^{142}Nd(^{6}Li,3nγ) 1980Ra01,1980Ba01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 110, 507 (2009)	1-Oct-2008

E=32 MeV.
Measured: γ, $\gamma\gamma$, $\gamma(\theta)$, excitation function (1980Ra01,1980Ba01), ce (1980Ra01), γ(t) (1980Ra01).
^{142}Nd(^{7}Li,4nγ) E=32 MeV (1980Ra01), measured: γ, $\gamma\gamma$.
All data are from 1980Ra01, except where noted otherwise.

^{145}Eu Levels

E(level)	J$^{\pi}$‡	T$_{1/2}$†	Comments
0.0	5/2$^+$		
329.4 *3*	7/2$^+$		
716.0 *3*	11/2$^-$	490 ns *30*	T$_{1/2}$: from 1975Fr18; the value measured by 1980Ra01 is consistent with T$_{1/2}$=490 ns.
1601.2 *4*	11/2$^-$		
1828.5 *4*			
1844.6 *4*	13/2$^-$		
2244.4 *5*	15/2$^+$		
2284.1 *4*	15/2$^-$		
2573.6 *4*	15/2$^-$		
2813.5 *5*	17/2$^-$		
2836.4 *6*	19/2$^-$		
2862.7 *6*	19/2$^-$		
2911.1? *7*	21/2$^-$		
3183.0 *8*	23/2$^-$		
3976.3 *9*	25/2$^+$		
4122.8 *10*	27/2$^+$		

† For all excited levels except 716, T$_{1/2}$<10 ns (1980Ra01).
‡ Adopted values.

γ(^{145}Eu)

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.‡#	δ	α†	Comments
(22.9)		2836.4	19/2$^-$	2813.5	17/2$^-$				
74.7 *3*	30 *10*	2911.1?	21/2$^-$	2836.4	19/2$^-$	D			Mult.: A$_2$=−0.11 *2*, A$_4$=−0.06 *2* (1980Ba01).
146.5 *3*	9 *1*	4122.8	27/2$^+$	3976.3	25/2$^+$	M1+E2	−2.6 *+8−14*	0.623 *10*	α(K)=0.410 *16*; α(L)=0.165 *12*; α(M)=0.038 *3*; α(N+..)=0.0097 *7* α(N)=0.0085 *6*; α(O)=0.00119 *8*; α(P)=3.5×10^{-5} *3* Mult.: A$_2$=−0.311 *27*, A$_4$=+0.043 *35*.
x233.7 *3*	7 *2*								Mult.: A$_2$=+0.08 *3*.
239.5 *3*	51 *3*	2813.5	17/2$^-$	2573.6	15/2$^-$	M1+E2	−3.49 *+41−52*	0.1221 *20*	α(K)=0.0917 *17*; α(L)=0.0236 *4*; α(M)=0.00534 *9*; α(N+..)=0.001382 *22* α(N)=0.001200 *19*; α(O)=0.000174 *3*; α(P)=8.38×10^{-6} *19* Mult.: A$_2$=−0.253 *8*, A$_4$=+0.044 *11*.
262.5 *3*	10 *2*	2836.4	19/2$^-$	2573.6	15/2$^-$	E2		0.0885	α(K)=0.0668 *10*; α(L)=0.01693

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^{142}Nd(^{6}Li,3nγ) 1980Ra01,1980Ba01 (continued)

