^{101}Rh ε decay (4.34 d) 1974HeYW,1985Va15

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jean Blachot	ENSDF	1-Jul-2006

Parent: ^{101}Rh: E=157.41 *4*; $J^\pi=9/2^+$; $T_{1/2}$=4.34 d *1*; Q(ε)=542 *17*; %ε decay=93.6 *20*

^{101}Rh-%ε decay: from Iγ(157γ,^{101}Rh)/Iγ(307γ)= 0.0029 *2* (1971Si16).

Others: 1971Si16, 1966Ar05.

4.5, 332, 337, 489, 496, 616, 624, 643 7γ's given by 1971Si16, not seen by 1985Va15 are uncertain.

^{101}Ru Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	$5/2^+$	stable	
127.227 *8*	$3/2^+$		
306.858 *5*	$7/2^+$		J^π: J=7/2 from 307γ anisotropy with oriented ^{101}Rh source (1973Ka28).
311.382 *22*	$3/2^+$,$5/2^+$	≤0.15 ns	$T_{1/2}$: from 1973Be72 (234γ)(311γ)(t).
545.118 *7*	$7/2^+$		J^π: J=7/2 from 545γ anisotropy with oriented ^{101}Rh source (1973Ka28).

ε radiations

E(decay)	E(level)	Iε[†]	Log *ft*	Comments
(154 *17*)	545.118	5.1 *5*	5.37 *13*	εK=0.835 *6*; εL=0.133 *5*; εM+=0.0322 *12*
(393 *17*)	306.858	89 *8*	5.02 *6*	εK=0.8577; εL=0.1149 *5*; εM+=0.02735 *13*

[†] For absolute intensity per 100 decays, multiply by 0.936 *20*.

γ(^{101}Ru)

Iγ normalization: for Σ(Iγ+ce)=93.6 if %(ε)≈0 to g.s. (ΔJ=2).
1971Si16 I(ce) measurements are normalized to I(ce(K) 307γ)=1.3.
α(K)exp=ce(K)(1971Si16)/Iγ normalized to α(K)(307γ)=0.01364 (M1+1% E2 theory).
623γ not seen by 1985Va15 is uncertain.
γγ coin: 1971Si16, 1966Ar05.

E_γ[†]	I_γ[†#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	δ	α[@]	Comments
127.226 *9*	0.79 *2*	127.227	3/2$^+$	0.0	5/2$^+$	M1+E2	+0.17 *3*	0.170 *6*	α(K)=0.1450 *22*; α(L)=0.0180 *3*; α(M)=0.00332 *6*; α(N+..)=0.000560 *10* α(N)=0.000534 *9*; α(O)=2.65×10^{-5} *4* Mult.: from α(K)exp= 0.16 *4*. δ: from 1966Wo06 via 3.3-y ^{101}Rh decay. K/L= 6.6 *12* (1971Si16).
179.636 *15*	0.660 *15*	306.858	7/2$^+$	127.227	3/2$^+$	E2		0.16	α(K)= 0.1343; α(L)=0.02086; α(M)=0.00385; α(N+..)=0.00069 K/L= 5.2 *15* (1971Si16).
184.11 *5*	0.193 *3*	311.382	3/2$^+$,5/2$^+$	127.227	3/2$^+$	M1		0.06	α(K)=0.0509 *8*; α(L)=0.00606 *9*; α(M)=0.001114 *16*; α(N+..)=0.000190 *3* α(N)=0.000180 *3*; α(O)=9.41×10^{-6} *14* α(K)=0.01361 *22*; α(L)=0.00160 *3*; α(M)=0.000293 *5*; α(N+..)=5.00×10^{-5} *9* α(N)=4.75×10^{-5} *8*; α(O)=2.50×10^{-6} *4* B(M1)(W.u.)>0.020 Mult.: from α(K)exp= 0.045 *10*.
233.74 *4*	0.2198 *15*	545.118	7/2$^+$	311.382	3/2$^+$,5/2$^+$	M1(+E2)		0.03	α(K)= 0.0273; α(L)=0.00322; α(M)=0.00059; α(N+..)=0.00011 Mult.: from α(K)exp= 0.029 *5*.
238.27 *4*	0.2505 *17*	545.118	7/2$^+$	306.858	7/2$^+$	M1(+E2)		0.03	α(K)=0.038 *13*; α(L)=0.0051 *21*; α(M)=0.0009 *4*; α(N+..)=0.00015 *6* α(N)=0.00015 *6*; α(O)=6.5×10^{-6} *18* Mult.: from α(K)exp= 0.027 *4*.
306.857 *5*	100 *5*	306.858	7/2$^+$	0.0	5/2$^+$	M1+E2	−0.10 *5*	0.0156 *1*	α(K)=0.01361 *22*; α(L)=0.00160 *3*; α(M)=0.000293 *5*; α(N+..)=5.00×10^{-5} *9* α(N)=4.75×10^{-5} *8*; α(O)=2.50×10^{-6} *4* δ: from 1973Ka28 γ(θ,T). K/L= 8.45 *25* (1971Si16).
311.40 *3*	0.0175 *9*	311.382	3/2$^+$,5/2$^+$	0.0	5/2$^+$	(M1)		0.015	α(K)=0.01311; α(L)=0.00153; α(M)=0.00028 B(M1)(W.u.)>0.00038 Mult.: from α(K)exp= 0.010 *4*.
417.86 *5*	≈0.005	545.118	7/2$^+$	127.227	3/2$^+$				
545.117 *7*	5.3 *3*	545.118	7/2$^+$	0.0	5/2$^+$	M1+E2	−0.98 *10*		α(K)=0.00347 *6*; α(L)=0.000412 *7*; α(M)=7.55×10^{-5}

γ(^{101}Ru) (continued)

E_γ [†]	E_i(level)	Comments
		13; α(N+..)=1.278×10^{-5} *20* α(N)=1.216×10^{-5} *20*; α(O)=6.19×10^{-7} *9* E_γ: Others: 545.01 *15* (1974HeYW), 544.85 *8* (1971Si16). δ: from 1973Ka28 γ(θ,T). K/L= 7.5 *10* (1971Si16).

† Eγ,Iγ are from 1985Va15, unless otherwise noted.
‡ Deduced from α(K)exp and/or K/L ratio data.
# For absolute intensity per 100 decays, multiply by 0.806 *18*.
@ 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.

$^{101}_{44}Ru_{57}$-3

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Decay Scheme

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