^{75}Rb ε decay (19.0 s) 1983Ke08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh	NDS 114, 841 (2013)	30-Jun-2013

Parent: ^{75}Rb: E=0.0; J$^{\pi}$=(3/2$^-$); T$_{1/2}$=19.0 s *12*; Q(ε)=7105 *8*; %ε+%β^+ decay=100.0
^{75}Rb-J$^{\pi}$,T$_{1/2}$: From ^{75}Rb Adopted Levels.
^{75}Rb-Q(ε): From 2012Wa38.
1983Ke08: ^{75}Rb isotope produced by ^{58}Ni(^{20}Ne,p2n) reaction and mass separated with an on-line isotope separator. Measured γ, $\gamma\gamma$, T$_{1/2}$ using two Ge(Li) detectors.
Others: 1998Sk01, 1977Da04, 1975Bo52, 1975Ra03.
1998Sk01: mass-separated source. Measured precise energies and ce for the 179 doublet; details are given in 1995BeZS thesis.

^{75}Kr Levels

E(level)	J$^{\pi}$†	T$_{1/2}$†
0.0	5/2$^+$	4.60 min *7*
178.90 *5*	(3/2)$^-$	
187.05 *10*	(7/2)$^+$	
358.11 *6*	(5/2)$^-$	
611.16? *9*	(7/2)$^-$	
629.04 *10*	(1/2$^+$,3/2,5/2)	
671.80 *7*	(3/2$^-$,5/2$^-$)	
833.21 *9*	(1/2$^-$,3/2,5/2)	
880.69 *10*	(1/2$^-$,3/2,5/2)	
1026.5 *3*	(1/2$^+$,3/2,5/2)	
1042.14 *10*	(3/2$^+$,5/2)	

† From Adopted Levels.

ε,β^+ radiations

All ε, β^+ feedings are considered as upper limits and associated log *ft* values as lower limits since the level scheme is known only up to 1042 keV whereas Q value is 7 MeV.

E(decay)	E(level)	Iβ^+ †	Iε†	Log *ft*	I($\varepsilon+\beta^+$)†	Comments
(6063 *8*)	1042.14	<4.3	<0.048	>6.1	<4.3	av Eβ=2333.7 *39*; εK=0.00970 *5*; εL=0.001120 *6*; εM+=0.0002298 *1*
(6079 *8*)	1026.5	<1.1	<0.012	>6.7	<1.1	av Eβ=2341.3 *39*; εK=0.00962 *5*; εL=0.001110 *6*; εM+=0.0002278 *1*
(6224 *8*)	880.69	<3.1	<0.031	>6.3	<3.1	av Eβ=2412.1 *39*; εK=0.00885 *4*; εL=0.001021 *5*; εM+=0.0002095 *1*
(6272 *8*)	833.21	<3.9	<0.038	>6.2	<3.9	av Eβ=2435.1 *39*; εK=0.00862 *4*; εL=0.000994 *5*; εM+=0.0002040 *1*
(6433 *8*)	671.80	<17	<0.15	>5.6	<17	av Eβ=2513.6 *39*; εK=0.00788 *4*; εL=0.000910 *4*; εM+=0.0001867 *9*
(6476 *8*)	629.04	<6.8	<0.061	>6.0	<6.9	av Eβ=2534.3 *39*; εK=0.00771 *4*; εL=0.000889 *4*; εM+=0.0001824 *8*
(6494 *8*)	611.16?	<3.2	<0.028	>6.3	<3.2	av Eβ=2543.0 *39*; εK=0.00763 *4*; εL=0.000881 *4*; εM+=0.0001807 *8* Iε,Iβ^+: very small ε feeding is expected for ΔJ=2, Δπ=yes.
(6747 *8*)	358.11	<36	<0.27	>5.4	<36	av Eβ=2666.3 *39*; εK=0.00668 *3*; εL=0.000771 *4*; εM+=0.0001582 *7*
(6918 *8*)	187.05	<7.2	<0.051	>6.1	<7.3	av Eβ=2749.7 *39*; εK=0.006131 *25*; εL=0.000707 *3*; εM+=0.0001451 *6* Iε,Iβ^+: almost no ε feeding is expected for ΔJ=2, Δπ=no.
(6926 *8*)	178.90	<18	<0.13	>5.8	<18	av Eβ=2753.6 *39*; εK=0.006107 *25*; εL=0.000704 *3*; εM+=0.0001445 *6*

† Absolute intensity per 100 decays.

^{75}Rb ε decay (19.0 s) 1983Ke08 (continued)

γ(^{75}Kr)

Iγ normalization: from Ti(γ′s to g.s.)=100. From I(γ$^{\pm}$)=140 *14* (1983Ke08), the ε+β^{+} feeding to g.s. and 179 level is expected to be negligible, but in the present decay scheme apparent ε+β^{+} feeding is ≈18% to the 179 level. The normalization is considered as approximate since level scheme is known up to only 1042, whereas the Q value is 7.1 MeV.
I(γ±)=140 *14* (1983Ke08).