$\gamma(^{145}Eu)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡#]	δ	α[†]	Comments
									25; α(M)=0.00383 *6*; α(N+..)=0.000990 *15* α(N)=0.000859 *13*; α(O)=0.0001247 *19*; α(P)=6.05×10^{-6} *9* Mult.: A_2=+0.307 *58*, A_4=−0.242 *68*.
271.9 *3*	61 *3*	3183.0	23/2$^-$	2911.1?	21/2$^-$	M1+E2	−1.96 *+16−18*	0.0864 *17*	α(K)=0.0677 *15*; α(L)=0.01459 *22*; α(M)=0.00326 *5*; α(N+..)=0.000851 *13* α(N)=0.000736 *11*; α(O)=0.0001090 *16*; α(P)=6.55×10^{-6} *18* Mult.: A_2=−0.498 *25*, A_4=+0.073 *29*.
329.2 *3*	16 *4*	2573.6	15/2$^-$	2244.4	15/2$^+$				
329.4 *3*	334 *15*	329.4	7/2$^+$	0.0	5/2$^+$	M1		0.0687	α(K)=0.0583 *9*; α(L)=0.00813 *12*; α(M)=0.001753 *25*; α(N+..)=0.000472 *7* α(N)=0.000402 *6*; α(O)=6.38×10^{-5} *9*; α(P)=6.38×10^{-6} *9* Mult.: A_2=+0.01 *2* (1980Ba01).
386.6 *3*	271 *15*	716.0	11/2$^-$	329.4	7/2$^+$	M2		0.1651	α(K)=0.1362 *20*; α(L)=0.0226 *4*; α(M)=0.00497 *7*; α(N+..)=0.001338 *19* α(N)=0.001141 *17*; α(O)=0.000180 *3*; α(P)=1.703×10^{-5} *25* B(M2)(W.u.)=0.183 *18* Mult.: A_2=+0.06 *2* (1980Ba01).
399.8 *3*	34 *2*	2244.4	15/2$^+$	1844.6	13/2$^-$	E1		0.00757 *11*	α=0.00757 *11*; α(K)=0.00646 *10*; α(L)=0.000874 *13*; α(M)=0.000187 *3*; α(N+..)=5.00×10^{-5} *7* α(N)=4.27×10^{-5} *6*; α(O)=6.68×10^{-6} *10*; α(P)=6.26×10^{-7} *9* Mult.: α(K)exp=0.0053 *12*; A_2=−0.250 *11*, A_4=+0.029 *14*.
[x]517									Coin only with 578.6γ.
530.2 *3*	11 *2*	2813.5	17/2$^-$	2284.1	15/2$^-$	M1+E2	−0.44 *+8−7*	0.0187 *5*	α(K)=0.0159 *5*; α(L)=0.00223 *5*; α(M)=0.000481 *10*; α(N+..)=0.000129 *3* α(N)=0.0001101 *23*; α(O)=1.74×10^{-5} *4*; α(P)=1.71×10^{-6} *5* Mult.: α(K)exp=0.022 *4*; A_2=−0.990 *47*, A_4=+0.071 *50*.
552.7 *3*	10 *2*	2836.4	19/2$^-$	2284.1	15/2$^-$	E2		0.01031	α(K)=0.00849 *12*; α(L)=0.001427 *21*;

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^{142}Nd(^{6}Li,3nγ) 1980Ra01,1980Ba01 (continued)

$\gamma(^{145}Eu)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡#]	δ	α[†]	Comments
									α(M)=0.000313 *5*; α(N+..)=8.28×10^{-5} *12* α(N)=7.11×10^{-5} *10*; α(O)=1.088×10^{-5} *16*; α(P)=8.52×10^{-7} *12*
569.3 *3*	8 *2*	2813.5	17/2$^-$	2244.4	15/2$^+$	D			Mult.: α(K)exp=0.0064 *56*; A_2=+0.359 *39*, A_4=−0.074 *45*. Mult.: α(K)exp<0.04 (1980Ra01); A_2=−0.14 *10*, A_4=−0.08 *16* (1980Ba01).
578.6 *3*	29 *3*	2862.7	19/2$^-$	2284.1	15/2$^-$	E2		0.00918 *13*	α=0.00918 *13*; α(K)=0.00758 *11*; α(L)=0.001253 *18*; α(M)=0.000275 *4*; α(N+..)=7.27×10^{-5} *11* α(N)=6.24×10^{-5} *9*; α(O)=9.57×10^{-6} *14*; α(P)=7.64×10^{-7} *11* Mult.: α(K)exp=0.008 *2*; A_2=+0.265 *13*, A_4=−0.070 *16*.
[x]651.8 *3*	8 *1*					D			Mult.: A_2=−0.37 *4*, A_4=+0.03 *5*. Coin relations found in 1980Ra01 did not allow placement between 1368 and 716 levels, contrary to conclusion of 1980Ba01.
716.0 *3*	76 *4*	716.0	11/2$^-$	0.0	5/2$^+$	E3		0.01324	α(K)=0.01051 *15*; α(L)=0.00213 *3*; α(M)=0.000475 *7*; α(N+..)=0.0001252 *18* α(N)=0.0001078 *16*; α(O)=1.632×10^{-5} *23*; α(P)=1.138×10^{-6} *16* B(E3)(W.u.)=4.0 *4*
793.3 *3*	30 *2*	3976.3	25/2$^+$	3183.0	23/2$^-$	E1		0.001693 *24*	α=0.001693 *24*; α(K)=0.001452 *21*; α(L)=0.000190 *3*; α(M)=4.06×10^{-5} *6*; α(N+..)=1.088×10^{-5} *1* α(N)=9.27×10^{-6} *13*; α(O)=1.466×10^{-6} *21*; α(P)=1.446×10^{-7} *21*
885.2 *3*	44 *3*	1601.2	11/2$^-$	716.0	11/2$^-$	M1+E2	−2.5 *+8−79*	0.0037 *3*	Mult.: α(K)exp<0.0022; A_2=−0.256 *14*, A_4=+0.056 *22*. α=0.0037 *3*; α(K)=0.0031 *3*; α(L)=0.00045 *3*; α(M)=9.8×10^{-5} *7*; α(N+..)=2.61×10^{-5} *18* α(N)=2.23×10^{-5} *16*; α(O)=3.50×10^{-6} *25*; α(P)=3.3×10^{-7} *3*
968.5 *3*	46 *3*	2813.5	17/2$^-$	1844.6	13/2$^-$	E2		0.00280 *4*	Mult.: α(K)exp=0.0033 *9*; A_2=−0.239 *11*, A_4=−0.058 *13*. α=0.00280 *4*; α(K)=0.00237 *4*; α(L)=0.000340 *5*; α(M)=7.35×10^{-5} *11*;

