Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Yu. Khazov, A. Rodionov and G. Shulyak	NDS 136, 163 (2016)	14-Jul-2016

Q(β^-)=−1472 *4*; S(n)=7565.23 *9*; S(p)=8589 *7*; Q(α)=1182.1 *21* 2012Wa38

Produced and identified by F.W.Aston, Nature, 114, (1924) 273.

The level scheme of ^{146}Nd studied in beta-decay and in electron capture, also in neutron capture reactions and other reactions. The evaluators believe firmly established levels, if they are confirmed by various data. However, a number of levels are doubtful. This primarily concerns to the (n,γ) results, a number of levels do not have a reliable isotope identification and are not suggested by other data, and these levels are not adopted.

^{146}Nd Levels

Band assignments are from ^{136}Xe(^{13}C,3nγ).

Cross Reference (XREF) Flags

A	^{146}Pr β^- decay	F	^{146}Nd(n,n′γ)	K	^{148}Nd(p,t)
B	^{146}Pm ε decay	G	Coulomb excitation	L	^{149}Sm(n,α)
C	^{145}Nd(n,γ) E=thermal	H	^{144}Nd(t,p)	M	^{150}Nd(α,α′4nγ)
D	^{145}Nd(n,γ) E=0.2-0.5 keV	I	^{146}Nd(e,e′)	N	^{136}Xe(^{13}C,3nγ)
E	^{146}Nd(γ,γ′)	J	^{146}Nd(p,p′),(d,d′)		

E(level)[†]	J$^\pi$	T$_{1/2}$[b]	XREF	Comments
0.0[c]	0$^+$	stable	ABCDEFGHIJKLMN	T$_{1/2}$: T$_{1/2}$(2β^-,0ν mode)(theory)=1.18×10^{28} y (2002Hi09); T$_{1/2}$(2β^-,2ν mode)(theory)=5.2×10^{32} y (2010PrZZ), 2.1×10^{31} y (2002Hi09). T$_{1/2}$: T$_{1/2}$(α)>1.6×10^{18} y (2015St09, HPGe); T$_{1/2}$(α)(theory)=2.0×10^{34} y (2002Tr04).
453.84[c] *3*	2$^+$	20.9 ps *9*	ABCDEFGHIJKLMN	J$^\pi$: 453.8γ E2 to g.s. 0$^+$. T$_{1/2}$: from weighted average of 19.9 ps *2* from B(E2) in Coulomb excitation, 22.2 ps *3* from B(E2) in (e, e′) reaction and 23 ps *5* from $\gamma\gamma$(t) ^{146}Pr β- decay. μ: +0.582 *14*, projectile Coulomb excitation coupled to the transient field technique (2001Ho02). Others: +0.50 *8* (1978Ka36,1989Ra17), +0.44 *6* (1972Ku10), +0.64 *10* (1987Be08). Q: −0.78 *9* (1970GE08,1989RA17), Coulomb excitation. Other: −0.72 *20* (1971Cr01).
915.4 *3*	0$^+$		A G J	J$^\pi$: 0$^+$ in (d,d′).
1043.21[c] *5*	4$^+$	3.8 ps *10*	ABCD FGHIJKLMN	B(E4)↑=0.0150 *26* (1993Sa07) J$^\pi$: 589.4γ E2 to 2$^+$, L=4 in (d,d′). T$_{1/2}$: from B(E2) in Coulomb excitation (1967Bu04,1967BuZX). μ: +0.77 *10*, projectile Coulomb excitation coupled to the transient field technique (2001Ho02).
1189.60[d] *4*	3$^-$	0.62 ps *+90−24*	ABCD FGHIJKLMN	B(E3)=0.352 *21* from (e,e′) (1993Sa07). Others: from Coulomb excitation, 0.26 *3*, (1970Ch14), 0.21 *4* (1967BuZX), 0.41 *18* (1963Ha20). J$^\pi$: 735.8γ E1+(M2) to 2$^+$; 6375.0γ M1 from 3$^-$, 4$^-$; in (p,t), (p,p′), (d,d′) 3$^-$. T$_{1/2}$: from DSA in (n,n′γ) (1995Di06).
1303.2 *4*	2$^+$		A I K	J$^\pi$: from (849.1γ-453.8) $\gamma\gamma(\theta)$, 1303.4γ to J=0$^+$; contradicts J^π=0$^+$ in (p,t).
1376.78 *5*	1$^-$	63 fs *13*	A CDEFG IJKL	B(E1)↑=4.51×10^{-5} *27* (1993Sa07) J$^\pi$: 1376.7γ E1 to 0$^+$.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[b]	XREF	Comments
1470.63 *6*	2^+	0.32 ps *19*	A CDEFG IJKL	B(E2)↑=0.068 *5* (1993Sa07) Jπ: 1470.6γ E2 to 0^+.
1517.58[d] *8*	5^-		CD FGHIJKLMN	B(E5)↑=0.0264 *29* (1993Sa07) Jπ: 327.9γ E2 to 3^-, 474.5γ E1+(M2) to 4^+.
1572? *2*	(0^+)		J	Jπ: from (p,p′).
1602.64 *11*	0^+		A F K	Jπ: 1148.8γ E2 to 2^+, $J^\pi=0^+$ in (p,t).
1697.23 *18*	0^+		A E H JK	XREF: H(1693). Jπ: from (1243.4γ-453.8γ) γγ(θ), $J^\pi=0^+$ in (p,t) and (t,p).
1745.15 *10*	4^+		CD FGHIJKL	B(E4)↑=0.0361 *32* (1993Sa07) Jπ: 1291.9γ E2 to 2^+, 701.9γ M1+E2 (ΔJ=0) to 4^+.
1769.3 *6*	$(2^+,3^-)$		CD	E(level): not observed in (n,n′γ) (1983Al12,2004De49). Jπ: 725.6γ to 4^+, 894.0γ from (1^-).
1777.43 *10*	3^+		A CD F K	Jπ: 1323.4γ M1+E2 (ΔJ=1) to 2^+, 736.0γ M1+E2 to 4^+.
1780.01[c] *10*	6^+		G J MN	Jπ: 263.5γ E1 to 5^-, 736.8γ E2 to 4^+.
1787.30 *9*	2^+		A CDEF IJK	Jπ: 1787.3γ E2 to 0^+, 1333.3γ M1+E2 to 2^+.
1811.9 *4*	$(2,3)^-$		CD	Jπ: primary 5752.5γ M1 in (n,γ), E(n)=0.2-0.5 keV; 716.8γ from 2^+.
1834 *10*			L	
1884.7 *4*	$(2 \text{ to } 4)^-$		D	Jπ: primary 5680.0γ M1 in (n,γ), E(n)=0.2-0.5 keV; 677.1γ from 3^+.
1895.5 *10*	$(2 \text{ to } 5)^-$		D	Jπ: primary 5669.1γ M1 in (n,γ), E(n)=0.2-0.5 keV.
1905.58 *10*	2^+		A CD F Kl	Jπ: from (1451.8γ-453.8γ) γγ(θ); J=2^+ in (p,t).
1911.0 *5*			C L	
1918.91 *8*	4^+		CD F IJ l	Jπ: 1465.0γ E2 to 2^+, 875.7γ M1+(E2) (ΔJ=0) to 4^+.
1978.36 *6*	2^+		A CD F HIJK	B(E2)↑=0.02 (1993Sa07) Jπ: 788.88γ E1+(M2) to 3^-, 1977.5γ E2 to 0^+; 2^+ in (e,e′) and (p,p′).
1989.32 *9*	4^+		CD F IJK	B(E4)↑=0.021 *4* (1993Sa07) Jπ: 946.1γ M1+E2 to 4^+, 1535.3γ E2 to 2^+.
2027 *2*	1^-		IJ	XREF: I(2030). Jπ: from (p,p′).
2029.41[d] *12*	7^-		MN	Jπ: 249.4γ E1 to 6^+, 511.9γ E2 to 5^-.
2045.70 *22*	4^-,5		CD F	Jπ: 528.3γ D+(Q) to 5^-, 1002.5γ to 4^+, primary 5519.4γ in (n,γ), E(n)=2 keV (1983Ra18).
2069 *2*	5^-		J	Jπ: from (p,p′).
2072.80 *10*	3^-		CD F H J	Jπ: 883.1γ M1+E2 to 3^-, 1030.4γ (E1) to 4^+, γ(θ), primary 5492.3γ M1 in (n,γ), E(n)=0.2-0.5 keV; J=3^- in (p,p′), (d,d′).
2083.51 *10*	(6^+)[&]		K N	
2090 *2*	(0^+)		IJ	Jπ: from (p,p′) and (d,d′).
2096.13 *10*	4^+		CD F K	Jπ: 1053γ M1+E2 to 4^+, 906.6γ E1+(M2) to 3^-, primary 5468.7γ E1 in (n,γ), E(n)=0.2-0.5 keV, $J^\pi=(4^+)$ in (p,t).
2119.84 *19*	2^+		A C F	Jπ: 2119.9γ E2 to 0^+.
2143.56 *13*	2^+		A F K	Jπ: 1689.5γ M1+E2 to 2^+, 954.0γ to 3^-, 446.4γ to 0^+.
2148.95 *16*	$(1,2^+)$		A F I	Jπ: 2148.8γ to 0^+, 1696.1γ to 2^+.
2167.97 *16*	3^-		CD F K	XREF: K(2171). Jπ: 1124.8γ D+(Q) to 4^+, 380.9γ to 2^+, 650.6γ to 5^-.
2197.49 *22*	2^+		A CD F IjK	Jπ: 1743.8γ M1+E2 to 2^+, primary 5367.3γ E1 in (n,γ), E(n)=0.2-0.5 keV, from (p,p′), (d,d′) and (p,t).
2208.31 *21*	2^+		A F H j	Jπ: 2208.4γ E2 to 0^+.
2220.03 *12*	3^+		A CD F	Jπ: 1176.7γ M1+E2 to 4^+, γ(θ), primary 5344.8γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2225 *2*	1^-		J	Jπ: from (p,p′), (d,d′).
2226.05 *14*	3^+,4^+		CD F	Jπ: 1182.6γ M1+E2 to 4^+; supported by angular correlation measurements in (n,n′γ) (1983Al12); this put limits to the assignment 2^+:5^+ from primary 5338.2γ E1 in (n,γ), E(n)=0.2-0.5

