

Adopted Levels, Gammas

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

$Q(\beta^-)=5035$ (syst) 201; $S(n)=5664$ (syst) 202; $S(p)=12803$ (syst) 361; $Q(\alpha)=-4260$ (syst) 283 [2017Wa10](#)
 $S(2n)=9724$ (syst) 202; $S(2p)=23813$ (syst) 361; $Q(\beta^-n)=171$ (syst) 200 [2017Wa10](#)

Additional information 1.

[1997Be12](#): this nuclide was observed in projectile fission of ^{238}U at a beam energy of 750 MeV/nucleon with fragment separator at GSI ([1997Be12](#), figure 7). No decay or structure data measured.

[2012Ku26](#): measured production cross-section $\sigma=201$ 11 nb in reaction with ^{238}U impinging on Be target at 1 GeV/nucleon using fragment separator at GSI.

[2016Id02](#), [2015TaZX](#): $^9\text{Be}(^{238}\text{U},\text{F})$, $E=345$ MeV/nucleon, see ^{158}Nd IT Decay dataset.

All data are from [2016Id02](#), ^{158}Nd IT Decay dataset, unless noted otherwise.

[2017Wu04](#): ^{158}Nd nuclides produced at the RIBF-RIKEN facility using the $^9\text{Be}(^{238}\text{U},\text{F})$ reaction at $E=345$ MeV/nucleon.

identification of the nuclide of interest made in the BigRIPS separator by determining the atomic number and the mass-to-charge ratio of the ion using the tof-B ρ - ΔE method. The reaction products were transported through the ZeroDegree Spectrometer and implanted into the beta-counting system WAS3ABi that was surrounded by the EURICA array comprising of 84 HPGe detectors. Measured: implanted ion- β^- -t, implanted ion- β^- - γ -t and implanted ions- γ -t correlations. Deduced: $T_{1/2}$.

α : [Additional information 2.](#)

δ : [Additional information 3.](#)

^{158}Nd Levels

Cross Reference (XREF) Flags

A ^{158}Nd IT decay

E(level) [†]	J π [‡]	$T_{1/2}$	XREF	Comments
0.0 [#]	0 ⁺	0.820 s +15-36	A	$\% \beta^- = 100$; $\% \beta^- n = ?$ $T_{1/2}$: From 2017Wu04 following a fit to the implanted ion- β^- -t spectrum using the least-squares and maximum-likelihood methods. The data analysis included contributions from the parent, daughter and grand-daughter decays, as well as a constant background.
65.9 [#] 10	(2 ⁺)		A	
217.6 [#] 12	(4 ⁺)		A	
451.0 [#] 13	(6 ⁺)		A	
1648.1 14	(6 ⁻)	339 ns 20	A	configuration= $\nu 5/2[523] \otimes \nu 7/2[633]$. 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.

Adopted Levels, Gammas (continued)

							$\gamma(^{158}\text{Nd})$		
$E_i(\text{level})$	J_i^π	E_γ	I_γ	E_f	J_f^π	Mult.	α	Comments	
65.9	(2 ⁺)	(65.9 10)	100	0.0	0 ⁺	[E2]	10.2 7	$\alpha(\text{K})=3.45$ 12; $\alpha(\text{L})=5.3$ 4; $\alpha(\text{M})=1.21$ 10; $\alpha(\text{N})=0.260$ 20; $\alpha(\text{O})=0.0329$ 25; $\alpha(\text{P})=0.000148$ 6 E_γ : estimated from moment of inertia (2016Id02) by including the unc of the measured γ rays.	
217.6	(4 ⁺)	151.7 5	100	65.9	(2 ⁺)	[E2]	0.503 10	$\alpha(\text{K})=0.345$ 6; $\alpha(\text{L})=0.1239$ 25; $\alpha(\text{M})=0.0278$ 6; $\alpha(\text{N})=0.00605$ 12; $\alpha(\text{O})=0.000805$ 16 $\alpha(\text{P})=1.65 \times 10^{-5}$ 3	
451.0	(6 ⁺)	233.4 5	100	217.6	(4 ⁺)	[E2]	0.1173 19	$\alpha(\text{K})=0.0895$ 14; $\alpha(\text{L})=0.0218$ 4; $\alpha(\text{M})=0.00482$ 8; $\alpha(\text{N})=0.001054$ 18; $\alpha(\text{O})=0.0001452$ 24 $\alpha(\text{P})=4.69 \times 10^{-6}$ 8	
1648.1	(6 ⁻)	1197.1 5	100	451.0	(6 ⁺)	[E1]	6.98×10^{-4}	$\alpha(\text{K})=0.000580$ 9; $\alpha(\text{L})=7.29 \times 10^{-5}$ 11; $\alpha(\text{M})=1.529 \times 10^{-5}$ 22; $\alpha(\text{N})=3.42 \times 10^{-6}$ 5; $\alpha(\text{O})=5.20 \times 10^{-7}$ 8 $\alpha(\text{P})=3.44 \times 10^{-8}$ 5	

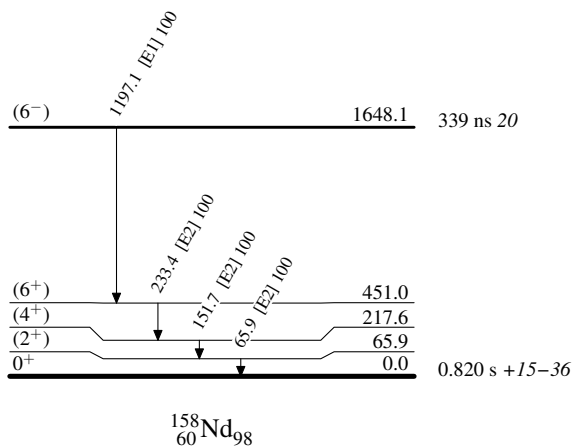
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Legend

Level Scheme

Intensities: Relative photon branching from each level

-----▶ γ Decay (Uncertain)



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