^{93}Rb β^-n decay 1982Kr11,1985Gr15

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 113, 2187 (2012)	15-Sep-2012

Parent: ^{93}Rb: E=0.0; $J^\pi=5/2^-$; $T_{1/2}$=5.84 s *2*; Q(β^-n)=2176 *9*; %β^-n decay=1.39 *7*

^{93}Rb-Q from 2011AuZZ. Other: 2179 *8* (2003Au03).

^{93}Rb-J^π,$T_{1/2}$: From 1997Ba13.

Additional information 1.

Others: 1980Kr07, 1981Ho07.

1985Gr15: TRISTAN ISOL facility; gas-filled proton recoil proportional counters, pulse-shape discrimination (FWHM≈2-11 keV for E(n)<200 keV); measured β^- delayed n energy spectrum, E(n)=14 to ≈1300.

1982Kr11: OSTIS mass separator; measured n-γ, $\beta\gamma$, $\gamma\gamma$ coincidences. Assumed I(953γ)=3.78% 25 in ^{92}Sr β^- decay (cf. value of 3.52% 24 adopted here).

1981Ho07: OSIRIS mass separator; measured Eγ, Iγ, I(n).

1980Kr07: ^{3}He ionization chamber; measured β^- delayed-neutron spectrum. Deduced S(n).

^{92}Sr Levels

E(level)[†]	J^π[‡]
0.0	0^+
814.7	2^+
1384.5	2^+
1778.1	$2^{(+)}$
2088.1?	$0^{(+)}$

[†] From 1982Kr11; uncertainties not stated by authors.

[‡] From Adopted Levels.

$\gamma(^{92}Sr)$

Iγ normalization: from Σ(I(γ+ce) to g.s.)=1.39% 7, based on %β^-n for ^{93}Rb recommended in evaluation by 2011Ba40.

E$_\gamma$[‡]	I$_\gamma$[‡@]	E$_i$(level)	J_i^π	E$_f$	J_f^π	Mult.[#]	δ[#]	α[†]	Comments
393.5	1.4	1778.1	$2^{(+)}$	1384.5	2^+	(M1)		0.00463 *7*	α=0.00463 *7*; α(K)=0.00410 *6*; α(L)=0.000450 *7*; α(M)=7.57×10^{-5} *11*; α(N+..)=1.012×10^{-5} *15* α(N)=9.50×10^{-6} *14*; α(O)=6.19×10^{-7} *9*
569.8	3.1	1384.5	2^+	814.7	2^+	(M1+E2)	+0.21 *2*	0.00196 *3*	α=0.00196 *3*; α(K)=0.001737 *25*; α(L)=0.000189 *3*; α(M)=3.18×10^{-5} *5*; α(N+..)=4.26×10^{-6} *6* α(N)=4.00×10^{-6} *6*; α(O)=2.61×10^{-7} *4*
814.7	100	814.7	2^+	0.0	0^+	E2		0.000950 *14*	α=0.000950 *14*; α(K)=0.000840 *12*; α(L)=9.24×10^{-5} *13*; α(M)=1.551×10^{-5} *22*; α(N+..)=2.06×10^{-6} α(N)=1.94×10^{-6} *3*; α(O)=1.240×10^{-7} *18*
963.5	1.7	1778.1	$2^{(+)}$	814.7	2^+	(E2+M1)	+1.7 *+13−15*	0.000625 *20*	α=0.000625 *20*; α(K)=0.000553 *17*; α(L)=6.02×10^{-5} *24*; α(M)=1.01×10^{-5} *4*;

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^{93}Rb β^-n decay 1982Kr11,1985Gr15 (continued)

$\gamma(^{92}Sr)$ (continued)

E_γ[‡]	I_γ[‡@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[†]	Comments
								α(N+..)=1.35×10^{-6} *5*
								α(N)=1.27×10^{-6} *5*; α(O)=8.22×10^{-8} *19*
1384.6[&]		1384.5	2$^+$	0.0	0$^+$	E2	0.000332 *5*	α=0.000332 *5*; α(K)=0.000252 *4*; α(L)=2.72×10^{-5} *4*; α(M)=4.55×10^{-6} *7*; α(N+..)=4.84×10^{-5} *7*
								α(N)=5.72×10^{-7} *8*; α(O)=3.74×10^{-8} *6*; α(IPF)=4.78×10^{-5} *7*
1778.3	0.5	1778.1	2$^{(+)}$	0.0	0$^+$			

† Additional information 2.
‡ From 1982Kr11; uncertainties not stated by authors.
# From Adopted Gammas.
@ For absolute intensity per 100 decays, multiply by 0.0138 *7*.
& Placement of transition in the level scheme is uncertain.

Delayed Neutrons (^{92}Sr)

E(n)[‡]	E(^{92}Sr)	I(n)[†@]	E(^{93}Sr)[#]	Comments
28			5318	
66			5356	
114			5404	
158			5448	E(n): other: 153 (1980Kr07) for possible doublet.
188			5478	E(n): from 1980Kr07. Other: 202 (1974Ru07).
234			5524	E(n): other: 231 (1985Gr15).
266			5556	
309			5599	E(n): other: 308 (1985Gr15).
371			5661	E(n): from 1980Kr07. other: 375 (1985Gr15).
398			5688	E(n): from 1980Kr07.
454			5744	E(n): other: 457 (1985Gr15).
484			5774	
521			5811	
545			5835	E(n): from 1980Kr07.
606			5896	
636			5926	E(n): other: 631 (1985Gr15).
663			5953	
684			5974	
701			5991	
729			6019	
773			6063	E(n): from 1980Kr07.
815			6105	
862			6152	E(n): from 1980Kr07.
979			6269	
1260			6550	
	0.0	85 *3*		
	814.7	14 *3*		
	1384.5	0.5 *3*		
	1778.1	0.4 *2*		
	2088.1?	<0.1		

† Partial branching, given by 1982Kr11 as % of total n-emission probability; there exists only a 2175-keV window for delayed-n emission to ^{92}Sr and branches to all but the 1673, 1993?, 2054, 2088, 2141 levels within it are reported. 1981Ho07, unable to

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^{93}Rb β^-n decay 1982Kr11,1985Gr15 (continued)

Delayed Neutrons (^{92}Sr) (continued)

detect the weaker n-branches, report I(n to g.s.):I(n to 815 level)=87.5 *19*:12.5 *19*; also, I(432γ,^{93}Sr)/I(n)=9.8 *6*.

‡ E(n)(c.m.). For E(n)<200, agreement between different studies is only fair, and the superior-resolution data of 1985Gr15 are adopted. For E(n)≥200, data are taken from 1980Kr07; in instances where the authors do not quote E(n), the evaluator has deduced it from the authors′ proposed E(level) and assumed S(n). Values of E(n) quoted by 1980Kr07 are indicated.

Highly tentative. From measured E(n) (ΔE unstated) and S(n)=5290 *8* (2011AuZZ), assuming neutrons populate ^{92}Sr(g.s.). Different ^{93}Sr level energies were deduced in 1980Kr07 because authors assumed S(n)=5230 *6*, the value deduced by 1980Kr07 based on correlation between energy spacing for delayed-neutron groups and ^{93}Sr level energy differences known from ^{93}Rb β^- decay.

@ For absolute intensity per 100 decays, multiply by 0.0139 *7*.