^{93}Nb IT decay (16.12 y)

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 112, 1163 (2011)	15-Dec-2010

Parent: ^{93}Nb: E=30.77 *2*; $J^{\pi}=1/2^{-}$; $T_{1/2}$=16.12 y *12*; %IT decay=100.0

1999ZhZY, 1991BaZS, 1990Co17, 1983Va25, 1982Re09, 1981Ll01, 1977Ll01, 1977Mo07, 1972FlZM, 1965Fl02, 1964Ho08.

1977Mo07: intrinsic Ge detector, measured Eγ and I(30γ)/I(K x ray).

1999ZhZY observe both the 30.8-keV IT and a 28.5-keV transition; they attribute the latter to an electron bridge mechanism with electron bridge emission probability 0.061 *14* times that of the 30.8-keV radiation.

^{93}Nb x-ray Emission Probabilities (per 100 IT decays):

The calculated values are those obtained using the program RADLST and the adopted decay scheme. The most precise measurement of I(K x ray) is that by 1990Co17 (other data are 11.5 *3* (1983Va25) and unpublished values of 11.6 *4*, 10.7 *3*, 11.0 *3* referenced in 1991BaZS).

The energy balance for this decay is satisfactory: total energy deposited is calculated to Be 30.3 *11* cf. 30.77 *2* based on Q value.

Calculated	1990Co17	X-ray
6.34 24		($K_{\alpha 1}$)
3.32 13		($K_{\alpha 2}$)
1.89 7		(K_{β})
11.55 28	11.12 22	(K(Total))

^{93}Nb Levels

E(level)[†]	J^{π}[‡]	$T_{1/2}$	Comments
0	$9/2^{+}$		
30.77 *2*	$1/2^{-}$	16.12[#] y *12*	%IT=100

[†] From Eγ.

[‡] From Adopted Levels.

[#] weighted average of 16.13 y *15* (1983Va25; statistical uncertainty 0.10) and 16.11 y *19* (1981Ll01; presumed to supersede preliminary datum from 1977Ll01); decay was followed for >4 and 10 years, respectively. Other $T_{1/2}$: 13.6 y *3* (1965Fl02; decay followed for 11 y));≥5 y (1976Ju04; from γ(t), decay followed for 1 y).

$\gamma(^{93}Nb)$

Eγ[†]	Iγ[@]	E$_i$(level)	J_i^{π}	E$_f$	J_f^{π}	Mult.[‡]	α[&]	I$_{(\gamma+ce)}$[@]	Comments
30.77 *2*	5.91×10^{-4}[#] *9*	30.77	$1/2^{-}$	0	$9/2^{+}$	M4	1.693×10^{5}	100	ce(K)/(γ+ce)=0.153 *3*; ce(L)/(γ+ce)=0.680 *8*; ce(M)/(γ+ce)=0.147 *3*; ce(N+)/(γ+ce)=0.0193 *4* ce(N)/(γ+ce)=0.0191 *4*; ce(O)/(γ+ce)=0.000285 *6* α(K)exp=2.58×10^{4} *15* (1976Ju04); K/L=0.21 *2* (1964Ho08) other α(K)exp: 1.7×10^{4} *3* from I(31γ)/I(K x ray)=8.0×10^{-5} *10* (1977Mo07), assuming ω_K=0.75 *3*; 2.4×10^{4} *9* (1999ZhZY). other sub-shell ratios: K/(L+M)=0.18 *2* (1964Ho08), 0.12 *2* (1972FlZM);

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^{93}Nb IT decay (16.12 y) (continued)

$\gamma(^{93}Nb)$ (continued)

E_γ †	E_i(level)	Comments
		K/(L+M+...)=0.19 *2* (1982Re09); L/(M+N+...)=3.8 *4* (1982Re09).

† From 1977Mo07. Others: 30.4 *3* (1972FlZM), 30.7 *1* (1976Ju04).
‡ From measured α(K)exp and subshell ratios.
# From %IT=100 and $\alpha(31\gamma)$, assuming 1.4% uncertainty In $\alpha(31\gamma)$ calculation and an additional 0.4% uncertainty arising from uncertainty In Eγ. this value differs from that calculated by 2007BeZP because that evaluation assumed a different value for $\alpha(31\gamma)$.
@ Absolute intensity per 100 decays.
& 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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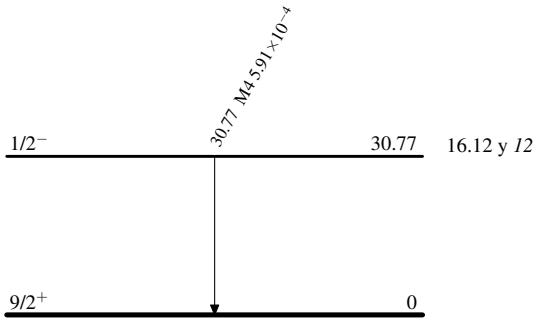
Decay Scheme

Intensities: I_γ per 100 parent decays
%IT=100.0



$^{93}_{41}Nb_{52}$