

${}^{90}\text{Zr}(\alpha, p\gamma)$ 1973Ta10

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

1973Ta10: $E\alpha=14.77$ MeV, Ge(Li) detectors; measured γ spectra and $\gamma(\theta)$ (at 5 angles) in coincidence with protons, $T_{1/2}$ from DSAM.

 ${}^{93}\text{Nb}$ Levels

E(level) [†]	J^π [#]	$T_{1/2}$ [‡]	Comments
0	9/2 ⁺		J^π : adopted value.
31	1/2 ⁻		J^π : adopted value.
687	3/2	0.28 ps +48-14	
744	7/2,11/2	>0.7 ps	J^π : 5/2 eliminated on basis of implied $\delta(Q,O)=-1.0$ for 744 γ .
808	5/2 to 11/2	>2.8 ps	
810	3/2,5/2	>1.0 ps	adopted J=5/2.
950	9/2,13/2		adopted J=13/2.
979	7/2,11/2		
1082	9/2		J^π : if J(744 level)=7/2.
1127	$\leq 7/2$		

[†] Rounded-off value from Adopted Levels.

[‡] From DSA measurements.

[#] From $\gamma(\theta)$.

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

E_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Mult. [‡]	δ [‡]	Comments
(31)	31	1/2 ⁻	0	9/2 ⁺			
318	1127	$\leq 7/2$	808	5/2 to 11/2			E_γ : 318 γ in (n,n' γ) is multiplet deexciting both 1126 and 1297 levels; however, the relatively stronger 553 γ and 1297 γ , which also deexcite the 1297 level in (n,n' γ), were not observed by 1973Ta10. $A_2=+0.07$ 16, $A_4=+0.07$ 23.
339	1082	9/2	744	7/2,11/2	D+Q	-0.12 -9+7	
656	687	3/2	31	1/2 ⁻	D+Q	-0.13 +9-14	δ : -1.3 4 also possible, but violates RUL.
744	744	7/2,11/2	0	9/2 ⁺	D+Q	+0.25 +9-6	δ : if J=7/2.
780	810	3/2,5/2	31	1/2 ⁻			$\delta(Q,O)=-0.15$ 20 if J=5/2; $\delta(D,Q)=+0.64$ +17-12 if J=3/2.
808	808	5/2 to 11/2	0	9/2 ⁺			$\delta(Q,O)=-0.03$ +6-8 if J=5/2.
950	950	9/2,13/2	0	9/2 ⁺			$\delta(Q,O)=-0.18$ 18 if J=13/2; $\delta(D,Q)=+1.0$ +4-3 if J=9/2.
979	979	7/2,11/2	0	9/2 ⁺	Q+D		$\delta(D,Q)=-0.27$ -13+9 if J=11/2.

[†] Rounded-off value from Adopted Gammas.

[‡] From $\gamma(\theta)$, except As noted.

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Legend

Level Scheme-----> γ Decay (Uncertain)