E_γ	I_γ[@]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[‡]	Comments
171[&] *1*	≈0.1	358.11	(5/2)$^-$	187.05	(7/2)$^+$				
178.95 *6*	68 *4*	178.90	(3/2)$^-$	0.0	5/2$^+$	(E1)		0.01615	α(K)=0.01434 *21*; α(L)=0.001536 *22*; α(M)=0.000247 *4*; α(N)=2.46×10^{-5} *4* E_γ,Mult.: from 1998Sk01. I_γ: from Iγ(178.95)/ Iγ(179.26)=90 *4*/43 *4* (1998Sk01).
179.26 *6*	32 *3*	358.11	(5/2)$^-$	178.90	(3/2)$^-$	M1+E2	0.6 *2*	0.048 *11*	α(K)=0.042 *9*; α(L)=0.0050 *12*; α(M)=0.00081 *19*; α(N)=7.9×10^{-5} *18* E_γ: from 1998Sk01. I_γ: from Iγ(178.95)/ Iγ(179.26)=90 *4*/43 *4* (1998Sk01). Mult.,δ: from α(K)exp=0.044 *13* (1998Sk01) deduced from α(K)exp(178.95γ+179.26γ)=0.022 *3* (1998Sk01) and mult(178.95γ)=E1. α(K)exp(178.95γ+179.26γ) =0.024 *6* listed in 1995BeZS thesis.
187.0 *1*	7.6 *15*	187.05	(7/2)$^+$	0.0	5/2$^+$	M1+E2	−0.55 *6*	0.040 *3*	α(K)=0.0349 *24*; α(L)=0.0041 *3*; α(M)=0.00066 *5*; α(N)=6.5×10^{-5} *5* α(K)exp=0.07 *3* (1995BeZS)
253.1 *1*	1.7 *3*	611.16?	(7/2)$^-$	358.11	(5/2)$^-$	M1+E2	−1.2 *2*	0.0227 *18*	α(K)=0.0200 *16*; α(L)=0.00232 *20*; α(M)=0.00037 *4*; α(N)=3.7×10^{-5} *3*
313.6 *1*	2.8 *6*	671.80	(3/2$^-$,5/2$^-$)	358.11	(5/2)$^-$				
358.0 *1*	5.6 *11*	358.11	(5/2)$^-$	0.0	5/2$^+$				
432.2 *1*	1.2 *2*	611.16?	(7/2)$^-$	178.90	(3/2)$^-$	E2			
450.2 *1*	5.5 *11*	629.04	(1/2$^+$,3/2,5/2)	178.90	(3/2)$^-$				
475.2 *1*	1.0 *2*	833.21	(1/2$^-$,3/2,5/2)	358.11	(5/2)$^-$				
493.0 *1*	5.9 *12*	671.80	(3/2$^-$,5/2$^-$)	178.90	(3/2)$^-$				
522.5 *2*	1.0 *2*	880.69	(1/2$^-$,3/2,5/2)	358.11	(5/2)$^-$				
^{x}608.1[†]									
628.8 *2*	0.8 *2*	629.04	(1/2$^+$,3/2,5/2)	0.0	5/2$^+$				
654.2 *1*	2.5 *5*	833.21	(1/2$^-$,3/2,5/2)	178.90	(3/2)$^-$				
^{x}670.8[†]									
671.8 *1*	7.0 *14*	671.80	(3/2$^-$,5/2$^-$)	0.0	5/2$^+$				
701.8 *1*	1.8 *4*	880.69	(1/2$^-$,3/2,5/2)	178.90	(3/2)$^-$				
^{x}725.1[†]									

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^{75}Rb ε decay (19.0 s) 1983Ke08 (continued)

γ(^{75}Kr) (continued)

E_γ	I_γ[@]	E_i(level)	J^π_i	E_f	J^π_f
[x]791.3 *1*	0.7 *2*				
848.2		1026.5	(1/2$^+$,3/2,5/2)	178.90	(3/2)$^-$
854.9 *2*	1.0 *2*	1042.14	(3/2$^+$,5/2)	187.05	(7/2)$^+$
863.2 *1*	2.1 *4*	1042.14	(3/2$^+$,5/2)	178.90	(3/2)$^-$
1026.4 *3*	1.0 *2*	1026.5	(1/2$^+$,3/2,5/2)	0.0	5/2$^+$
1042.9 *3*	0.8 *2*	1042.14	(3/2$^+$,5/2)	0.0	5/2$^+$
[x]1139.3[†]					
[x]1192.5[†]					
[x]1197.1 *3*	3.1 *6*				
[x]1683.8[†]					
[x]1690.1 *3*	4.1 *8*				
[x]1877.5[†]					

[†] Observed in coincidence with 178.9γ.
[‡] Additional information 1.
[#] From Adopted Gammas.
[@] For absolute intensity per 100 decays, multiply by ≈1.1.
[&] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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