^{141}Nd ε decay (2.49 h) 1973Bu21

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 187,1 (2023)	12-Oct-2022

Parent: ^{141}Nd: E=0.0; $J^\pi=3/2^+$; $T_{1/2}$=2.49 h *3*; Q(ε)=1823.0 *28*; %ε+%$β^+$ decay=100
^{141}Nd-Q(ε): From 2021Wa16.
Measured: γ, γγ, ce, $β^+$ (1973Bu21,1974HeYW,1969He10,1968Da14,1968Be28,1963Al11).
Except where noted otherwise, the presented data are from 1973Bu21.

^{141}Pr Levels

E(level)†	Jπ‡	$T_{1/2}$‡	E(level)†	Jπ‡	$T_{1/2}$‡
0.0	$5/2^+$	stable	1452?	$(7/2)^+$	0.31 ps *+11−7*
145.31 *16*	$7/2^+$	1.85 ns *3*	1456.1 *5*	$9/2^+$	0.26 ps *+7−5*
1126.96 *17*	$3/2^+$	>188 fs	1580.18 *22*	$5/2^-$	0.22 ps *+6−4*
1292.63 *17*	$(5/2)^+$	0.33 ps *+10−7*	1608.36 *19*	$(3/2)^+$	11.8 fs *7*
1298.61 *21*	$1/2^+$	0.34 ps *+22−10*	1657.1 *4*	$1/2^+$	>0.67 ps
1434.8 *3*	$3/2^+$	0.23 ps *+8−5*			

† From least-squares fit to Eγ′s.
‡ Adopted values.

ε,$β^+$ radiations

I(K x ray)=11120 *430*, I($γ^\pm$)=628 *24*.
ε(K)/$β^+$=31.5 *32* was derived from I(K x ray)/I($γ^\pm$) (1973Bu21); Others: 30.4 *23* (1972Ev01), 28 *1* (1970Bi02), 22 *8* (1968Be28), 32 *3* (1966Gr05).
E($β^+$) to g.s.=802 *3* (1976GaZI). Others: 794 *8* (1973Bu21), 790 *20* (1963Bi19).

E(decay)	E(level)	Iβ+ †	Iε†	Log *ft*	I(ε+β+)†	Comments
(165.9 *28*)	1657.1		0.00095 *25*	7.98 *12*	0.00095 *25*	εK=0.7730 *19*; εL=0.1744 *14*; εM+=0.0526 *5*
(214.6 *28*)	1608.36		0.0184 *25*	6.97 *6*	0.0184 *25*	εK=0.7954 *10*; εL=0.1578 *7*; εM+=0.04684 *24*
(242.8 *28*)	1580.18		0.007 *3*	7.52 *19*	0.007 *3*	εK=0.8033 *7*; εL=0.1519 *6*; εM+=0.04482 *18*
(366.9 *29*)	1456.1		0.00120 *25*	8.69 *9*	0.00120 *25*	εK=0.8217 *3*; εL=0.13817 *20*; εM+=0.04016 *7*
(388.2 *28*)	1434.8		0.0154 *17*	7.64 *5*	0.0154 *17*	εK=0.8235 *3*; εL=0.13681 *17*; εM+=0.03970 *6*
(524.4 *28*)	1298.61		0.127 *15*	7.00 *6*	0.127 *15*	εK=0.8313 *2*; εL=0.13100 *9*; εM+=0.03774 *3*
(530.4 *28*)	1292.63		0.77 *6*	6.23 *4*	0.77 *6*	εK=0.8315 *2*; εL=0.13082 *9*; εM+=0.03768 *3*
(696.0 *28*)	1126.96		0.82 *3*	6.456 *18*	0.82 *3*	εK=0.8364; εL=0.12716 *5*; εM+=0.03645 *2*
1824 *3*	0.0	2.59 *4*	95.64 *10*	5.255 *6*	98.23 *9*	av Eβ=367.0 *13*; εK=0.8232 *3*; εL=0.11720 *5*; εM+=0.03328 *2* E(decay): from 1976GaZI.

† Absolute intensity per 100 decays.

