

Adopted Levels, Gammas

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	D. Abriola(a), A. A. Sonzogni		NDS 109,2501 (2008)	1-Apr-2008

$Q(\beta^-)=3187$ 4; $S(n)=6893$ 4; $S(p)=7234$ 4; $Q(\alpha)=-3215$ 10 [2012Wa38](#)

Note: Current evaluation has used the following Q record 3187 3 6893 3 7235 4 -3215 10 [2003Au03](#).

 ^{96}Nb LevelsCross Reference (XREF) Flags

A	$^{94}\text{Zr}(\alpha, d)$	D	$^{98}\text{Mo}(d, \alpha)$
B	$^{96}\text{Zr}(p, n\gamma)$	E	$^{97}\text{Mo}(t, \alpha)$
C	$^{96}\text{Zr}(^3\text{He}, t)$		

E(level) [†]	J ^π [#]	T _{1/2} ^a	XREF	Comments
0	6 ⁺	23.35 h 5	ABCDE	$\% \beta^- = 100$ $\mu = 4.976$ 4 (1989Ra17) μ : g=0.8294 6 hfs (1986Ed01). Others: g=0.85 7 ($\gamma(\theta, H, t)$ (1986Du17 , 1985DuZX); g=0.8292 7 hfs (1985Oh08). J^π : J=6 ($\gamma(\theta, T, H)$ (1986Ed01); log ft=5.8 to 5 ⁺ . T _{1/2} : from 1949Ku18 . Other measurement: 23.5 h 5 (1968An03).
44.19 6	(5 ⁺) [@]		ABCDE	
146.10 10	(4 ⁺) [@]	<0.8 ns	BCDE	
184.58 12	(3 ⁺) [@]	<0.8 ns	BCDE	
233 [‡] 5	(7 ⁺) [@]		A CDE	
511.84 15	(2 ⁻) ^{&}	<0.4 ns	BCDE	
634.96 19	(2 ⁺) [@]	<1.4 ns	BCDE	
694.62 16	(3 ⁻)	<1.4 ns	ABCD	
867.9 3	(3 ⁻) ^{&}		ABCDE	
1002.67 18	(3 ⁻ , 2 ⁻)		AB D	
1045.4 4	(4, 3)		B D	
1116 10			D	
1140.7 3	(0 ⁻ , 2)		B	
1156.1 5			B D	
1242.4? 4	(3)		AB D	
1258.2 8			B	
1270.18 21			B	
1325.6? 4	(4)		B D	
1346.3 3			B	
1368.5 3			B D	
1427 5			A D	
1498.5 4	(0, 3)		B D	
1519.9? 6	(3, 0)		B	
1537 10			D	
1614.7? 4			B D	
1652 10			D	
1720 10			A D	
1810 10			D	
1872 10			A D	
1937 10			D	
1973 10			D	
2100 30			A	
2240 30			A	
2380 30			A	

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Adopted Levels, Gammas (continued) ^{96}Nb Levels (continued)

<u>E(level)[†]</u>	<u>XREF</u>
2470 30	A
2730 40	A
2960 40	A

[†] From least-squares fit to $E\gamma$, unless otherwise noted.

[‡] From ($^3\text{He},t$).

[#] From Hauser-Feshbach analysis and mult of γ 's. Additionally, transfer reactions and comparisons with shell model calculations and nearby nuclides.

@ Member of the configuration= $((\pi g_{9/2})(\nu d_{5/2}))$ multiplet (see ($^3\text{He},t$)).

& Member of the configuration= $((\pi p_{1/2})(\nu d_{5/2}))$ multiplet.

^a From $(p,n\gamma)$ if not indicated otherwise.

