.94	5^+	1228.78	4^+	M1+E2		α(K)exp=0.00033 *10*
1565.4 *3*	0.7 *5*	2077.18	$(4)^+$	511.52	2^+			
1573.9 *2*	7.8 *6*	2085.07	3^-	511.52	2^+	E1		α(K)exp=0.00037 *13*
1724.6 *2*	2.6 *5*	2953.18	5^+	1228.78	4^+	M1+E2	0.00026	
1840.6 *2*	2.2 *4*	2351.98	4^+	511.52	2^+	E2		

† From semi γ-singles analysis (1971Ta09), unless otherwise noted. Where comparison possible, Eγ systematically 0.7-1.5 keV higher than in (α,2nγ), ^{106}Ag ε decay (8.46 d), and (n,n′γ) data.

‡ Only statistical uncertainty given. Evaluators added quadratically an uncertainty of 5% due to the systematic deviation of the gamma data compared to other similar experiments.

Deduced from α(K)exp including 8.46-d ^{106}Ag decay data.

@ Calculated for δ from adopted gammas.

& For absolute intensity per 100 decays, multiply by 0.855 *7*.

a Multiply placed with intensity suitably divided.

x γ ray not placed in level scheme.

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Decay Scheme

Intensities: I_γ per 100 parent decays

@ Multiply placed: intensity suitably divided