

^{158}Nd IT decay **2016Id02**

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 141, 1 (2017)	1-Feb-2017

Parent: ^{158}Nd : E=1648.1 14; $J^\pi=(6^-)$; $T_{1/2}=339$ ns 20; %IT decay=?

2016Id02, **2015TaZX**: $^9\text{Be}(^{238}\text{U},\text{F})$, E=345 MeV/nucleon; measured fission fragments separated and identified by BigRIPS in-flight separator, delayed E_γ , I_γ using WAS3ABi active stopper and EURICA γ -ray spectrometer. $^{158,160}\text{Nd}$ deduced γ -ray energy spectra, γ -ray time spectra gated on specified γ transitions, isomeric transitions $T_{1/2}$.

All data are from **2016Id02**.

 ^{158}Nd Levels

E(level) [†]	J^π [‡]	$T_{1/2}$	Comments
0.0 [#]	0 ⁺	0.820 s +15–36	$\% \beta^- = 100$ $T_{1/2}, \% \beta^-$: from Adopted Levels.
65.9 [#] 10	(2 ⁺)		
217.6 [#] 12	(4 ⁺)		
451.0 [#] 13	(6 ⁺)		
1648.1 14	(6 ⁻)	339 ns 20	CONF= $\nu 5/2[523] \otimes \nu 7/2[633]$. J^π : based on coin relations and decay pattern; $K^\pi=(6^-)$ (2016Id02), which corrects $K^\pi=(7^-)$, $\pi 5/2[532] \otimes \pi 9/2[404]$ (2015TaZX). 2016Id02 argue that the latter state is energetically unfavored and lie about 200 keV higher in energy than the former state. $T_{1/2}$: from $\gamma(t)$ (2016Id02 , 2015TaZX).

[†] From E_γ values.

[‡] Postulated by **2016Id02** based on analogy with ^{156}Nd (**2009Si21**) and the expected rotational character of these nuclei.

[#] Band(A): G.s. rotational band.

 $\gamma(^{158}\text{Nd})$

E_γ	I_γ	$E_i(\text{level})$	J^π_i	E_f	J^π_f	Mult.	$\alpha^\dagger$	Comments
(65.9 10)		65.9	(2 ⁺)	0.0	0 ⁺	[E2]	10.2 7	$\alpha(K)=3.45$ 12; $\alpha(L)=5.3$ 4; $\alpha(M)=1.21$ 10 $\alpha(N)=0.260$ 20; $\alpha(O)=0.0329$ 25; $\alpha(P)=0.000148$ 6 E_γ : estimated from moment of inertia (2016Id02) by including the unc of the measured γ rays.
151.7 5	66 9	217.6	(4 ⁺)	65.9 (2 ⁺)	[E2]	0.503 10		$\alpha(K)=0.345$ 6; $\alpha(L)=0.1239$ 25; $\alpha(M)=0.0278$ 6 $\alpha(N)=0.00605$ 12; $\alpha(O)=0.000805$ 16; $\alpha(P)=1.65 \times 10^{-5}$ 3
233.4 5	102 9	451.0	(6 ⁺)	217.6 (4 ⁺)	[E2]	0.1173 19		$\alpha(K)=0.0895$ 14; $\alpha(L)=0.0218$ 4; $\alpha(M)=0.00482$ 8 $\alpha(N)=0.001054$ 18; $\alpha(O)=0.0001452$ 24; $\alpha(P)=4.69 \times 10^{-6}$ 8
1197.1 5	99 12	1648.1	(6 ⁻)	451.0 (6 ⁺)	[E1]	6.98×10^{-4}		$\alpha(K)=0.000580$ 9; $\alpha(L)=7.29 \times 10^{-5}$ 11; $\alpha(M)=1.529 \times 10^{-5}$ 22 $\alpha(N)=3.42 \times 10^{-6}$ 5; $\alpha(O)=5.20 \times 10^{-7}$ 8; $\alpha(P)=3.44 \times 10^{-8}$ 5; $\alpha(\text{IPF})=2.61 \times 10^{-5}$ 5

[†] Additional information 1.

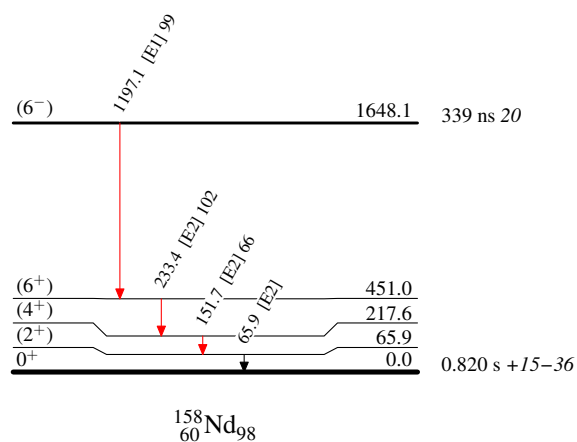
^{158}Nd IT decay 2016Id02

Decay Scheme

Intensities: Relative I_γ
 %IT=?

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)



^{158}Nd IT decay 2016Id02

