^{131}Nd ε decay 1996Ge12,1993GeZZ

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, I. Mitropolsky, A. Rodionov	NDS 107, 2715 (2006)	17-Jul-2006

Parent: ^{131}Nd: E=0.0; J$^{\pi}$=(5/2^{+}); $T_{1/2}$=26.0 s *11*; Q(ε)=6510 *60*; %ε+%β^{+} decay=100.0

1996Ge12: ^{131}Nd ε decay [from ^{94}Mo(^{40}Ca,2pn), E=255 MeV]; measured Eγ, Iγ, ce, $\gamma\gamma$, xγ, ceγ(t), xγ(t). He-jet transport, magnetic selector, Ge, Si(Li) detectors.

Others: 1996Gi08, 1983ViZU.

^{131}Pr Levels

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	Comments
0.0	3/2^{+}	1.51 min *2*	$T_{1/2}$: from Adopted Levels.
87.57 *12*	5/2^{+}		
251.69 *15*	7/2^{+}		
261.95 *13*	(5/2, 7/2)$^{+}$		
448.51 *18*	9/2^{+}		
450.11 *17*	7/2^{+}		
515.74 *19*	(3/2, 5/2, 7/2)$^{+}$		
556.93 *19*	(5/2, 7/2, 9/2)$^{+}$		
571.96 *21*			
668.87 *20*	(7/2, 9/2)$^{+}$		
679.6 *3*	11/2^{+}		
680.97 *21*			
724.07 *17*			
772.6 *5*			
787.50 *21*			
799.0 *4*			
828.58 *25*			
892.5 *4*			
923.64 *22*			
975.29 *19*	(9/2^{+})		
1075.99 *18*			
1239.7 *7*			

† From least-squares fit to Eγ's.
‡ As in 1996Ge12: from multipolarities of γ's, level scheme and systematics.

ε,β^{+} radiations

E(decay)	E(level)	Iβ^{+} [‡]	Iε[†‡]	Log *ft*	I($\varepsilon+\beta^{+}$)[‡]	Comments
(5.27×10^{3} *6*)	1239.7	1.41 *18*	0.25 *3*	6.23 *7*	1.66 *21*	av Eβ=1943 *29*; εK=0.129 *5*; εL=0.0179 *7*; εM+=0.00505 *19*
(5.43×10^{3} *6*)	1075.99	0.87 *20*	0.14 *3*	6.51 *11*	1.01 *23*	av Eβ=2020 *29*; εK=0.117 *5*; εL=0.0162 *6*; εM+=0.00460 *17*
(5.53×10^{3} *6*)	975.29	0.88 *20*	0.13 *3*	6.56 *11*	1.01 *23*	av Eβ=2068 *29*; εK=0.111 *4*; εL=0.0153 *6*; εM+=0.00434 *15*
(5.59×10^{3} *6*)	923.64	2.8 *3*	0.41 *5*	6.07 *7*	3.2 *4*	av Eβ=2092 *29*; εK=0.107 *4*; εL=0.0149 *6*; εM+=0.00421 *15*
(5.62×10^{3} *6*)	892.5	1.33 *20*	0.19 *3*	6.41 *8*	1.52 *23*	av Eβ=2107 *29*; εK=0.106 *4*; εL=0.0146 *5*; εM+=0.00414 *15*
(5.68×10^{3} *6*)	828.58	2.6 *4*	0.35 *5*	6.16 *7*	2.9 *4*	av Eβ=2137 *29*; εK=0.102 *4*; εL=0.0141 *5*; εM+=0.00400 *14*
(5.71×10^{3} *6*)	799.0	2.1 *4*	0.28 *5*	6.25 *8*	2.4 *4*	av Eβ=2151 *29*; εK=0.100 *4*; εL=0.0139 *5*; εM+=0.00393

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^{131}Nd ε decay 1996Ge12,1993GeZZ (continued)

ϵ,β^+ radiations (continued)