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[b]	XREF	Comments
				keV (1976Bu14, table 4; see the same paper, level scheme, fig. 5, where this level is marked as $J^\pi=2^+$ only).
2231.4 *5*	3^-		CD F I K	XREF: K(2227). Jπ: from (p,t), 1777.9γ to 2^+; primary 5333.7γ M1 in (n,γ), E(n)=0.2-0.5 keV. J conflicts with J=(0^+) in (e,e′), perhaps, this is different level with E=2231 keV.
2265.97 *21*	2^+		A F h K	Jπ: 1812.1γ M1+E2 to 2^+, 2266.0γ to 0^+, γ(θ).
2269 *2*	1^-		hIJ	XREF: I(2275). Jπ: from (p,p′), (d,d′).
2286.42 *11*	2^+		CD F h K	Jπ: 1243.2γ E2 to 4^+, 1832.6γ M1+E2 to 2^+, primary 5277.6γ E1 in (n,γ), E(n)=0.2-0.5 keV. J conflicts with J=0^+ in (p,t).
2292.2 *9*			C	
2302.1 *5*	(2^+ to 5^+)		CD	Jπ: 525.1γ to 3^+, primary 5262.6γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2310.6 *6*			C	
2324.88 *22*			C H	
2335.52 *12*	7^-&		N	
2335.65 *21*	3^-		A F HIJK	B(E3)↑=0.051 *7* (1993Sa07) XREF: I(2339). Jπ: 1881.8γ E1(+M2) to 2^+, γ(θ), from (p,p′), (d,d′) and (p,t).
2355.95 *13*	1^+	15.5 fs *23*	A EF H	Jπ: 2356.3γ D to 0^+, (γ,γ′) resonant scattering.
2356.85 *11*	4^+		CD F K	Jπ: 1313.5γ M1+E2 (ΔJ=0) to 4^+, 1167.2γ E1(+M2) to 3^-, primary 5207.6γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2374			I	
2419.3 *3*	2^+ to 5^+		D	Jπ: primary 5145.3γ E1 in (n,γ), E(n)=0.2-0.5 keV (1976Bu14).
2433.6 *5*	(3^-,4^-)		CD	Jπ: primary 5131.0γ M1 in (n,γ), E(n)=0.2-0.5 keV and E(n)=thermal, (1996Bu14); 1243.9γ to 3^-.
2435.34 *18*	4^+		C F	Jπ: 657.6γ M1+E2 to 3^+, no γ to 0^+, γγ(θ), primary 5128.2γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2437.58 *24*	2^+		A CD F I K	Jπ: 1983.4γ M1+E2 to 2^+, 1247.6γ to 3^-, from (p,t).
2457.06 *17*	2^+		F IJ	Jπ: 2003γ M1+E2 to 2^+, 1081.0γ to 1^-, from (p,p′), (d,d′).
2459.97 *17*	(1,2^+)		A E H	Jπ: 2460.1γ to 0^+, 4701.0γ from 1^-.
2469.68 *15*	2^+,5^+,(3^+,4^+)		CD F	Jπ: primary 5094.7γ E1 in (n,γ), E(n)=0.2-0.5 keV and E(n)=thermal.
2474.52[h] *11*	8^+		k MN	Jπ: 694.5γ E2 to 6^+, 445.1γ E1 to 7^-, and (p,t).
2479.2 *4*	(2^+)		A Jk	Jπ: from (p,p′), (d,d′); log *ft*=8.55 in ^{146}Pr β$^-$ decay ($J^\pi=(2)^-$).
2484.2 *3*	2^+		CD I	Jπ: 2030γ to 2^+; primary 5079.3γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2491.45 *22*	2^+,3^+	0.18 ps *+6−4*	CD F	Jπ: 2037.4γ M1+E2 to 2^+, γ(θ). $T_{1/2}$: from DSA in (n,n′γ) (1995Di06).
2516.28 *18*	2^-		CD F H	Jπ: M1+E2 1139.47γ to 1^-, primary 5048.3γ M1 in (n,γ), E(n)=0.2-0.5 keV.
2521.55 *20*	2^+ to 4^+		CD K	Jπ: 1332.3γ to 3^-, 2066.0γ to 2^+, 1478.6γ to 4^+; primary 5043.3γ E1 in (n,γ), E(n)=0.2-0.5 keV. $J^\pi=(4^+,5^-)$ in (p,t).
2526 *4*	3^-		IJ	Jπ: from (p,p′), (d,d′), (e,e′).
2528.4 *3*	2^+		CD K	Jπ: from (p,t), primary 5036.3γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2530 *8*	3^-		IJ	B(E3)↑=0.02 (1993Sa07) Jπ: from longitudinal form factors measured in (e,e′).
2546.72 *24*	2^+,(4^+)		D	Jπ: 1169.5γ to 1^-, 1502.9γ to 4^+; primary 5016.9γ E1 in (n,γ), E(n)=0.2-0.5 keV.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[b]	XREF	Comments
2552.20 *9*	2^+		A CD F H K	Jπ: 1363.5γ E1+M2 to 3^-, γγ(θ), primary 5011.9γ E1 in (n,γ), E(n)=0.2-0.5 keV;
2555.80 *24*	$3^+,4^+$		D H J	Jπ: 578.0γ to 2^+; 4^+ suggested in (p,p′), (d,d′); primary 5008.7γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2561.93 *22*	3^+		CD F	Jπ: 2108.1γ M1+E2 to 2^+, γ(θ), primary 5002.5γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2570 *3*	5^-		IJ	B(E5)↑=0.0085 (1993Sa07) Jπ: from (p,p′), (d,d′).
2574.30 *20*	2^+		CD K	Jπ: from (p,t), primary 4990.0γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2583 *4*	2^+[@]		E K	
2590.26 *17*	4^+		CD	Jπ: 1073.2γ to 5^-, primary 4975.1γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2593.52[c] *12*	8^+[&]		N	
2597.9 *7*	$(1,2^+)$	0.14 ps *7*	E H	Jπ: 2144γ to 2^+, 2598γ to 0^+.
2602.20 *23*	$2^-,3^-$		CD	Jπ: 2149.1γ to 2^+; primary 4963.1γ M1 in (n,γ), E(n)=0.2-0.5 keV.
2610.9 *4*	0^+		F K	Jπ: from (p,t), 1234.0γ (E1) to 1^-, 2157.1γ (E2) to 2^+.
2623 *3*	4^+		IJK	B(E4)↑=0.003 (1993Sa07) Jπ: from (p,p′), (d,d′) and (p,t).
2628.5 *10*	(8^+)		M	Jπ: 848.5γ (E2) to 6^+. No γ′s to J<6.
2641 *3*	(1^-)[@]		H K	
2660.88 *14*	$3^+,4^+$		CD h	Jπ: 2207.0γ to 2^+, primary 4903.8γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2663.3 *12*	$(1^-),2^+$		C e IJK	B(E2)↑=0.0168 *20* Jπ: from (p,t), (e,e′).