^{141}Nd ε decay (2.49 h) 1973Bu21 (continued)

γ(^{141}Pr)

Iγ normalization: I(1127γ)=0.796% *30* from I(K x ray), I($\gamma^{\pm}$) and ε/β^+(g.s.)=38.3 (theory).
α(K)exp were normalized to α(K)exp(145γ)=0.376 (^{141}Ce β^- decay).

E_γ	I_γ [@]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [†]	δ [#]	α [‡]	Comments
145.45 *30*	30.0 *30*	145.31	7/2$^+$	0.0	5/2$^+$	M1+E2	+0.069 *7*	0.449	%Iγ=0.240 *26* α(K)=0.382 *6*; α(L)=0.0529 *8*; α(M)=0.01115 *17* α(N)=0.00249 *4*; α(O)=0.000401 *7*; α(P)=2.93×10^{-5} *5* δ: from ^{141}Ce β^- decay. Mult.: α(K)exp=0.376 (^{141}Ce β^- decay) used for normalization of α(K)exp.
981.70 *22*	2.73 *29*	1126.96	3/2$^+$	145.31	7/2$^+$	(E2)		0.00221	%Iγ=0.0218 *25* α(K)=0.00189 *3*; α(L)=0.000257 *4*; α(M)=5.41×10^{-5} *8* α(N)=1.206×10^{-5} *17*; α(O)=1.93×10^{-6} *3*; α(P)=1.355×10^{-7} *19*
1126.91 *20*	100	1126.96	3/2$^+$	0.0	5/2$^+$	M1+E2	+0.47 *6*	0.00225 *5*	%Iγ=0.796 *30* α(K)=0.00193 *4*; α(L)=0.000250 *5*; α(M)=5.23×10^{-5} *10* α(N)=1.171×10^{-5} *22*; α(O)=1.89×10^{-6} *4*; α(P)=1.43×10^{-7} *3*; α(IPF)=9.30×10^{-7} *15* Mult.: α(K)exp=0.00167 *33*.
1147.30 *20*	38.4 *15*	1292.63	(5/2)$^+$	145.31	7/2$^+$	E2		1.60×10^{-3}	%Iγ=0.307 *17* α(K)=0.001365 *20*; α(L)=0.000182 *3*; α(M)=3.82×10^{-5} *6* α(N)=8.52×10^{-6} *12*; α(O)=1.365×10^{-6} *20*; α(P)=9.82×10^{-8} *14*; α(IPF)=1.73×10^{-6} *3* Mult.: α(K)exp=0.00114 *24*.
1289.58 *30*	1.23 *19*	1434.8	3/2$^+$	145.31	7/2$^+$	(E2)		1.28×10^{-3}	%Iγ=0.0098 *16* α(K)=0.001079 *16*; α(L)=0.0001418 *20*; α(M)=2.97×10^{-5} *5* α(N)=6.64×10^{-6} *10*; α(O)=1.066×10^{-6} *15*; α(P)=7.77×10^{-8} *11*; α(IPF)=1.92×10^{-5} *3*
1292.64 *20*	57.5 *52*	1292.63	(5/2)$^+$	0.0	5/2$^+$	E2+M1		0.00151 *25*	%Iγ=0.46 *5* α(K)=0.00128 *21*; α(L)=0.00017 *3*; α(M)=3.5×10^{-5} *6* α(N)=7.8×10^{-6} *12*; α(O)=1.26×10^{-6} *20*; α(P)=9.4×10^{-8} *17*; α(IPF)=1.99×10^{-5} *4* Mult.: α(K)exp=0.00086 *19*.
1298.60 *21*	15.9 *17*	1298.61	1/2$^+$	0.0	5/2$^+$	E2		1.26×10^{-3}	%Iγ=0.127 *14* α(K)=0.001064 *15*; α(L)=0.0001397 *20*; α(M)=2.93×10^{-5} *5* α(N)=6.54×10^{-6} *10*; α(O)=1.050×10^{-6} *15*;

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$\gamma(^{141}Pr)$ (continued)