<u>$\gamma(^{96}\text{Nb})$</u>									
<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>$E_\gamma^\dagger$</u>	<u>$I_\gamma^\ddagger$</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Mult.[†]</u>	<u>$\delta^\dagger$</u>	<u>$\alpha^\#$</u>	<u>Comments</u>
44.19	(5 ⁺)	44.19 6	100	0	6 ⁺				
146.10	(4 ⁺)	101.91 8	100	44.19	(5 ⁺)	M1		0.214	$\alpha(K)=0.188$ 3; $\alpha(L)=0.0221$ 4; $\alpha(M)=0.00390$ 6; $\alpha(N)=0.000569$ 8; $\alpha(O)=3.22\times 10^{-5}$ 5 $\alpha(N+..)=0.000601$ 9 B(M1)(W.u.)>0.021
184.58	(3 ⁺)	38.48 6	100	146.10	(4 ⁺)				
511.84	(2 ⁻)	327.29 12	100	184.58	(3 ⁺)	E1		0.00409 6	$\alpha(K)=0.00361$ 5; $\alpha(L)=0.000402$ 6; $\alpha(M)=7.06\times 10^{-5}$ 10; $\alpha(N)=1.029\times 10^{-5}$ 15; $\alpha(O)=5.80\times 10^{-7}$ 9 $\alpha(N+..)=1.087\times 10^{-5}$ 16 B(E1)(W.u.)> 2.3×10^{-5}
634.96	(2 ⁺)	450.37 16	100	184.58	(3 ⁺)	M1		0.00451 7	$\alpha(K)=0.00397$ 6; $\alpha(L)=0.000447$ 7; $\alpha(M)=7.88\times 10^{-5}$ 11; $\alpha(N)=1.155\times 10^{-5}$ 17; $\alpha(O)=6.72\times 10^{-7}$ 10 $\alpha(N+..)=1.222\times 10^{-5}$ 18 B(M1)(W.u.)>0.00017
694.62	(3 ⁻)	182.80 8	100 2	511.84	(2 ⁻)	M1		0.0438	$\alpha(K)=0.0385$ 6; $\alpha(L)=0.00445$ 7; $\alpha(M)=0.000786$ 11; $\alpha(N)=0.0001149$ 17; $\alpha(O)=6.57\times 10^{-6}$ 10 $\alpha(N+..)=0.0001214$ 17 B(M1)(W.u.)>0.0021
867.9	(3 ⁻)	510.0 2 356.01 25	20 6 100	184.58 (3 ⁺) 511.84 (2 ⁻)		M1		0.00798 12	$\alpha(K)=0.00702$ 10; $\alpha(L)=0.000796$ 12; $\alpha(M)=0.0001403$ 20; $\alpha(N)=2.06\times 10^{-5}$ 3 $\alpha(O)=1.191\times 10^{-6}$ 17; $\alpha(N+..)=2.17\times 10^{-5}$
1002.67	(3 ⁻ ,2 ⁻)	308.05 12	100 3	694.62 (3 ⁻)		M1+E2	1.3 +13-5	0.0174 24	$\alpha(K)=0.0152$ 20; $\alpha(L)=0.0019$ 3; $\alpha(M)=0.00033$ 5;

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Adopted Levels, Gammas (continued) $\gamma(^{96}\text{Nb})$ (continued)

<u>$E_i(\text{level})$</u>	<u>J_i^π</u>	<u>$E_\gamma^\dagger$</u>	<u>$I_\gamma^\ddagger$</u>	<u>E_f</u>	<u>J_f^π</u>	<u>Comments</u>
						$\alpha(\text{N})=4.7\times 10^{-5}$ 7; $\alpha(\text{O})=2.4\times 10^{-6}$ 3 $\alpha(\text{N}+..)=5.0\times 10^{-5}$ 8
1002.67	(3 ⁻ ,2 ⁻)	818.0 3	14.2 17	184.58	(3 ⁺)	
1045.4	(4,3)	899.3 4	100	146.10	(4 ⁺)	
1140.7	(0 ⁻ ,2)	628.90 24	100	511.84	(2 ⁻)	
1156.1		644.3 5	100	511.84	(2 ⁻)	
1242.4?	(3)	1057.8 @ 4	100	184.58	(3 ⁺)	
1258.2		746.4 8	100	511.84	(2 ⁻)	
1270.18		267.50 @ 20	17.4 30	1002.67	(3 ⁻ ,2 ⁻)	
		575.58 20	100 5	694.62	(3 ⁻)	
		758.3 4	<52	511.84	(2 ⁻)	
1325.6?	(4)	1179.5 @ 4	100	146.10	(4 ⁺)	
1346.3		651.72 24	100	694.62	(3 ⁻)	
1368.5		674.0 6	77 10	694.62	(3 ⁻)	
		733.5 3	100 6	634.96	(2 ⁺)	
1498.5	(0,3)	986.7 4	100	511.84	(2 ⁻)	
1519.9?	(3,0)	1008.1 @ 6	100	511.84	(2 ⁻)	
1614.7?		1430.1 @ 4	100	184.58	(3 ⁺)	

[†] From (p,n γ).[‡] Branching ratios for each level deduced from (p,n γ).# 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.

@ Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas**Level Scheme**

Intensities: Type not specified

Legend

- $I_\gamma < 2\% \times I_\gamma^{\max}$
 —→ $I_\gamma < 10\% \times I_\gamma^{\max}$
 —→ $I_\gamma > 10\% \times I_\gamma^{\max}$
 - - - - -→ γ Decay (Uncertain)

