^{95}Nb β^- decay (3.61 d) 1999BeZS,1999BeZQ,2000He14

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, G. Mukherjee, A. A. Sonzogni	NDS 111, 2555 (2010)	30-Jun-2009

Parent: ^{95}Nb: E=234.70 *14*; $J^\pi=1/2^-$; $T_{1/2}$=3.61 d *3*; Q(β^-)=925.6 *5*; %β^- decay=5.6 *6*

1999BeZS,1999BeZQ: Evaluation by M.-M. Be, R. Helmer, N. Coursol, and F. Lagoutine, January 1998 and including information from a previous evaluation (1993Bu08). This evaluation was done as part of a collaboration of evaluators from Laboratoire National Henri Becquerel (lnhb) in France; Physikalisch-Technische Bundesanstalt (PTB) in Germany; HMS Sultan and AEA Technology in the United Kingdom; Khlopin Radium Institute (kri) in Russia; Centro de Investigaciones Energeticas, Medioambientales, y Tecnologicas (CIEMAT) and Universidad Nacional a Distancia (UNED) in Spain; and Brookhaven National Laboratory (BNL), Lawrence Berkeley National Laboratory (LBNL), and Idaho National Engineering and Environmental Laboratory (INEEL) in the United States.

Measurements include: measured γ's, Ge(Li) and Compton-suppressed Ge(Li), mixed and pure sources (1972Er08); see ^{95}Zr β^- decay for details (1974An22); see ^{95}Nb β^- decay (34.975 d) for details (1976Ho04).

α: Additional information 1.

^{95}Mo Levels

E(level)	J^π[†]	$T_{1/2}$[†]
0.0	$5/2^+$	stable
204.116 *2*	$3/2^+$	
786.201 *3*	$1/2^+$	
820.628 *4*	$3/2^+$	
1039.269 *4*	$1/2^+$	

[†] From Adopted Levels.

β^- radiations

E(decay)	E(level)	Iβ^-[†‡]	Log *ft*	Comments
(121.0[#] *5*)	1039.269	≤0.000027	≥10.3	av Eβ=32.20 *15*
(339.7[#] *5*)	820.628	0.00037 *22*	10.6 *3*	av Eβ=100.06 *18*
(374.1 *5*)	786.201	0.071 *9*	8.4 *1*	av Eβ=111.68 *18*
(956.2 *5*)	204.116	2.4 *3*	8.4 *1*	av Eβ=334.55 *22*
1160 *5*	0.0	3.2 *10*	9.20[1u] *14*	av Eβ=437.37 *22*
				E(decay): from 1974An22.
				Log *ft*: observed 1st-forbidden unique spectrum shape (1974An22).

[†] The intensity of the β- transition to the ground state has been deduced by the evaluators from the β spectrum analysis relative to the intensity of the K electrons from the 235-keV isomeric decay γ of 1974An22. 1974An22 report Iβ- to ground state of 5.5% *4* of the it decays and Iβ- to 204-keV level of 0.5% *1*. Current Iγ(204)/Iγ(234) data imply that $I_{\beta-}$(204) is more nearly 2.4% of all decays of the isomer. Therefore, this evaluator has taken the total β- intensity to these two levels to be 5.6% and divided it 3.2% and 2.4%. Since Kurie-Fermi plot of 1974An22 does not show two components, the uncertainty in the total intensity may be larger than reported; the evaluator has assigned 5.6% *10*. The Iβ(204) is assigned as 2.4% *3* from the γ data, leaving the Iβ(ground state) = 3.2% *10*.

[‡] Absolute intensity per 100 decays.

[#] Existence of this branch is questionable.

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$\gamma(^{95}Mo)$

Iγ normalization: From %Iγ(204γ)=2.33 *16* and Iγ(204γ)=100 *3*. %Iγ is from Iγ(204γ)/Iγ(^{95}Nb 236γ)=0.094 *34* (1976Ho04), %IT=94.4 *6*, and α(^{95}Nb 236γ)=2.81. Note that Iγ(204γ)/Iγ(^{95}Nb 236γ)=0.022 *4* and ce(K)(204γ)/ce(K)(^{95}Nb 236γ)=4.5×10^{-4} *11* (1974An22) are discrepant while Iγ(204γ)/Iγ(^{95}Nb 236γ)=0.095 *22* derived by 1974An22 from the data of 1972Er08 agrees. Other %Iγ: 2.36 *7* (1976Ho04).

E_γ †	I_γ ‡@	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α#	Comments
204.1161 *17*	41	204.116	3/2$^+$	0.0	5/2$^+$	M1+E2	−0.62 *7*	0.052 *3*	α(K)=0.0449 *23*; α(L)=0.0058 *4*; α(M)=0.00103 *7*; α(N)=0.000154 *9*; α(O)=7.5×10^{-6} *4*; α(N+..)=0.000161 *10*
218.640& *8*	≤0.000001	1039.269	1/2$^+$	820.628	3/2$^+$				
253.070& *3*	≤0.00002	1039.269	1/2$^+$	786.201	1/2$^+$				
582.0775 *21*	0.85	786.201	1/2$^+$	204.116	3/2$^+$				
616.507 *8*	0.0017	820.628	3/2$^+$	204.116	3/2$^+$				
786.1922 *27*	0.24	786.201	1/2$^+$	0.0	5/2$^+$				
820.622 *7*	0.0061	820.628	3/2$^+$	0.0	5/2$^+$				
835.146& *6*	≤0.001	1039.269	1/2$^+$	204.116	3/2$^+$				
1039.260& *6*	≤0.0001	1039.269	1/2$^+$	0.0	5/2$^+$				

† From 2000He14 where they are associated with the ^{95m}Tc ε decay (61 d), except 218, 253, and 616 γ's which are from the level energies.

‡ From 1976Ho04 with the addition of the data for the 218, 253, 616, 1039 γ's from the ^{95m}Tc ε decay (61 d).

From the ^{95}Mo Adopted Gammas.

@ For absolute intensity per 100 decays, multiply by 0.0233 *16*.

& Placement of transition in the level scheme is uncertain.

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Decay Scheme

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