2681.24 *18*	1^-	0.083 ps *32*	A EF h	Jπ: 2681.4γ E1 to 0^+. $T_{1/2}$: other: 0.038 ps *6* from DSA in (n,n′γ) (1995Di06).
2690 *3*	(3^-)		hIJK	B(E3)↑=0.003 (1993Sa07) Jπ: from (p,p′), (d,d′), (e,e′).
2705	(6^+)		J	
2705.80 *7*	$2,3^{(-)}$		A C h	Jπ: 1329.0γ to 1^-, 928.2γ to 3^+, 1515.9γ to 3^-.
2706.22[d] *12*	9^-[&]		MN	
2707.1 *5*	$(3^+,4^+)$		CD K	Jπ: $J^\pi=(4^+)$ in (p,t), primary 4857.5γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2710.8 *4*			C I	
2729 *3*	0^+[@]		H K	XREF: H(2739).
2750.1 *5*	5^-		CD IJK	B(E5)↑=0.00293 *45* (1993Sa07) Jπ: from (p,t), (p,p′), (d,d′). However, π=+ from primary 4814.5γ E1 (1976Bu14, uncertain isotopic identification).
2756.9 *3*	1^-[a]	5.3 fs *14*	EF	$T_{1/2}$: other: $T_{1/2}$<6 fs from DSA in (n,n′γ) (1995Di06).
2776.1 *9*	$1,2^+$		A F	Jπ: 2776.1γ to 0^+.
2783.8 *4*	$(3^+,4^+)$		CD	Jπ: primary 4780.8γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2803.4 *4*	$2^+,(3^+)$		CD	Jπ: 1059.4γ to 4^+, 1426.7γ to 1^-, primary 4761.6γ E1 in (n,γ), E(n)=0.2-0.5 keV.
2807	3^-		IJK	Jπ: from (e,e′).
2820 *3*	0^+[@]		IJK	Jπ: However, $J^\pi=3^-$ in (p,p′), (d,d′), (e,e′), possible doublet level.
2829.9 *7*	1^-[a]	67 fs *12*	E	
2844.6 *3*	3^-		C IJK	Jπ: from (p,p′), (d,d′), (p,t), primary 4720.0γ in (n,γ), E(n)=thermal.
2855.3 *3*	2^+		F	Jπ: 2855.4γ E2 to 0^+, 1665.5γ (E1) to 3^-.
2856 *3*	3^-[@]		I K	B(E3)↑=0.02 (1993Sa07)
2870.6 *3*	2^+		C JK	Jπ: from (p,t), (p,p′), (d,d′), primary 4694.0γ in (n,γ), E(n)=thermal.
2877 *19*	5^-		I	Jπ: from longitudinal form factors measured in (e,e′).
2885.4 *3*	(4^+)		C F JK	XREF: J(2887). Jπ: from (p,t), primary 4679.3γ in (n,γ), E(n)=thermal.
2905.7 *4*	$3^+,4^+$		D F	Jπ: primary 4658.9γ E1 in (n,γ), E(n)=0.2-0.5 keV, 1862.4γ (E2) to 4^+.
2913.55 *17*	3		F k	Jπ: 1169.0γ D+(Q) to 4^+, 2459.5γ D+(Q) to 2^+, γ(θ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[b]	XREF	Comments
2923.3 *5*	5^-		C IJk	B(E5)↑=0.0047 (1993Sa07) XREF: I(2915)J(2916). Jπ: from (p,p′), (d,d′), (e,e′), primary 4649.4γ in (n,γ), E(n)=thermal.
2930.4 *5*	4^+		CD IJK	B(E4)↑=0.016 (1993Sa07) Jπ: from (p,p′), (d,d′), (e,e′), primary 4634.0γ E1 in (n,γ), E(n)=0.2-0.5 keV. However, $J^\pi=3^-$ in (p,t).
2945 *3*	0^+[@]		K	
2958.6[#] *5*			D	
2970.32 *18*	2^+		A C IJK	B(E2)↑=0.006 (1993Sa07) Jπ: from (p,t), (p,p′), (d,d′), primary 4595.0γ in (n,γ), E(n)=thermal.
2996.5 *5*	$3^+,4^+$		CD K	Jπ: primary 4567.9γ E1 in (n,γ), E(n)=0.2-0.5 keV and E(n)=thermal, 2542.4γ to 2^+. However, $J^\pi=3^-$ in (p,t).
3000	1[a]		E	
3005 *4*	5^-		IJ	B(E5)↑=0.0027 (1993Sa07) Jπ: from (p,p′), (d,d′), (e,e′).
3013.3 *4*	4^+		CD J	XREF: J(3018). Jπ: primary 4551.4γ E1 in (n,γ), E(n)=0.2-0.5 keV and E(n)=thermal. However, $J^\pi=3^-$ from (p,p′), (d,d′).
3028 *20*	0^+[@]		H K	Jπ: from (p,t).
3034.7[#] *5*	$(2)^+$		D K	XREF: K(3039). Jπ: from (p,t), primary 4530.0γ E1 in (n,γ), E(n)=0.2-0.5 keV.
3042.5 *5*	2^+		CD K	XREF: K(3047). Jπ: primary 4522.4γ E1 in (n,γ), E(n)=0.2-0.5 keV, 3043.5γ to 0^+.
3064.7[#] *5*	$^+$		D	Jπ: primary 4500.0γ E1 in (n,γ), E(n)=0.2-0.5 keV.
3091.3 *3*	$(2^+,4^+)$		C JK	Jπ: from 2^+ in (p,t), 4^+ in (p,p′), primary 4473.4γ in (n,γ), E(n)=thermal.
3103 *4*	2^+		J	Jπ: from (p,p′), (d,d′).
3109.02 *12*	9^-[&]		N	
3123.82[h] *12*	10^+[&]		MN	
3126 *4*	1^-[@]		K	
3145.4 *3*	2^+		C	Jπ: 3146.0γ to 0^+, primary 4418.7γ in (n,γ), E(n)=thermal.
3149 *5*	$(4^+,6^+)$		JK	Jπ: $J^\pi=4^+$ in (p,t), $J^\pi=6^+$ in (p,p′), (d,d′).
3162 *4*	4^+		J	Jπ: from (p,p′), (d,d′).
3172.1[#] *5*	2^+		D K	XREF: K(3178). Jπ: from (p,t), primary 4392.6γ E1 in (n,γ), E(n)=0.2-0.5 keV.
3178.81 *20*	$3^+,(5^+)$		CD F	Jπ: 2135.3γ M1+E2 to 4^+, γ(θ), primary 4386.4γ E1 in (n,γ), E(n)=0.2-0.5 keV.
3210.3 *10*	4^+		C J	Jπ: from (p,p′), (d,d′), primary 4354.8γ in (n,γ), E(n)=thermal.
3220 *4*	2^+[@]		K	
3229.8[#] *4*	$3^+,4^+$		D	Jπ: primary 4334.9γ E1 in (n,γ), E(n)=0.2-0.5 keV.
3231 *4*	(4^-)		J	Jπ: from (p,p′), (d,d′).
3236 *4*	2^+[@]		K	
3245.52[g] *13*	10^-[&]		N	
3246.9 *4*	2^+ to 4^+		C	Jπ: primary 4317.8γ in (n,γ), E(n)=thermal, 2793.0γ to 2^+.
3249 *4*	3^-		J	Jπ: from (p,p′), (d,d′).
3273	(6^+)		J	Jπ: from (p,p′), (d,d′).
3275.9 *7*	1^+[a]	22.4 fs *34*	E	
3283 *4*	2^+		JK	Jπ: from (p,p′), (d,d′), (p,t).
3292.20 *22*	1[a]	12.7 fs *31*	A E	
3310 *4*	4^+		J	Jπ: from (p,p′), (d,d′).