E_γ	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[‡]	Comments
								α(P)=7.66×10^{-8} *11*; α(IPF)=2.08×10^{-5} *3* Mult.: α(K)exp=0.00081 *24*.
1306[&] *1*	≤0.04	1452?	(7/2)$^+$	145.31	7/2$^+$	M1+E2	0.00148 *24*	%Iγ=0.000320 *12* α(K)=0.00126 *21*; α(L)=0.000163 *25*; α(M)=3.4×10^{-5} *6* α(N)=7.6×10^{-6} *12*; α(O)=1.23×10^{-6} *19*; α(P)=9.2×10^{-8} *17*; α(IPF)=2.24×10^{-5} *5*
1310.6 *10*	≈0.05	1456.1	9/2$^+$	145.31	7/2$^+$	M1+E2	0.00147 *24*	%Iγ≈0.000400 α(K)=0.00125 *21*; α(L)=0.000161 *25*; α(M)=3.4×10^{-5} *5* α(N)=7.6×10^{-6} *12*; α(O)=1.22×10^{-6} *19*; α(P)=9.1×10^{-8} *16*; α(IPF)=2.34×10^{-5} *5*
1434.6 *5*	≈0.7	1434.8	3/2$^+$	0.0	5/2$^+$	(E2+M1)	0.00125 *18*	%Iγ≈0.00560 α(K)=0.00103 *16*; α(L)=0.000132 *19*; α(M)=2.8×10^{-5} *4* α(N)=6.2×10^{-6} *9*; α(O)=1.00×10^{-6} *15*; α(P)=7.5×10^{-8} *13*; α(IPF)=5.64×10^{-5} *12*
1435.1 *22*	0.1 *3*	1580.18	5/2$^-$	145.31	7/2$^+$	E1	6.31×10^{-4}	%Iγ=0.0008 *24* α(K)=0.000402 *6*; α(L)=4.99×10^{-5} *8*; α(M)=1.039×10^{-5} *15* α(N)=2.32×10^{-6} *4*; α(O)=3.75×10^{-7} *6*; α(P)=2.84×10^{-8} *4*; α(IPF)=0.000166 *3*
1456.12 *54*	0.10 *3*	1456.1	9/2$^+$	0.0	5/2$^+$	(E2)	1.05×10^{-3}	%Iγ=0.00080 *24* α(K)=0.000851 *12*; α(L)=0.0001105 *16*; α(M)=2.31×10^{-5} *4* α(N)=5.17×10^{-6} *8*; α(O)=8.31×10^{-7} *12*; α(P)=6.13×10^{-8} *9*; α(IPF)=6.23×10^{-5} *9*
1580.17 *22*	0.76 *11*	1580.18	5/2$^-$	0.0	5/2$^+$	(E1)	6.69×10^{-4}	%Iγ=0.0061 *9* α(K)=0.000342 *5*; α(L)=4.23×10^{-5} *6*; α(M)=8.81×10^{-6} *13* α(N)=1.97×10^{-6} *3*; α(O)=3.18×10^{-7} *5*; α(P)=2.41×10^{-8} *4*; α(IPF)=0.000274 *4*
1608.35 *19*	2.3 *3*	1608.36	(3/2)$^+$	0.0	5/2$^+$	(E2+M1)	0.00106 *13*	%Iγ=0.0184 *25* α(K)=0.00081 *11*; α(L)=0.000104 *13*; α(M)=2.2×10^{-5} *3* α(N)=4.8×10^{-6} *7*; α(O)=7.8×10^{-7} *11*; α(P)=5.9×10^{-8} *9*; α(IPF)=0.000120 *4*
1657.04 *40*	0.12 *3*	1657.1	1/2$^+$	0.0	5/2$^+$	(E2)	9.10×10^{-4}	%Iγ=0.00096 *24* α(K)=0.000666 *10*; α(L)=8.55×10^{-5} *12*; α(M)=1.79×10^{-5} *3* α(N)=3.99×10^{-6} *6*; α(O)=6.44×10^{-7} *9*; α(P)=4.80×10^{-8} *7*; α(IPF)=0.0001367 *20*

[†] Adopted values.

[‡] Additional information 1.

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^{141}Nd ε decay (2.49 h) 1973Bu21 (continued)

$\gamma(^{141}Pr)$ (continued)

Additional information 2.
@ For absolute intensity per 100 decays, multiply by 0.0080 *3*.
& Placement of transition in the level scheme is uncertain.

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Decay Scheme

Intensities: I_γ per 100 parent decays

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)