^{160}Nd IT decay 2016Id02

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 176, 1 (2021)	1-May-2021

Parent: ^{160}Nd: E=1107.9 *9*; $J^\pi=(4^-)$; $T_{1/2}$=1.63 μs *21*; %IT decay=100.0

2017Wu04, 2016Id02, 2015TaZX: ^{9}Be(^{238}U,F), E=345 MeV/nucleon; measured fission fragments separated and identified by BigRIPS in-flight separator, delayed Eγ, Iγ using WAS3ABi active stopper and EURICA γ-ray spectrometer. ^{158,160}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.

^{160}Nd Levels

E(level)†	J^π‡	$T_{1/2}$	Comments
0.0#	0^+	439 ms *37*	%β^-=100; %β^-n=? $T_{1/2}$: from Adopted Levels.
65.2# *5*	(2^+)		
215.1# *7*	(4^+)		
1107.9@ *9*	(4^-)	1.63 μs *21*	configuration: ν1/2[521] ⊗ ν7/2[633]. J^π: based on coin relations and decay pattern; $K^\pi=(4^-)$ (2016Id02, 2015TaZX). The only two quasiparticle states predicted below 1.5 MeV have spins 4^- and 7^-; 4^- more likely based on configuration and predicted energy 1.07 MeV in agreement with the observed energy. $T_{1/2}$: from γ(t) (2016Id02, 2015TaZX).

† From Eγ values.

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

Band(A): $K^\pi=0^+$ ground-state band.

@ Band(B): $K^\pi=(4^-)$ ν1/2[521] ⊗ ν7/2[633] bandhead.

γ(^{160}Nd)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	α†	Comments
65.2 *5*	7 *2*	65.2	(2^+)	0.0	0^+	[E2]	10.7 *4*	α(K)=3.53 *8*; α(L)=5.55 *22*; α(M)=1.27 *5* α(N)=0.274 *11*; α(O)=0.0346 *14*; α(P)=0.000152 *4*
149.9 *5*	66 *5*	215.1	(4^+)	65.2	(2^+)	[E2]	0.524 *10*	α(K)=0.358 *7*; α(L)=0.130 *3*; α(M)=0.0293 *6* α(N)=0.00637 *13*; α(O)=0.000846 *17*; α(P)=1.71×10^{-5} *3*
892.8 *5*	97 *8*	1107.9	(4^-)	215.1	(4^+)	[E1]	1.16×10^{-3}	α(K)=0.001000 *14*; α(L)=0.0001271 *18*; α(M)=2.67×10^{-5} *4* α(N)=5.96×10^{-6} *9*; α(O)=9.05×10^{-7} *13*; α(P)=5.91×10^{-8} *9* Reduced hindrance f_ν=1717 *74* for ν=3 (by the evaluator). Additional information 1.

† 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.

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Decay Scheme

Intensities: Relative I_γ

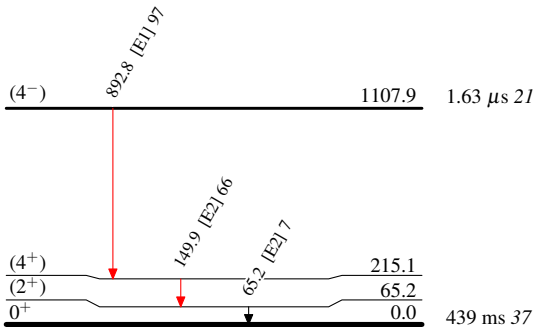
%IT=100.0

Legend

$I_\gamma < 2\% \times I_\gamma^{max}$

$I_\gamma < 10\% \times I_\gamma^{max}$

$I_\gamma > 10\% \times I_\gamma^{max}$



$^{160}_{60}Nd_{100}$

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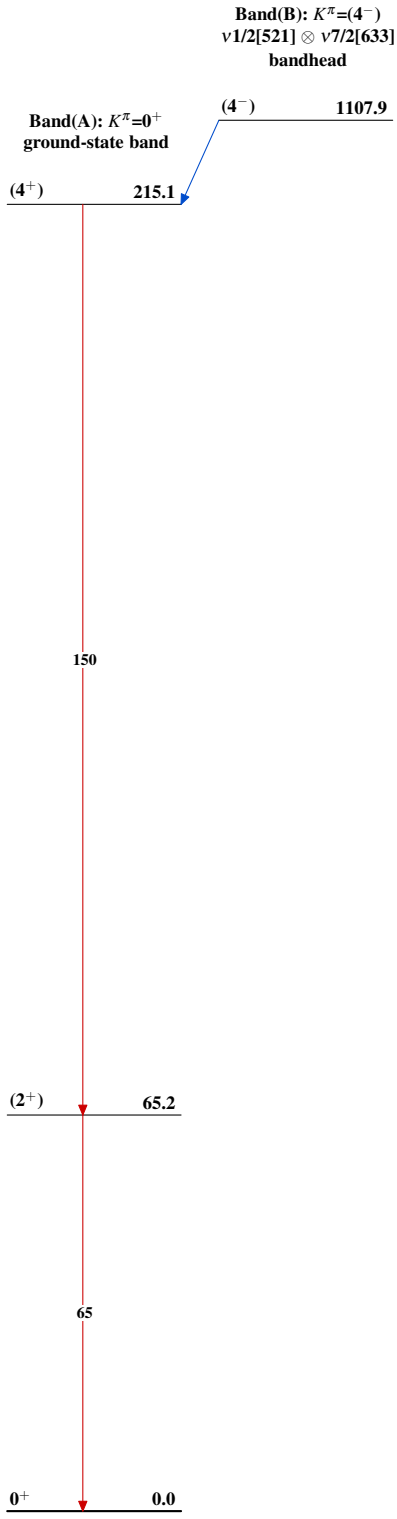

$^{160}_{60}Nd_{100}$