3319.72[c] *13*	10^+[&]		N	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[b]	XREF	Comments
3329.6 *3*	(3⁻,4,5⁺)		C K	Jπ: 1812.1γ to 5⁻, 1102.7γ to 3⁺,4⁺; conflicts with 2⁺ from (p,t).
3335.4 *4*			A	
3347.2 *9*	1,2⁺		A	Jπ: 1650.1γ to 0⁺, 2893.0γ to 2⁺.
3356 *4*	3⁻		JK	Jπ: from (p,p′), (d,d′), (p,t).
3368.88 *22*	1⁻,2		A K	Jπ: 2915.1γ to 2⁺, 2179.3γ to 3⁻, 1991.9γ to 1⁻, 1012.7γ to 1⁺. J=3⁻ in (p,t) most probably relates to the level of 3356.
3384.9 *7*	(2,3,4)		C	Jπ: 2193.8γ to 3⁻, 2342.8γ to 4⁺, 2931.7γ to 2⁺, primary 4180.0γ in (n,γ), E(n)=thermal.
3391.8 *3*	1⁻		A K	Jπ: from (p,t).
3404.72[e] *13*	11⁻&		MN	
3411.0 *7*	1⁺[a]	8.5 fs *13*	E	
3419 *4*	0⁺		JK	Jπ: from (p,p′), (d,d′), (p,t).
3429.0 *7*	1[a]	32 fs *7*	E	
3435 *4*	5⁻		J	Jπ: from (p,p′), (d,d′).
3443 *4*	2⁺@		K	
3451	(2⁺,1)[a]		E	
3455 *4*	4⁺		JK	Jπ: from (p,p′), (d,d′), (p,t).
3468 *4*	3⁻@		K	
3472.6 *8*	4⁺		C J	Jπ: from (p,p′), (d,d′), primary 4092.5γ in (n,γ), E(n)=thermal.
3481 *4*	2⁺		JK	Jπ: from (p,p′), (d,d′), (p,t).
3496 *4*	5⁻		JK	XREF: J(3503). Jπ: from (p,p′), (d,d′), (5⁻,6⁺) in (p,t).
3500.72[d] *13*	11⁻&		MN	
3521 *5*	3⁻@		K	
3534.1 *4*	1⁻@		A K	
3546 *5*	2⁺		JK	XREF: J(3539). Jπ: from (p,p′), (d,d′), (p,t).
3558 *5*	5⁻@		JK	XREF: J(3567).
3569 *5*	2⁺@		K	
3577.0 *7*	1(+)[a]	7.0 fs *12*	E	
3585 *4*	2⁺		J	Jπ: from (p,p′), (d,d′).
3594.6 *4*			A	
3601 *5*	4⁺@		K	
3616 *5*	5⁻		JK	XREF: K(3610). Jπ: from (p,p′), (d,d′).
3618.5 *3*			A	
3625 *5*	2⁺		JK	Jπ: from 2⁺ in (p,p′), (d,d′), (2⁺) in (p,t).
3634.0 *7*	1[a]	25 fs *5*	E	
3646 *5*			K	
3667 *5*	5⁻		JK	XREF: J(3676). Jπ: from (d,d′), (d,d′), (p,t).
3670 *5*	(2⁺)@		K	
3692 *5*	(5⁻)@		K	
3701 *5*	(2⁺)@		K	
3709.8 *14*	2⁺@	45 fs *15*	A E K	
3713.5 *10*	(2,3,4)		C	Jπ: 2526.3γ to 3⁻, 3257.6γ to 2⁺, primary 3851.7γ in (n,γ), E(n)=thermal.
3727 *5*	2⁺@		K	
3738.8 *9*	3⁻@		C K	
3751.0 *7*	1⁻[a]	16.7 fs *30*	E K	
3753 *4*	(4⁺)		J	Jπ: from (d,d′), (d,d′).
3762 *5*			K	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[b]	XREF	Comments
3770	$(2^+,1)^a$		E	
3780.0 *7*	1^a	23 fs *4*	E K	XREF: K(3782). Jπ: (2^+) in (p,t).
3789 *5*			K	
3794.8 *7*	1^a	≤21 fs	C E	
3813.3 *9*	3^-@		C K	
3827.6 *9*	$1^{(-)a}$		C E K	XREF: K(3830). Jπ: π=(−) from primary 3737.2γ from 3^- in (n,γ), E(n)=th.
3847 *5*			K	
3866 *5*	(2^+)@		K	
3875 *5*	(5^-)@		K	
3884 *5*	(4^+)@		K	
3893.0 *7*	1^a	15.2 fs *32*	E K	
3902.22[h] *14*	12^+&		N	
3913 *5*	(3^-)@		K	
3922 *5*	3^-@		K	
3931 *5*			K	
3939 *5*	(2^+)@		K	
3949 *5*	(2^+)@		K	
3958.12[g] *16*	12^-&		N	
3962.8 *9*			C	
3975.0 *7*	1^a	17 fs *4*	E	
3993.72[c] *14*	12^+&		N	
4006 *6*	(2^+)@		K	
4014	$(1)^a$		E	
4028.12[e] *14*	13^-&		MN	
4039 *6*	$(2^+,3^-)$@		K	
4042	$(1)^a$		E	
4054 *6*	(2^+)@		K	
4066 *6*	(2^+)@		K	
4121 *6*	(2^+)@		K	
4138 *6*	$(2^+,3^-)$@		K	
4168 *6*	2^+@		K	
4179 *6*	3^-@		K	
4196 *6*	2^+@		K	
4212 *6*	2^+@		K	
4243 *6*	1^-@		K	
4256 *6*	2^+@		K	
4295.02[d] *14*	13^-&		N	
4302 *6*	(4^+)@		K	
4310 *6*	(1^-)@		K	
4325 *6*	(4^+)@		K	
4341 *6*	$(2^+,3^-)$@		K	
4380 *6*	(3^-)@		K	
4388 *6*	(2^+)@		K	
4404 *6*	4^+@		K	
4411 *6*	(4^+)@		K	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$[b]	XREF	Comments
4422 *6*	(3−)[@]		K	
4442 *6*	3−[@]		K	
4454.3 *9*	(3−)[@]		C K	
4461 *6*	3−[@]		K	
4485.5 *9*	(3−)[@]		C K	XREF: K(4491).
4501 *7*	(3−)[@]		K	
4517 *7*	(4+)[@]		K	
4533 *7*	(3−)[@]		K	
4545 *7*	4+[@]		K	
4558 *7*	(3−)[@]		K	
4571 *7*	(3−)[@]		K	
4591 *7*	(2+,3−)[@]		K	
4649 *7*	(3−)[@]		K	
4694.22[c] *15*	14+[&]		N	
4695.52[h] *15*	14+[&]		N	
4696 *7*	(3−)[@]		K	
4707 *7*	(3−)[@]		K	
4738 *7*	3−[@]		K	
4755 *7*	3−[@]		K	
4761.32[e] *17*	15−[&]		N	
4765 *7*	2+[@]		K	
4786.72[g] *19*	14−[&]		N	
4802 *7*	(3−)[@]		K	
4899 *7*	4+[@]		K	
4948.4 *10*	(2+)		C K	Jπ: 4946.3γ to 0+, 3761.0γ to 3−; J^{π}=(4+) in (p,t) conflicts.
4964 *7*	(3−)[@]		K	
4982 *7*	3−[@]		K	
4997.3 *9*			C	
5057.92[d] *15*	15−[&]		N	
5115.7 *9*			C	
5160.92 *21*	15+[&]		N	
5297.9 *3*			C	
5362.82[f] *19*	16+[&]		N	
5389.7 *8*			C	
5460.52[c] *16*	16+[&]		N	
5559.02[e] *19*	17−[&]		N	
5612.42[g] *21*	16−[&]		N	
5899.72[f] *20*	18+[&]		N	
6202.52[e] *20*	19−[&]		N	
6513.73[f] *21*	20+[&]		N	
6807.03[e] *22*	(21−)[&]		N	
7165.7 *12*	1−[a]	0.37 fs *15*	E	
7364.23[f] *22*	(22+)[&]		N	
7564.73[‡] *7*	3−,4−		CD	Additional information 1.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{146}Nd Levels (continued)