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^{142}Nd(^{6}Li,3nγ) 1980Ra01,1980Ba01 (continued)

$\gamma(^{145}Eu)$ (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡#]	δ	α[†]	Comments
									α(N+..)=1.96×10^{-5} *3* α(N)=1.677×10^{-5} *24*; α(O)=2.63×10^{-6} *4*; α(P)=2.43×10^{-7} *4* Mult.: A_2=+0.301 *13*, A_4=−0.041 *17*.
972.0 *3*	32 *2*	2573.6	15/2$^-$	1601.2	11/2$^-$	E2		0.00278 *4*	α=0.00278 *4*; α(K)=0.00235 *4*; α(L)=0.000337 *5*; α(M)=7.29×10^{-5} *11*; α(N+..)=1.95×10^{-5} *3* α(N)=1.663×10^{-5} *24*; α(O)=2.61×10^{-6} *4*; α(P)=2.42×10^{-7} *4* Mult.: α(K)exp=0.0022 *5*; A_2=+0.382 *21*, A_4=−0.004 *27*.
[x]1038.6 *3*	16 *2*					D			Mult.: A_2=−0.10 *4*, A_4=+0.03 *5*.
1128.6 *3*	100 *5*	1844.6	13/2$^-$	716.0	11/2$^-$	M1+E2	+1.30 *+15−25*	0.00247 *13*	α=0.00247 *13*; α(K)=0.00210 *11*; α(L)=0.000287 *14*; α(M)=6.2×10^{-5} *3*; α(N+..)=1.75×10^{-5} *8* α(N)=1.41×10^{-5} *7*; α(O)=2.24×10^{-6} *11*; α(P)=2.20×10^{-7} *13*; α(IPF)=9.00×10^{-7} *18* Mult.: α(K)exp=0.0022 *2*; A_2=+0.575 *7*, A_4=+0.110 *9*.
1499.1 *3*	7 *1*	1828.5		329.4	7/2$^+$	D+Q			Mult.: A_2=−0.60 *10*. E_γ: observed only by 1980Ba01.
1568.1 *3*	64 *3*	2284.1	15/2$^-$	716.0	11/2$^-$	E2		0.001167 *17*	α=0.001167 *17*; α(K)=0.000913 *13*; α(L)=0.0001225 *18*; α(M)=2.63×10^{-5} *4*; α(N+..)=0.000106 α(N)=6.01×10^{-6} *9*; α(O)=9.52×10^{-7} *14*; α(P)=9.41×10^{-8} *14*; α(IPF)=9.89×10^{-5} *14* Mult.: A_2=+0.255 *9*, A_4=−0.021.
1858.0 *3*	25 *2*	2573.6	15/2$^-$	716.0	11/2$^-$	E2		0.000999 *14*	α=0.000999 *14*; α(K)=0.000665 *10*; α(L)=8.80×10^{-5} *13*; α(M)=1.88×10^{-5} *3*; α(N+..)=0.000227 *4* α(N)=4.31×10^{-6} *6*; α(O)=6.84×10^{-7} *10*; α(P)=6.86×10^{-8} *10*; α(IPF)=0.000222 *4* Mult.: A_2=+0.388 *18*, A_4=−0.014 *22*.

