^{101}Rh ε decay (3.3 y) 1985Va15

History

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

Parent: ^{101}Rh: E=0.0; $J^\pi=1/2^-$; $T_{1/2}$=3.3 y *3*; Q(ε)=542 *17*; %ε decay=100.0

Others: 1971Si16, 1965Ev06, 1965Hi07, 1966Ch13, 1966Ar05, 1966Wo06, 1966CoZX.

97, 114, 137, 217, 306, 334, 344, 462 γ's given by 1971Si16, not seen by 1985Va15 are uncertain. 217, 462γ's seen in coin by 1985Va15 in ^{102}Rh.

^{101}Ru Levels

E(level)	J^π	$T_{1/2}$	Comments
0.0	$5/2^+$	stable	
127.225 *9*	$3/2^+$	0.56 ns *2*	$T_{1/2}$: (198γ)(127γ)(t) av: 0.55 ns *3* (1966Ch13), 0.58 ns *2* (1970La16) 0.56 ns *3* (1973Be72). Others: 1966CoZX, 1971Bo13. g-factor=− 0.207 *17* (1966Au06) (198γ)(127γ)(θ,H,T).
311.36 *9*	$3/2^+$,$5/2^+$	≤0.15 ns	
325.233 *22*	$1/2^+$	0.20 ns *4*	$T_{1/2}$: from 1970La16 (K x ray)(198γ)(t), scin. Branching: Iγ(325γ)/Iγ(198γ)=0.19 *2* (1971Si16), 0.21 (1966Wo06), 0.21 (1966Ar05), 0.15 *4* (1965Ev06).
422.23 *3*	$3/2^+$		Branching: Iγ(422γ)/Iγ(295γ)=0.52 *17* (1971Si16), 0.8 *4* (^{101}Tc decay).

ε radiations

E(decay)	E(level)	Iε†	Log *ft*	Comments
(120 *17*)	422.23	0.84 *8*	8.31 *18*	εK=0.822 *11*; εL=0.143 *9*; εM+=0.0350 *23*
(217 *17*)	325.233	89 *8*	6.88 *10*	εK=0.8466 *23*; εL=0.1237 *18*; εM+=0.0298 *5*
(231 *17*)	311.36	0.015 *15*	10.0[1u] *5*	εK=0.788 *11*; εL=0.169 *9*; εM+=0.0427 *25*
(415 *17*)	127.225	2.4 *10*	9.05 *19*	εK=0.8584; εL=0.1144 *4*; εM+=0.02720 *12*
(542 *17*)	0.0	8 *8*	8.8 *5*	εK=0.8612; εL=0.11219 *23*; εM+=0.02660 *7*

† Absolute intensity per 100 decays.

γ(^{101}Ru)

Iγ normalization: for Σ(Iγ+ce)=100 to g.s. if %ε≈0 to g.s.; from log $f^{1u}t$>8.5, one gets Iε(g.s.)<16%.
γγ coin: 1971Si16, 1966Ar05.
α(K)exp from 1996La21 based on I(ce(K))/Iγ using calibrated detectors. The evaluator has renormalized the authors' values to give α(K)exp(325γ)=0.0177 known to be E2 from level scheme. The authors' value is 0.0160 8.

E_γ [†]	I_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ	α [#]	Comments
110.94 *12*	0.06 *2*	422.23	3/2$^+$	311.36	3/2$^+$,5/2$^+$				
127.226 *9*	93.2 *9*	127.225	3/2$^+$	0.0	5/2$^+$	M1+E2	+0.195 *+25−22*	0.170 *6*	α(K)= 0.148 *5*; α(L)= 0.0186 *10*; α(M)=0.00341 *18*; α(N+..)=0.00065 *3* α(K)exp=0.154 *5* (1996La21); K/L=7.7 *3* (1996La21); K/Mn=47 *4* B(M1)(W.u.)=0.0157 *6*; B(E2)(W.u.)=34 *9* Mult.: other: α(K)exp= 0.16 *2* (1966Wo06) via K x ray/Iγ, scin. δ: av: +0.22 *4* from α(K)exp (1996La21), +0.23 *+8−7* from K/L (1996La21), +0.17 *3* (1977Kr13) and 0.18 *+6−5* (1962Ri09).
184.22 *13*	0.081 *14*	311.36	3/2$^+$,5/2$^+$	127.225	3/2$^+$				
198.01 *3*	100	325.233	1/2$^+$	127.225	3/2$^+$	M1(+E2)	≈+0.05	0.048	α(K)= 0.0423; α(L)=0.00502; α(M)=0.00092; α(N+..)=0.00018 α(K)exp=0.0448 *18* (1996La21); K/L=8.3 *4* (1996La21); K/Mn=52 *7* B(M1)(W.u.)=(0.0117 *+17−11*); B(E2)(W.u.)=(0.E+2 *+5−0*) Mult.: other: α(K)exp= 0.042 *1* (1965Hi07). Others: 1960Pe05, 1963Pa24. δ: from (198γ)(127γ)(θ): 1977Kr13 evaluated coef of 1957Go34, 1965Ev06, 1966Ch13, 1966Wo06.
295.01 *3*	0.815 *24*	422.23	3/2$^+$	127.225	3/2$^+$				
325.23 *3*	16.20 *15*	325.233	1/2$^+$	0.0	5/2$^+$	E2		0.02	α(K)=0.01774; α(L)=0.00233; α(M)=0.00043 B(E2)(W.u.)=3.7 *8* α(K)exp: α(K)exp=0.0160 *8* (1996La21), renormalized 0.0177 *9* (Theory). Mult.: others: α(K)exp= 0.0164 *16* (1965Hi07), 0.0177 *5* (1971Si16).
422.19 *8*	0.272 *15*	422.23	3/2$^+$	0.0	5/2$^+$				I_γ: priv. comm. to evaluator from 1985Va15.

[†] Eγ,Iγ from 1985Va15, unless otherwise noted.
[‡] For absolute intensity per 100 decays, multiply by 0.73 *6*.
[#] 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

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$