† From a least-squares fit to Eγ, normalized χ^2=1.26.
‡ Thermal neutron capture state.
# Uncertain isotopic identification in (n,γ), En=0.2-0.5 keV.
@ From (p,t) (1996Po12).
& From DCO values (multipolarity), and analysis of common sequence of levels connected by ΔJ=2 transitions and comparison with calculations in ^{136}Xe(^{13}C,3nγ).
[a] From γ(θ) and pol in (γ,γ′).
[b] Deduced from $\Gamma_{\gamma 0}$ in (γ,γ′) using adopted branching ratios, unless indicated otherwise.
[c] Band(A): ground state band.
[d] Band(B): octupole band.
[e] Band(C): ΔJ=2, π=− cascade-1.
[f] Band(D): ΔJ=2, π=+ cascade-1.
[g] Band(E): ΔJ=2, π=− cascade-2.
[h] Band(F): ΔJ=2, π=+ cascade-2.

Adopted Levels, Gammas (continued)

γ(^{146}Nd)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[l]	Comments
453.84	2+	453.84 *3*	100	0.0	0+	E2		0.01535	B(E2)(W.u.)=31.9 *4*
915.4	0+	461.6[&] *3*	100	453.84	2+				
1043.21	4+	589.40 *6*	100	453.84	2+	E2		0.00765	B(E2)(W.u.)=43 *11*
1189.60	3−	146.4 *5*	0.60 *6*	1043.21	4+				
		735.77 *4*	100	453.84	2+	E1+(M2)	−0.07 *2*	0.00175 *5*	B(E1)(W.u.)=0.0009 *+4−9*; B(M2)(W.u.)=19 *+17−19* δ: from γγ(θ) in ^{146}Pr β− decay (1978Ik03).
1303.2	2+	849.1[&] *5*	100 *12*	453.84	2+				
		1303.4[&] *5*	90 *11*	0.0	0+				
1376.78	1−	922.87 *8*	55.5 *11*	453.84	2+	E1+(M2)	+0.05 *4*	0.00111 *6*	B(E1)(W.u.)=0.0018 *5*; B(M2)(W.u.)=24 *+38−24*
		1376.69 *10*	100.0 *25*	0.0	0+	E1		6.49×10^{-4}	B(E1)(W.u.)=0.00095 *23*
1470.63	2+	1016.67 *10*	100[f] *5*	453.84	2+	M1+E2	−0.25 *4*	0.00220 *4*	B(M1)(W.u.)≈0.0013; B(E2)(W.u.)≈19 Second value δ=+5.7 *+16−10* (1983Al12). Other: δ=−12.5 *+76−194* (1978Ik03).
		1470.60 *12*	97[f] *5*	0.0	0+	E2		1.09×10^{-3}	B(E2)(W.u.)≈3.0
1517.58	5−	327.9 *1*	0.41[h] *10*	1189.60	3−	E2		0.0398	
		474.46 *8*	100[h] *5*	1043.21	4+	E1+(M2)	+0.03 *2*	0.00450 *13*	
1602.64	0+	1148.8[c] *1*	100	453.84	2+	E2		1.68×10^{-3}	
1697.23	0+	1243.42[&] *18*	100	453.84	2+	Q			
1745.15	4+	555.58 *16*	100[h] *4*	1189.60	3−	E1+(M2)	−0.02 *4*	0.00311 *11*	
		701.9 *2*	78[h] *7*	1043.21	4+	M1+E2	−0.23 *10*	0.00776 *18*	
		1291.85 *23*	30.7[h] *18*	453.84	2+	E2		1.34×10^{-3}	
1769.3	(2+,3−)	725.6[a]	100	1043.21	4+				
1777.43	3+	588.2 *9*	43.8[f] *3*	1189.60	3−	E1+(M2)		0.014 *12*	I_γ: Other: 12.9 *26* in ^{146}Pr β- decay.
		736.0[a] *10*	57.8[f]	1043.21	4+	M1+E2		0.0045 *3*	This γ was observed in ^{145}Nd(n,γ) E=thermal only (see 1983Sn01) and wasn't found in ^{146}Pr β- decay but should be. Thus evaluators treat this transition as questionable.
		1323.43 *15*	100[f] *5*	453.84	2+	M1+E2		0.00131 *10*	Mult.,δ: from A_2=+0.06 *3*, A_4=+0.16 *4*; 1/δ=−0.011 *+21−5*, pol=1.8 *5* (1984Ga31). Other: δ=+0.16 *1*, second value δ=−16 *+8−6* (1983Al12) Other: δ=4.6 *+60−28* from γγ(θ), ^{146}Pm β-decay (1978Ik03).
1780.01	6+	262.5 *10*	11[h] *1*	1517.58	5−	E1		0.0191 *4*	
		736.8 *1*	100[h] *5*	1043.21	4+	E2		0.00443	
1787.30	2+	598.16 *22*	11.5 *12*	1189.60	3−				
		1333.33 *16*	100 *5*	453.84	2+	M1+E2	−0.59 *+10−12*	0.00164 *5*	
		1787.27 *15*	12.4 *6*	0.0	0+	E2		9.01×10^{-4}	
1905.58	2+	715.76 *18*	2.8 *3*	1189.60	3−				

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[l]	Comments
1905.58	2+	1451.78 *12*	100 *5*	453.84	2+	M1+E2	−0.37 *9*	0.00145 *3*	
		1906.5 *5*	1.9 *3*	0.0	0+				
1911.0		721.6[a] *5*	100	1189.60	3−				
1918.91	4+	448.4 *6*	58[f] *11*	1470.63	2+				
		730.0[a] *10*	26.3[f]	1189.60	3−				
		875.7 *1*	100[f] *5*	1043.21	4+	M1+(E2)	+0.03 *+16−11*	0.00464 *9*	
		1465.04 *12*	89[f] *5*	453.84	2+	E2		1.10×10^{-3}	
1978.36	2+	191.2[a] *8*	0.10 *5*	1787.30	2+	D+(Q)			
		508.0[a] *2*	2.95 *15*	1470.63	2+				
		601.570 *22*	49.9 *9*	1376.78	1−				
		788.88 *19*	40.3 *22*	1189.60	3−	E1+(M2)	+0.06 *4*	0.00153 *10*	
		1524.72 *24*	100 *5*	453.84	2+	M1+E2	−0.07 *4*	0.00136 *3*	Mult.: second value δ=2.8 *4*, other:+0.03 *3* from γγ(q) (1978Ik03).
		1977.55[k] *21*	1.38 *9*	0.0	0+	E2		8.68×10^{-4}	E_γ: poor fit, energy level difference between corresponding levels equals 1978.34 *6*.
1989.32	4+	218.6[a] *10*	100[f] *21*	1769.3	(2+,3−)				
		474.0[a] *10*	17.9[f]	1517.58	5−				
		800.0[a] *10*	100[f] *21*	1189.60	3−				
		946.14 *9*	68[f] *4*	1043.21	4+	M1+E2	−0.14 *7*	0.00383 *7*	
		1535.28 *19*	31.8[f] *21*	453.84	2+	E2		1.03×10^{-3}	
2029.41	7−	249.4 *10*	79.8[h] *4*	1780.01	6+	E1		0.0218 *4*	
		511.9 *10*	100[h] *5*	1517.58	5−	E2		0.01105	
2045.70	4−,5	528.3[ma] *4*	52[mf] *6*	1517.58	5−	D+(Q)			
		1002.45 *25*	100[f] *4*	1043.21	4+	D			
2072.80	3−	883.14 *9*	100[g] *6*	1189.60	3−	M1+E2	−0.14 *3*	0.0034 *8*	δ: the second value of δ=−3.0 *+4−2* (1983Al12).
		1030.4[ma] *6*	50[mg] *19*	1043.21	4+	(E1)		8.84×10^{-4}	
2083.51	(6+)	1040.3[d] *1*	100	1043.21	4+	(E2)		0.00206	
2096.13	4+	906.55 *15*	81[g] *7*	1189.60	3−	E1+(M2)	+0.08 *2*	0.00119 *4*	
		1052.95 *15*	100[g] *7*	1043.21	4+	M1+E2	−0.71 *4*	0.00267 *5*	
		1642.4[c] *4*	37[g] *7*	453.84	2+				
2119.84	2+	1665.4 *5*	92[g] *15*	453.84	2+				
		2119.9 *2*	100[g] *12*	0.0	0+	E2		8.66×10^{-4}	
2143.56	2+	446.4[&] *10*	12.4 *16*	1697.23	0+				
		766.4[&] *10*	5.9 *13*	1376.78	1−				
		954.0[&] *15*	2.6 *5*	1189.60	3−				
		1689.5 *3*	100 *5*	453.84	2+	M1+E2	−0.48 *3*	1.13×10^{-3} *2*	
		2143.2 *4*	28.1 *18*	0.0	0+				