E(decay)	E(level)	Iβ^+ ‡	Iε †‡	Log *ft*	I($\varepsilon+\beta^+$) ‡	Comments
						14
(5.72×10^3 *6*)	787.50	2.5 *4*	0.33 *5*	6.19 *7*	2.8 *4*	av Eβ=2157 *29*; εK=0.100 *4*; εL=0.0138 *5*; εM+=0.00391 *14*
(5.74×10^3 *6*)	772.6	0.60 *11*	0.079 *15*	6.81 *9*	0.68 *13*	av Eβ=2164 *29*; εK=0.099 *4*; εL=0.0137 *5*; εM+=0.00388 *13*
(5.79×10^3 *6*)	724.07	2.8 *4*	0.36 *6*	6.15 *8*	3.2 *5*	av Eβ=2187 *29*; εK=0.096 *4*; εL=0.0133 *5*; εM+=0.00377 *13*
(5.83×10^3 *6*)	680.97	2.2 *4*	0.28 *5*	6.28 *8*	2.5 *4*	av Eβ=2207 *29*; εK=0.094 *4*; εL=0.0130 *5*; εM+=0.00369 *13*
(5.83×10^3 *6*)	679.6	1.05 *19*	0.131 *24*	6.60 *9*	1.18 *21*	av Eβ=2208 *29*; εK=0.094 *4*; εL=0.0130 *5*; εM+=0.00368 *13*
(5.84×10^3 *6*)	668.87	3.3 *5*	0.41 *7*	6.11 *8*	3.7 *6*	av Eβ=2213 *29*; εK=0.093 *3*; εL=0.0130 *5*; εM+=0.00366 *13*
(5.94×10^3 *6*)	571.96	3.3 *4*	0.39 *5*	6.15 *7*	3.7 *5*	av Eβ=2259 *29*; εK=0.089 *3*; εL=0.0123 *4*; εM+=0.00348 *12*
(5.95×10^3 *6*)	556.93	6.9 *8*	0.80 *10*	5.84 *6*	7.7 *9*	av Eβ=2266 *29*; εK=0.088 *3*; εL=0.0122 *4*; εM+=0.00345 *12*
(5.99×10^3 *6*)	515.74	4.0 *6*	0.46 *7*	6.08 *8*	4.5 *7*	av Eβ=2286 *29*; εK=0.086 *3*; εL=0.0119 *4*; εM+=0.00337 *11*
(6.06×10^3 *6*)	450.11	9.4 *11*	1.02 *12*	5.75 *6*	10.4 *12*	av Eβ=2317 *29*; εK=0.083 *3*; εL=0.0115 *4*; εM+=0.00326 *11*
(6.06×10^3 *6*)	448.51	5.9 *9*	0.64 *10*	5.95 *8*	6.5 *10*	av Eβ=2318 *29*; εK=0.083 *3*; εL=0.0115 *4*; εM+=0.00326 *11*
(6.25×10^3 *6*)	261.95	15.2 *17*	1.49 *18*	5.61 *6*	16.7 *19*	av Eβ=2407 *29*; εK=0.0756 *24*; εL=0.0105 *4*; εM+=0.00296 *10*
(6.26×10^3 *6*)	251.69	7.7 *13*	0.75 *13*	5.91 *8*	8.5 *14*	av Eβ=2412 *29*; εK=0.0752 *24*; εL=0.0104 *4*; εM+=0.00294 *10*
(6.42×10^3 *6*)	87.57	17 *10*	1.5 *9*	5.6 *3*	19 *11*	av Eβ=2490 *29*; εK=0.0693 *21*; εL=0.0096 *3*; εM+=0.00271 *9*

† From net feeding of each level assuming no feeding to g.s.
‡ Absolute intensity per 100 decays.

γ(^{131}Pr)

Iγ normalization: from ΣI_γ(1+ce)=100 to g.s.
All data from 1996Ge12, except as noted.

E$_\gamma$	I$_\gamma$ #	E$_i$(level)	J$^\pi_i$	E$_f$	J$^\pi_f$	Mult. ‡	α @	Comments
87.6 *2*	180 *20*	87.57	5/2$^+$	0.0	3/2$^+$	M1	1.93	α(L)exp=0.26 *9*; K/L=8 *2* α(K)=1.64 *5*; α(L)=0.226 *7*; α(M)=0.0474 *15*; α(N+..)=0.0130 *4*
164.2 *2*	100	251.69	7/2$^+$	87.57	5/2$^+$	M1,(E2)	0.35 *3*	α(K)exp=0.24 *6*; K/L=9 *4* α(K)=0.272 *5*; α(L)=0.061 *23*; α(M)=0.013 *6*; α(N+..)=0.0035 *14*
174.5 *2*	76 *3*	261.95	(5/2, 7/2)$^+$	87.57	5/2$^+$	M1,E2	0.289 *15*	α(K)exp=0.23 *7*; K/L=4 *2* α(K)=0.227 *7*; α(L)=0.049 *17*; α(M)=0.010 *4*; α(N+..)=0.0028 *10*
188.4 *3*	2.5 *5*	450.11	7/2$^+$	261.95	(5/2, 7/2)$^+$			
196.7 *3*	26 *3*	448.51	9/2$^+$	251.69	7/2$^+$			

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^{131}Nd ε decay 1996Ge12,1993GeZZ (continued)

