

¹⁰⁵Nb β⁻ decay (2.91 s) 1995Li13,1984Sh03

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. Lalkovski, J. Timar and Z. Elekes		NDS 161, 1 (2019)	1-Apr-2019

Parent: ¹⁰⁵Nb: E=0.0; J^π=(5/2⁺); T_{1/2}=2.91 s 5; Q(β⁻)=7422 10; %β⁻ decay=100.0

1995Li13: Facility: JOSEPH the DIDO reactor at Kernforschungsanlage Julich, Germany; Source: ¹⁰⁵Nb from ²³⁵U_(n_{th},f);

Detectors: JOSEPH, one plastic scintillator, one conical BaF₂ scintillator, one Ge crystal; Measured: β-γ-γ(t), E_γ, Deduced: T_{1/2} from centroid shift method and deconvolution; Also from the collaboration: 1991LiZV.

1984Sh03: Facilities: JOSEPH at the DIDO reactor at Kernforschungsanlage, Julich, Germany and LOHENGRIN at ILL Grenoble,

France; Sources: ¹⁰⁵Nb from ²³⁵U_(n_{th},f); Detectors: JOSEPH and LOHENGRIN recoil separators, electrostatic and mechanical choppers, tape station, intrinsic Ge and Ge(Li) detectors; Measured: B_ρ, x-rays, γ, x-γ coinc., γ-γ and γ-γ(θ) coinc., E_γ, I_γ, γ(t); Deduced: fission product mass number A, ¹⁰⁵Mo level scheme, T_{1/2}; Also, from the same collaboration: 1983ShZY.

Others: 1996Lh04, 1987Gr18, 1985Se02, 1984LhZZ, 1973Ho22.

¹⁰⁵Mo Levels

Level scheme is incomplete and unbalanced.

E(level) [†]	J ^π [‡]	T _{1/2} [#]	Comments
0.0	(5/2 ⁻)		configuration: ν5/2 ⁻ [532].
94.86 7	(7/2 ⁻)	0.48 ns 4	T _{1/2} : Other: 0.54 ns 25 and 0.54 ns 25 from centroid-shift method with Ge detectors in 1985Se02 and 1984LhZZ, respectively.
232.86 8	(9/2 ⁻)	111 ps 10	
246.73 8	(3/2 ⁺)	0.30 ns 6	configuration: 3/2 ⁺ [411].
309.93 9	(5/2 ⁺)		
332.14 20	(1/2 ⁺)		
348.60 7	(5/2 ⁺)		
377.70 12	(11/2 ⁻)		
396.75 12	(3/2 ⁺)	0.53 ns 7	
464.14 12	(7/2 ⁺)	81 ps 12	
507.80 15	(7/2 ⁺)	0.08 ns 5	
514.18 18	(3/2 ⁻ to 9/2 ⁻)		
524.69 15	(5/2 ⁺)	0.10 ns 5	
648.71 16	(5/2 ⁻ to 11/2 ⁻)		

[†] From a least-squares fit to E_γ.

[‡] From the Adopted Levels.

[#] From β-γ-γ(t) coinc. in 1995Li13.

γ(¹⁰⁵Mo)

E _γ [†]	I _γ [†]	E _i (level)	J _i ^π	E _f	J _f ^π	E _γ [†]	I _γ [†]	E _i (level)	J _i ^π	E _f	J _f ^π
48.3 3	5 3	396.75	(3/2 ⁺)	348.60	(5/2 ⁺)	159.4 4	23 4	507.80	(7/2 ⁺)	348.60	(5/2 ⁺)
63.5 3	8 2	309.93	(5/2 ⁺)	246.73	(3/2 ⁺)	176.0 2	19 2	524.69	(5/2 ⁺)	348.60	(5/2 ⁺)
85.3 3	30 3	332.14	(1/2 ⁺)	246.73	(3/2 ⁺)	^x 186.3 5	3 2				
94.8 1	258 13	94.86	(7/2 ⁻)	0.0	(5/2 ⁻)	192.5 2	43 3	524.69	(5/2 ⁺)	332.14	(1/2 ⁺)
102.0 1	29 6	348.60	(5/2 ⁺)	246.73	(3/2 ⁺)	197.9 2	12 3	507.80	(7/2 ⁺)	309.93	(5/2 ⁺)
115.6 2	6 2	464.14	(7/2 ⁺)	348.60	(5/2 ⁺)	215.1 3	8 2	309.93	(5/2 ⁺)	94.86	(7/2 ⁻)
137.9 1	100 4	232.86	(9/2 ⁻)	94.86	(7/2 ⁻)	217.2 4	7 2	464.14	(7/2 ⁺)	246.73	(3/2 ⁺)
144.8 1	8 2	377.70	(11/2 ⁻)	232.86	(9/2 ⁻)	231.2 4	2 1	464.14	(7/2 ⁺)	232.86	(9/2 ⁻)
150.0 1	31 3	396.75	(3/2 ⁺)	246.73	(3/2 ⁺)	232.9 1	37 3	232.86	(9/2 ⁻)	0.0	(5/2 ⁻)
154.2 2	12 3	464.14	(7/2 ⁺)	309.93	(5/2 ⁺)	246.9 1	203 10	246.73	(3/2 ⁺)	0.0	(5/2 ⁻)

Continued on next page (footnotes at end of table)

^{105}Nb β^- decay (2.91 s) **1995Li13,1984Sh03** (continued) $\gamma(^{105}\text{Mo})$ (continued)

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π
253.7 2	48 5	348.60	(5/2 ⁺)	94.86	(7/2 ⁻)
261.1 3	7 2	507.80	(7/2 ⁺)	246.73	(3/2 ⁺)
^x 266.8 3	7 3				
274.7 3	4 1	507.80	(7/2 ⁺)	232.86	(9/2 ⁻)
278.1 2	12 2	524.69	(5/2 ⁺)	246.73	(3/2 ⁺)
283.0 2	8 2	377.70	(11/2 ⁻)	94.86	(7/2 ⁻)
309.9 1	108 6	309.93	(5/2 ⁺)	0.0	(5/2 ⁻)
348.5 1	45 4	348.60	(5/2 ⁺)	0.0	(5/2 ⁻)
369.3 2	29 2	464.14	(7/2 ⁺)	94.86	(7/2 ⁻)
415.9 2	18 3	648.71	(5/2 ⁻ to 11/2 ⁻)	232.86	(9/2 ⁻)
419.4 2	14 3	514.18	(3/2 ⁻ to 9/2 ⁻)	94.86	(7/2 ⁻)
514.0 3	34 6	514.18	(3/2 ⁻ to 9/2 ⁻)	0.0	(5/2 ⁻)
553.8 2	20 2	648.71	(5/2 ⁻ to 11/2 ⁻)	94.86	(7/2 ⁻)
^x 560.7 3	8 4				
^x 606.1 2	17 4				
^x 909.8 3	17 4				

† From **1984Sh03**.^x γ ray not placed in level scheme.

$^{105}\text{Nb} \beta^-$ decay (2.91 s) 1995Li13,1984Sh03

Decay Scheme

Intensities: Relative I_γ

Legend

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

$(5/2^+)$ 0.0 2.91 s 5
 $Q_{\beta^-} = 7422.10$ % $\beta^- = 100.0$
 $^{105}_{41}\text{Nb}_{64}$