$^{146}_{60}Nd_{86}$-11

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[l]	Comments
2148.95	(1,2$^+$)	772.1[c] *3*	63[g] *22*	1376.78	1$^-$				
		1696.1[c] *5*	59[g] *19*	453.84	2$^+$				
		2148.8 *2*	100[g] *15*	0.0	0$^+$				
2167.97	3$^-$	380.9[a]	100[f] *14*	1787.30	2$^+$				
		650.6[a] *5*	22[f] *3*	1517.58	5$^-$				
		976.8	82 *9*	1189.60	3$^-$				
		1124.78 *16*	55[f] *5*	1043.21	4$^+$	D+(Q)			
2197.49	2$^+$	1743.8 *3*	100	453.84	2$^+$	M1+E2	+2.9 *4*	9.39×10^{-4} *15*	
2208.31	2$^+$	2208.4 *3*	100	0.0	0$^+$	E2		8.72×10^{-4}	
2220.03	3$^+$	314.4[c] *2*	43[g] *7*	1905.58	2$^+$				
		1030.4[mc] *6*	90[mg] *33*	1189.60	3$^-$				
		1176.7[c] *2*	58[g] *7*	1043.21	4$^+$	M1+E2	+3.3 *+15−9*	0.00166 *6*	Mult.: second value δ=0.44 *12* (1983Al12).
		1766.39 *21*	100[g] *7*	453.84	2$^+$	M1+E2	+0.56 *+18−10*	9.08×10^{-4}	
2226.05	3$^+$,4$^+$	1036.59 *17*	50[g] *10*	1189.60	3$^-$				
		1182.6 *5*	100[g] *10*	1043.21	4$^+$	M1+E2	−0.35 *5*	0.00222	
		1771.6[c] *3*	88[g] *10*	453.84	2$^+$				
2231.4	3$^-$	1777.9 *6*	100	453.84	2$^+$				
2265.97	2$^+$	1812.10 *24*	100[g] *7*	453.84	2$^+$	M1+E2		0.00099 *10*	Mult.: δ=0.40 *+?−16*, second value δ=0.95 *+35−?* (1983Al12).
		2266.0 *4*	38[g] *7*	0.0	0$^+$				
2286.42	2$^+$	1243.19 *10*	100[g] *4*	1043.21	4$^+$	E2		1.44×10^{-3}	
		1832.6 *5*	30[g] *4*	453.84	2$^+$	M1+E2	−0.19 *3*	1.07×10^{-3} *2*	Mult.,δ: the second value of δ=+4.4 *+4−5* (1983Al12); 2+→2$^+$ transition.
2292.2		1103.6[a] *15*		1189.60	3$^-$				
		1248.4[a] *15*		1043.21	4$^+$				
2302.1	(2$^+$ to 5$^+$)	525.1[a]	100	1777.43	3$^+$				
2310.6		565.1[a] *6*	100[f] *8*	1745.15	4$^+$				
		1268.5[a]	83[f] *15*	1043.21	4$^+$				
2324.88		807.3[ma] *2*	100[m]	1517.58	5$^-$				
2335.52	7$^-$	306.1[d] *1*	34[h] *7*	2029.41	7$^-$	M1+E2		0.0582 *12*	
		555.5[d] *1*	100[h] *15*	1780.01	6$^+$	E1		0.00311	
2335.65	3$^-$	1881.8 *2*	100	453.84	2$^+$	E1(+M2)	−0.02 *4*	8.10×10^{-4}	Mult.: from (n,n′γ) (1994YaZT).
2355.95	1$^+$	979.1[cn] *2*	19[g] *7*	1376.78	1$^-$				E_γ: placement from 1983Al12. May be doubtful. Not seen in β^- decay.
		1902.03[c] *19*	53[g] *10*	453.84	2$^+$				
		2356.3 *4*	100[g] *10*	0.0	0$^+$	D			Mult.: from A_2=−0.140 *38*, A_4=−0.015 *47* (1983Al12).
2356.85	4$^+$	1167.2[a] *2*	100[f] *6*	1189.60	3$^-$	E1(+M2)		0.00072 *13*	
		1313.51 *17*	81[f] *4*	1043.21	4$^+$	M1+E2	0.47 *5*	0.00173 *3*	Placement from 1983Sn01; other:

$^{146}_{60}Nd_{86}$-12

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[l]	Comments
									(1983Al12), the 1313.6γ depopulates the 3058.6 level, which was not seen by others. Mult.: from A_2=+0.395 *46*, A_4=+0.062 *57*; (1983Al12).
2356.85	4$^+$	1903.2[a] *4*	32[f] *5*	453.84	2$^+$				
2433.6	(3$^-$,4$^-$)	1243.9[a]	100	1189.60	3$^-$				
2435.34	4$^+$	657.6 *4*	0.42[f] *8*	1777.43	3$^+$	M1+E2	+0.61 *10*	0.0083 *3*	
		1392.0 *3*	64[f] *12*	1043.21	4$^+$				
		1981.4[a] *3*	100[f] *19*	453.84	2$^+$				
2437.58	2$^+$	1247.6 *3*	20 *4*	1189.60	3$^-$				
		1983.4 *6*	100 *6*	453.84	2$^+$	M1+E2	+0.18 *2*	1.02×10^{-3}	
2457.06	2$^+$	248.8[c] *2*	45[g] *7*	2208.31	2$^+$				
		1081.0[c] *4*	25[g] *7*	1376.78	1$^-$				
		2002.95[c] *21*	100[g] *11*	453.84	2$^+$	M1+E2	+1.6 *+4−5*	0.00091 *3*	δ: from 1983Al12, the second value δ=+0.14 *+20−14*.
2459.97	(1,2$^+$)	481.5[&] *5*	8 *5*	1978.36	2$^+$				
		2005.5[&] *4*	49 *3*	453.84	2$^+$				
		2460.1[&] *2*	100 *5*	0.0	0$^+$				
2469.68	2$^+$,5$^+$,(3$^+$,4$^+$)	724.6[a] *4*	54[f] *12*	1745.15	4$^+$				
		1426.36 *17*	100[f] *10*	1043.21	4$^+$				
2474.52	8$^+$	391.0[d] *1*	17[h] *4*	2083.51	(6$^+$)	(E2)		0.0235	
		445.1 *1*	100[h] *10*	2029.41	7$^-$	E1		0.00515	
		694.5 *1*	43[h] *7*	1780.01	6$^+$	E2		0.00510	
2479.2	(2$^+$)	1436.0[a] *4*	100	1043.21	4$^+$				
2484.2	2$^+$	2030.0[a] *3*	100	453.84	2$^+$				
2491.45	2$^+$,3$^+$	1301.5[a] *15*		1189.60	3$^-$				
		1448.6[a] *4*	52[f] *11*	1043.21	4$^+$				
		2037.4 *3*	100[f] *11*	453.84	2$^+$	M1+E2		1.00×10^{-3} *2*	Mult.: from A_2=−0.206 *78*, A_4=+0.111 *165*; δ=−0.85 *+47−?* (J=2), δ=+0.01 *+13−?* (J=3) (1983Al12); 2$^+$,3+→2$^+$ transition.
2516.28	2$^-$	1139.47 *21*	100[f]	1376.78	1$^-$	M1+E2	0.28 *2*	0.00244	Placement from 1983Sn01; other: the 1139.5γ depopulates the 3058.6 level, which was not seen by others. Mult.: from A_2=+0.181 *23*, A_4=+0.004 *26*; (1983Al12).
		2517.3[ak] *4*		0.0	0$^+$				E_γ: poor fit, energy level difference between corresponding levels equals 2516.26 *18*.
2521.55	2$^+$ to 4$^+$	775.6[a] *5*	37[f] *4*	1745.15	4$^+$				
		1332.3[a] *4*	59[f] *3*	1189.60	3$^-$				