γ(^{131}Pr) (continued)

E_γ	I_γ[#]	E_i(level)	J^π_i	E_f	J^π_f	Comments
198.5 *5*	6.5 *15*	450.11	7/2$^+$	251.69	7/2$^+$	
220.5 *2*	5 *1*	668.87	(7/2, 9/2)$^+$	448.51	9/2$^+$	
251.6 *4*	14.0 *15*	251.69	7/2$^+$	0.0	3/2$^+$	
253.8 *4*	4.5 *6*	515.74	(3/2, 5/2, 7/2)$^+$	261.95	(5/2, 7/2)$^+$	
261.9 *2*	24 *2*	261.95	(5/2, 7/2)$^+$	0.0	3/2$^+$	
305.2 *2*	21 *2*	556.93	(5/2, 7/2, 9/2)$^+$	251.69	7/2$^+$	
310.0 *4*	5.0 *5*	571.96		261.95	(5/2, 7/2)$^+$	
360.8 *3*	22 *2*	448.51	9/2$^+$	87.57	5/2$^+$	
362.6 *3*	46 *2*	450.11	7/2$^+$	87.57	5/2$^+$	
406.8 *4*	3.7 *10*	668.87	(7/2, 9/2)$^+$	261.95	(5/2, 7/2)$^+$	
417.1 *4*	8.0 *15*	668.87	(7/2, 9/2)$^+$	251.69	7/2$^+$	
419.5 *5*	1.8 *8*	680.97		261.95	(5/2, 7/2)$^+$	
427.9 *2*	7 *1*	679.6	11/2$^+$	251.69	7/2$^+$	
428.2 *2*	11 *2*	515.74	(3/2, 5/2, 7/2)$^+$	87.57	5/2$^+$	
450.0 *3*	8 *1*	450.11	7/2$^+$	0.0	3/2$^+$	
^{x}460.5[†] *3*	64 *20*					
462.1 *2*	4.2 *4*	724.07		261.95	(5/2, 7/2)$^+$	
469.4 *2*	24.5 *15*	556.93	(5/2, 7/2, 9/2)$^+$	87.57	5/2$^+$	
484.4 *2*	17 *1*	571.96		87.57	5/2$^+$	
515.6 *4*	11 *2*	515.74	(3/2, 5/2, 7/2)$^+$	0.0	3/2$^+$	
525.4[&] *3*	1.5[&] *4*	787.50		261.95	(5/2, 7/2)$^+$	I_γ: from level scheme in authors′ fig.5; I(tot)=3.4 *4* in Table 2 (1996Ge12).
525.4[&] *3*	1.5[&] *4*	975.29	(9/2$^+$)	450.11	7/2$^+$	I_γ: from level scheme in authors′ fig.5; I(tot)=3.4 *4* in Table 2 (1996Ge12).
526.7 *1*	2.5 *5*	975.29	(9/2$^+$)	448.51	9/2$^+$	
535.9 *3*	3.0 *5*	787.50		251.69	7/2$^+$	
547.3 *3*	14.0 *15*	799.0		251.69	7/2$^+$	
576.8 *3*	7 *1*	828.58		251.69	7/2$^+$	
581.1 *3*	5 *1*	668.87	(7/2, 9/2)$^+$	87.57	5/2$^+$	
593.3 *3*	7 *1*	680.97		87.57	5/2$^+$	
627.5 *3*	2.0 *6*	1075.99		448.51	9/2$^+$	
636.5 *3*	4 *1*	724.07		87.57	5/2$^+$	
^{x}641.5[†] *4*	54 *12*					
^{x}668.0[†] *2*	84 *16*					
680.9 *3*	6 *1*	680.97		0.0	3/2$^+$	
685.0 *4*	4.0 *6*	772.6		87.57	5/2$^+$	
700.0 *3*	12.0 *15*	787.50		87.57	5/2$^+$	
724.0 *3*	2 *1*	975.29	(9/2$^+$)	251.69	7/2$^+$	
724.1 *3*	11 *1*	724.07		0.0	3/2$^+$	
741.1 *3*	10 *1*	828.58		87.57	5/2$^+$	
804.9 *3*	9 *1*	892.5		87.57	5/2$^+$	
824.3 *1*	4 *1*	1075.99		251.69	7/2$^+$	
835.8 *3*	8.0 *8*	923.64		87.57	5/2$^+$	
923.9 *3*	11 *1*	923.64		0.0	3/2$^+$	
^{x}1118.0[†] *5*	48 *24*					
1152.0 *8*	4.5 *5*	1239.7		87.57	5/2$^+$	
^{x}1183.4[†]	≈64					
1240 *1*	5.3 *5*	1239.7		0.0	3/2$^+$	

† Assigned to ^{131}Nd ε decay by 1983ViZU on the basis of partial $T_{1/2}$<30 s.