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^{142}Nd(^{6}Li,3nγ) 1980Ra01,1980Ba01 (continued)

$\gamma(^{145}Eu)$ (continued)

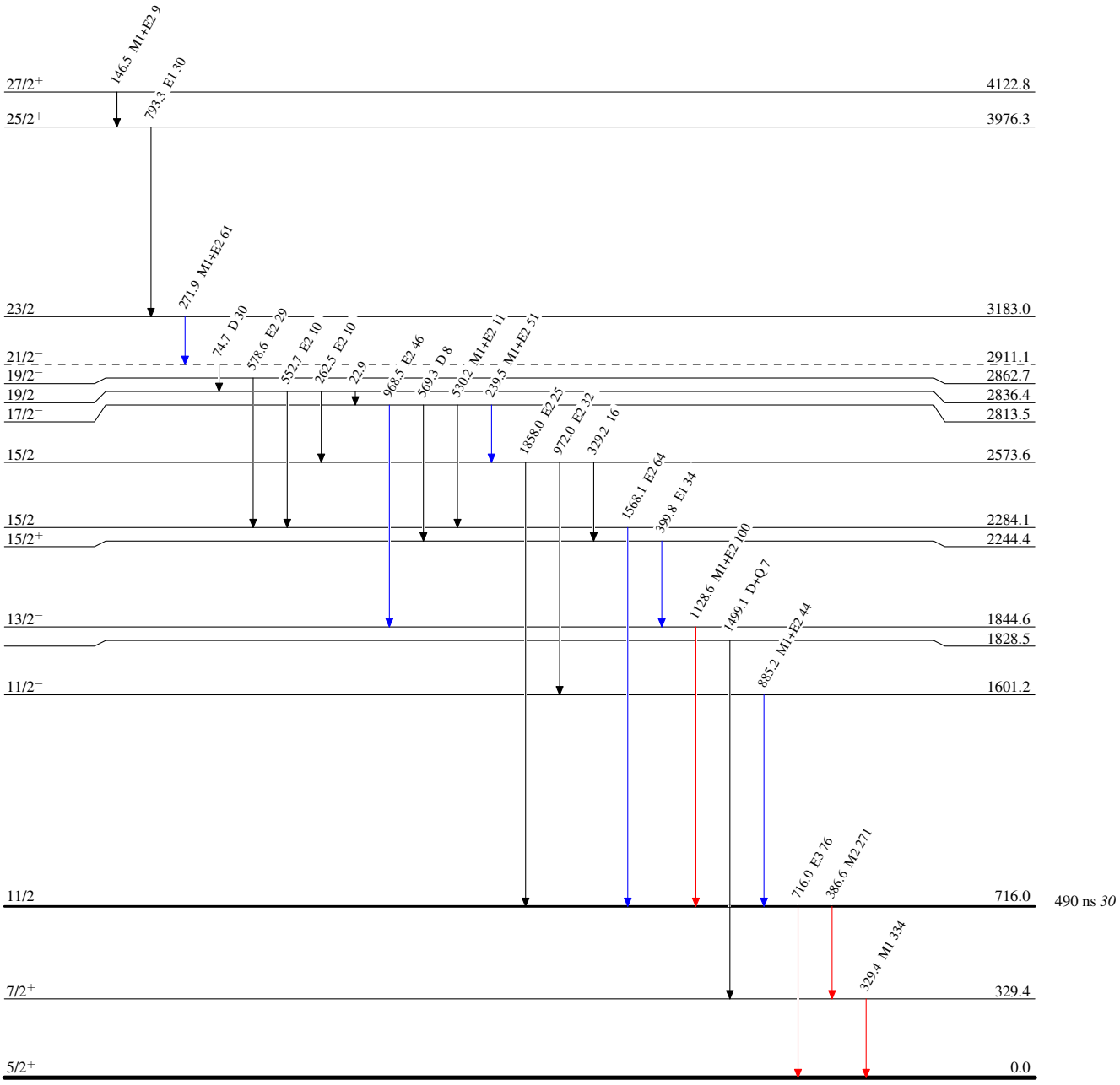
† Additional information 1.
‡ α(K)exp were normalized to known α(K)(716γ) E3, α(K)(329γ) M1 α(K)(386.6γ) M2, α(K)(1568γ) E2.
# It is assumed that Q γ's are E2.
x γ ray not placed in level scheme.

^{142}Nd(^{6}Li,3nγ) 1980Ra01,1980Ba01

Level Scheme

Intensities: Relative I_γ

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)



$^{145}_{63}Eu_{82}$