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[l]	Comments
2521.55	2$^+$ to 4$^+$	1478.6[a] *3*	100[f] *10*	1043.21	4$^+$			
		2066.0[a] *15*		453.84	2$^+$			
2528.4	2$^+$	716.8[a] *5*	100	1811.9	(2,3)$^-$			
2546.72	2$^+$,(4$^+$)	1169.5[a] *4*	100[f] *17*	1376.78	1$^-$			
		1502.9[a] *4*	73[f] *13*	1043.21	4$^+$			
2552.20	2$^+$	479.2[a] *5*	95[f] *20*	2072.80	3$^-$			
		765.1[a] *5*	14[f] *6*	1787.30	2$^+$			
		774.4[&] *3*	8.5 *5*	1777.43	3$^+$			
		807.3[ma] *2*	80[mf] *6*	1745.15	4$^+$			
		1081.23 *11*	26[f] *3*	1470.63	2$^+$			
		1363.5 *3*	100[f] *8*	1189.60	3$^-$	E1+M2	0.0012 *3*	
		1509.5 *5*	2.5 *2*	1043.21	4$^+$	(E2)	1.06×10^{-3}	
		2098.0 *7*	8[f] *4*	453.84	2$^+$			
2555.80	3$^+$,4$^+$	565.1[a] *6*	86[f] *21*	1989.32	4$^+$			
		578.0[a] *5*	100[f] *21*	1978.36	2$^+$			
2561.93	3$^+$	677.1[a] *5*	0.10[f] *5*	1884.7	(2 to 4)$^-$			
		2108.05 *25*	100[f]	453.84	2$^+$	M1+E2	9.99×10^{-4}	Mult.: from A_2=−0.507 *356*, A_4=+0.144 *336*; δ=−0.27 *+33−?*, 3+→2$^+$ transition (1983Al12).
2574.30	2$^+$	584.6[a] *6*	84[f] *13*	1989.32	4$^+$			
		2120.2[a] *3*	100[f] *11*	453.84	2$^+$			
2590.26	4$^+$	1073.2[a] *10*	56[f] *4*	1517.58	5$^-$			
		2136.7[a] *2*	100[f] *6*	453.84	2$^+$			
2593.52	8$^+$	564.1[d] *1*	100[h] *20*	2029.41	7$^-$	E1	0.00300	
		813.5[d] *1*	51[h] *10*	1780.01	6$^+$	E2	0.00353	
2597.9	(1,2$^+$)	2144[e]	34[e] *17*	453.84	2$^+$			
		2598[e]	100[e]	0.0	0$^+$			
2602.20	2$^-$,3$^-$	528.3[ma] *4*	100[mf] *10*	2072.80	3$^-$			
		1412.7[a] *15*		1189.60	3$^-$			
		2149.1[a] *3*	55[f] *7*	453.84	2$^+$			
2610.9	0$^+$	1234.0[ic] *5*	100[g]	1376.78	1$^-$	(E1)	6.80×10^{-4}	
		2157.1[ic] *5*	28[g]	453.84	2$^+$	(E2)	8.68×10^{-4}	
2628.5	(8$^+$)	848.5	100	1780.01	6$^+$	(E2)	0.00321	
2660.88	3$^+$,4$^+$	565.1[a] *6*	29[f] *5*	2096.13	4$^+$			
		883.3[a] *2*	100[f] *5*	1777.43	3$^+$			
		1190.8[a] *4*	27[f] *5*	1470.63	2$^+$			
		2207.0[a] *3*	21[f] *5*	453.84	2$^+$			
2663.3	(1$^-$),2$^+$	894.0[a]	100	1769.3	(2$^+$,3$^-$)			

$^{146}_{60}Nd_{86}$-14

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[l]	Comments
2681.24	1⁻	2227.25[&] *25*	100 *5*	453.84	2⁺				
		2681.35[&] *25*	95 *5*	0.0	0⁺	E1		1.20×10^{-3}	B(E1)(W.u.)=8.E−5 *3* Mult.: from γ(θ), $T_{1/2}$ in (n,n′γ) (1995Di06).
2705.80	2,3(−)	562.10[&] *14*	36.0 *19*	2143.56	2⁺				
		727.20[&] *14*	55.1 *28*	1978.36	2⁺				
		928.15[&] *30*	16.4 *11*	1777.43	3⁺				
		1235.25[&] *13*	35.5 *19*	1470.63	2⁺				
		1329.0[&] *2*	56.1 *28*	1376.78	1⁻				
		1515.9[&] *5*	25.2 *28*	1189.60	3⁻				
		2252.13[&] *10*	100 *5*	453.84	2⁺				
2706.22	9⁻	112.7[d] *1*	2.0[h] *5*	2593.52	8⁺	E1		0.187	
		676.8[d] *1*	100[h] *5*	2029.41	7⁻	E2		0.00543	
2710.8		1193.2[a] *4*	100[f]	1517.58	5⁻				
2756.9	1⁻	1286.2[c] *4*	72[g] *16*	1470.63	2⁺				
		2302.9[c] *4*	100[g] *16*	453.84	2⁺				
		2757.2[c] *6*	78[g] *13*	0.0	0⁺	E1		1.24×10^{-3}	B(E1)(W.u.)=0.00068 *18*
2776.1	1,2⁺	2776.1 *9*	100	0.0	0⁺				
2803.4	2⁺,(3⁺)	1059.4[a] *10*	100[f] *6*	1745.15	4⁺				
		1426.7[a] *10*	90[f] *15*	1376.78	1⁻				
2829.9	1⁻	2376[e]	18[e] *8*	453.84	2⁺				
		2830[e]	100[e]	0.0	0⁺				
2855.3	2⁺	1665.5[ic] *5*	100[g]	1189.60	3⁻	(E1)		7.17×10^{-4}	
		2401.5[ic] *5*	53[g]	453.84	2⁺	E2		8.96×10^{-4}	
		2855.4[ic] *5*	23[g]	0.0	0⁺	E2		9.96×10^{-4}	
2885.4	(4⁺)	1842.4[ic] *5*		1043.21	4⁺	(E2)		8.87×10^{-4}	
2905.7	3⁺,4⁺	1862.4[ic] *5*		1043.21	4⁺	(E2)		8.83×10^{-4}	
2913.55	3	1169.0[c] *3*	100[g] *10*	1745.15	4⁺	D+(Q)	+0.06 *10*		
		1869.8[c] *5*		1043.21	4⁺				
		2459.5[c] *2*	59[g] *6*	453.84	2⁺	D+(Q)	−0.03 *4*		
2923.3	5⁻	1732.1[a] *15*		1189.60	3⁻				
		1880.5[a] *5*	[f]	1043.21	4⁺				
2930.4	4⁺	1739.6[a]	[f]	1189.60	3⁻				
		2476.6[a] *15*		453.84	2⁺				
2970.32	2⁺	1183.1[a] *5*	28.1 *23*	1787.30	2⁺				
		1500.0[a] *5*	26.1 *29*	1470.63	2⁺				
		1593.9[a] *5*	41.5 *29*	1376.78	1⁻				
		1780.2 *7*	23.0 *13*	1189.60	3⁻				
		2517.3[a] *4*	100 *6*	453.84	2⁺				

$^{146}_{60}Nd_{86}$-15

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[l]	Comments
2996.5	3+,4+	1805.0[a] *15*		1189.60	3−			
		2542.4[a] *15*		453.84	2+			
3042.5	2+	2589.4[a] *15*		453.84	2+			
		3043.5[a] *15*		0.0	0+			
3109.02	9−	634.5[d] *1*	14[h] *4*	2474.52	8+	E1	0.00233	
		773.5[d] *1*	100[h] *10*	2335.52	7−	E2	0.00396	
3123.82	10+	417.6[d] *1*	51[h] *5*	2706.22	9−	E1	0.00599	
		649.3[d] *1*	100[h] *5*	2474.52	8+	E2	0.00601	
3145.4	2+	1958.9[a] *15*		1189.60	3−			
		2691.3[a] *3*	[f]	453.84	2+			
		3146.0[a] *15*		0.0	0+			
3178.81	3+,(5+)	1190.2[c] *4*	87[g] *15*	1989.32	4+			
		1989.2[a] *5*	51[f] *30*	1189.60	3−			
		2135.3 *3*	100[f] *10*	1043.21	4+	M1+E2	0.00092 *6*	Mult.: from A_2=−0.536 *95*, A_4=−0.125 *129*; δ=+0.6 *+?−2*, 3+→4+ transition or δ=−0.19 *8*, 5+→4+ transition (1983Al12).
		2725.9[a] *15*		453.84	2+			
3210.3	4+	2019.1[a] *15*		1189.60	3−			
		2758.3[a] *15*		453.84	2+			
3245.52	10−	136.5[d] *1*	85[h] *6*	3109.02	9−	M1+E2	0.629 *11*	
		539.3[d] *1*	100[h]	2706.22	9−	M1+E2	0.012 *3*	
3246.9	2+ to 4+	2204.3[a] *15*		1043.21	4+			
		2793.0[a] *4*	[f]	453.84	2+			
3275.9	1+	2822	25[j] *4*	453.84	2+			
		3276	100[j]	0.0	0+			
3292.20	1	1148.9[&] *4*	100 *6*	2143.56	2+			
		1504.9[&] *10*	17 *4*	1787.30	2+			
		1915.1[&] *5*	38 *3*	1376.78	1−			
		3292.12[&] *30*	67 *4*	0.0	0+			
3319.72	10+	613.5[d] *1*	100[h] *5*	2706.22	9−	E1	0.00250	
		726.2[d] *1*	3.1[h] *8*	2593.52	8+	E2	0.00459	
3329.6	(3−,4,5+)	1102.7[a]	12[f] *8*	2226.05	3+,4+			
		1812.1[a] *3*	100[f] *7*	1517.58	5−			
3335.4		1192.2[&] *8*	25 *3*	2143.56	2+			
		1958.3[&] *5*	100 *6*	1376.78	1−			
		2881.8[&] *6*	41 *3*	453.84	2+			
3347.2	1,2+	1650.1[&] *10*	100 *11*	1697.23	0+			
		2893.0[&] *15*	18 *2*	453.84	2+			