‡ From α(exp).

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^{131}Nd ε decay 1996Ge12,1993GeZZ (continued)

γ(^{131}Pr) (continued)

[#] For absolute intensity per 100 decays, multiply by 0.169 *17*.

[@] 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.

[&] Multiply placed with intensity suitably divided.

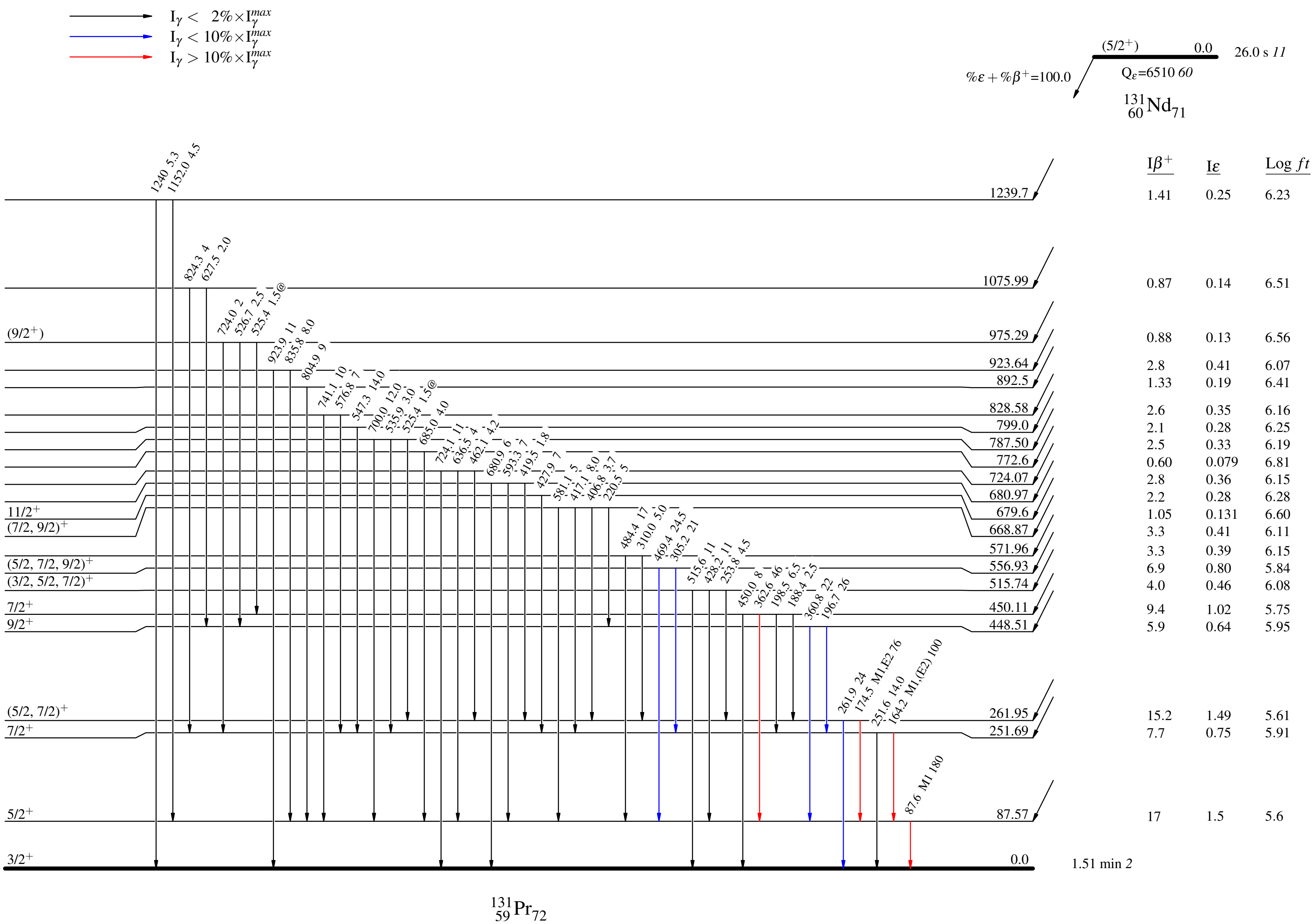
[x] γ ray not placed in level scheme.

^{131}Nd ε decay 1996Ge12,1993GeZZ

Decay Scheme

Intensities: Relative I_γ

@ Multiply placed: intensity suitably divided



$^{131}_{59}Pr_{72}$-5