$^{146}_{60}Nd_{86}$-16

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	α[l]
3368.88	1⁻,2	816.5[&] *10*	7.9 *34*	2552.20	2⁺		
		1012.7[&] *6*	63 *18*	2355.95	1⁺		
		1463.8[&] *7*	25 *3*	1905.58	2⁺		
		1991.9[&] *5*	29 *3*	1376.78	1⁻		
		2179.3[&] *3*	100 *6*	1189.60	3⁻		
		2915.1[&] *8*	21 *2*	453.84	2⁺		
3384.9	(2,3,4)	2193.8[a] *15*		1189.60	3⁻		
		2342.8[a] *15*		1043.21	4⁺		
		2931.7[a] *15*		453.84	2⁺		
3391.8	1⁻	839.5[a] *10*	36 *10*	2552.20	2⁺		
		1614.1[a] *7*	69 *8*	1777.43	3⁺		
		1920.9[a] *5*	68 *8*	1470.63	2⁺		
		2938.4[a] *5*	100 *7*	453.84	2⁺		
3404.72	11⁻	159.2[d] *1*	4.6[h] *12*	3245.52	10⁻	M1+E2	0.404 *24*
		280.9[d] *1*	97.[h] *5*	3123.82	10⁺	E1	0.01604
		698.5[d] *1*	100[h] *5*	2706.22	9⁻	E2	0.00503
3411.0	1⁺	2957	29[j] *4*	453.84	2⁺		
		3411	100[j] *5*	0.0	0⁺		
3429.0	1	2975	65[j] *10*	453.84	2⁺		
		3429	100[j] *5*	0.0	0⁺		
3472.6	4⁺	2280.9[a] *15*		1189.60	3⁻		
		2428.5[a] *15*		1043.21	4⁺		
		3021.9[a] *15*		453.84	2⁺		
3500.72	11⁻	181.0[d] *1*	8.9[h] *25*	3319.72	10⁺	E1	0.0513
		794.5[d] *1*	100[h] *5*	2706.22	9⁻	E2	0.00372
3534.1	1⁻	1555.6[&] *8*	91 *8*	1978.36	2⁺		
		2157.1[&] *7*	63 *8*	1376.78	1⁻		
		3080.4[&] *5*	100 *6*	453.84	2⁺		
3577.0	1⁽⁺⁾	3123	47[j] *7*	453.84	2⁺		
		3577	100[j] *5*	0.0	0⁺		
3594.6		2217.7[&] *5*	100 *13*	1376.78	1⁻		
		3140.9[&] *6*	98 *7*	453.84	2⁺		
3618.5		1831.1[&] *3*	100 *6*	1787.30	2⁺		
		3165.6[&] *10*	11 *1*	453.84	2⁺		
3634.0	1	3180	46[j] *10*	453.84	2⁺		
		3634	100[j] *5*	0.0	0⁺		
3709.8	2⁺	3256.5[&] *18*	36 *4*	453.84	2⁺		

$^{146}_{60}Nd_{86}$-17

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[l]	Comments
3709.8	2+	3709.0[&] *20*	100 *11*	0.0	0+			
3713.5	(2,3,4)	2526.3[a] *15*		1189.60	3−			
		3257.6[a] *15*		453.84	2+			
3738.8	3−	2549.7[a] *15*		1189.60	3−			
		2695.4[a] *15*		1043.21	4+			
3751.0	1−	3297	33[j] *6*	453.84	2+			
		3751	100[j] *5*	0.0	0+			
3780.0	1	3326	13[j] *4*	453.84	2+			
		3780	100[j] *5*	0.0	0+			
3794.8	1	2604.8[a] *15*		1189.60	3−			
		3343.0[a] *15*	44[j] *10*	453.84	2+			
		3793.7[a] *15*	100[j] *5*	0.0	0+			
3813.3	3−	3359.8[a]		453.84	2+			
		3811.6[ak]		0.0	0+			E_γ: poor fit, energy level difference between corresponding levels equals 3813.2 *9*.
3827.6	1(−)	3373.1[a] *15*		453.84	2+			
		3828.4[a] *15*		0.0	0+			
3893.0	1	3439	16[j] *8*	453.84	2+			
		3893	100[j]	0.0	0+			
3902.22	12+	497.5[d] *1*	37[h] *5*	3404.72	11−	E1	0.00398	
		778.4[d] *1*	100[h] *5*	3123.82	10+	E2	0.00390	
3958.12	12−	712.6[d] *1*	100[h]	3245.52	10−	E2	0.00480	
3962.8		2773.8[a] *15*		1189.60	3−			
		2919.3[a] *15*		1043.21	4+			
3975.0	1	3521	24[j] *6*	453.84	2+			
		3975	100[j] *5*	0.0	0+			
3993.72	12+	493.0[d] *1*	100[h] *5*	3500.72	11−	E1	0.00407	
		674.0[d] *1*	70[h] *7*	3319.72	10+	E2	0.00548	
4028.12	13−	125.9[d] *1*	3.3[h] *8*	3902.22	12+	E1	0.1380	
		527.4[d] *1*	6.6[h] *12*	3500.72	11−	E2	0.01021	
		623.4[d] *1*	100[h] *5*	3404.72	11−	E2	0.00664	
4295.02	13−	301.3[d] *1*	73[h] *5*	3993.72	12+	E1	0.01341	
		794.3[d] *1*	100[h] *5*	3500.72	11−	E2	0.00373	
		890.3[d] *1*	27[h] *4*	3404.72	11−	E2	0.00288	
4454.3	(3−)	3265.9[a] *15*		1189.60	3−			
		3999.6[a] *15*		453.84	2+			
4485.5	(3−)	3294.8[a] *15*		1189.60	3−			
		4033.1[a] *15*		453.84	2+			

$^{146}_{60}Nd_{86}$-18

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	α[l]
4694.22	14^+	399.2[d] *1*	100[h] *5*	4295.02	13^-	E1	0.00668
		700.5[d] *1*	48[h] *4*	3993.72	12^+	E2	0.00500
4695.52	14^+	667.4[d] *1*	96[h] *5*	4028.12	13^-	E1	0.00209
		793.3[d] *1*	100[h] *5*	3902.22	12^+	E2	0.00374
4761.32	15^-	733.2[d] *1*	100[h]	4028.12	13^-	E2	0.00449
4786.72	14^-	828.6[d] *1*	100[h]	3958.12	12^-	E2	0.00338
4948.4	(2^+)	3761.0[a] *15*		1189.60	3^-		
		4946.3[a] *15*		0.0	0^+		
4997.3		3808.9[a] *15*		1189.60	3^-		
		4996.2[a] *15*		0.0	0^+		
5057.92	15^-	363.7[d] *1*	100 *5*	4694.22	14^+	E1	0.00837
		762.9[d] *1*	100 *5*	4295.02	13^-	E2	0.00409
5115.7		3928.1[a] *15*		1189.60	3^-		
		4070.7[a] *15*		1043.21	4^+		
5160.92	15^+	374.2[d] *1*	100[h]	4786.72	14^-	E1	0.00781
5297.9		4255.1[a] *15*		1043.21	4^+		
		4844.4[a] *15*		453.84	2^+		
5362.82	16^+	601.5[d] *1*	100[h]	4761.32	15^-	(E1)	0.00261
5389.7		4200.6[a] *15*		1189.60	3^-		
		4343.4[a] *15*		1043.21	4^+		
		4938.6[a] *15*		453.84	2^+		
5460.52	16^+	402.6[d] *1*	100[h] *5*	5057.92	15^-	E1	0.00654
		766.3[d] *1*	56[h] *5*	4694.22	14^+	E2	0.00405
5559.02	17^-	196.2[d] *1*	20[h] *4*	5362.82	16^+	E1	0.0413
		797.7[d] *1*	100[h] *5*	4761.32	15^-	E2	0.00369
5612.42	16^-	451.5[d] *1*	30[h] *4*	5160.92	15^+	E1	0.00498
		825.7[d] *1*	100[h] *5*	4786.72	14^-	E2	0.00341
5899.72	18^+	340.7[d] *1*	92[h] *5*	5559.02	17^-	E1	0.00984
		536.9[d] *1*	100[h] *5*	5362.82	16^+	(E2)	0.00974
6202.52	19^-	643.5[d] *1*	100[h]	5559.02	17^-	E2	0.00614
6513.73	20^+	311.2[d] *1*	51[h] *4*	6202.52	19^-	E1	0.01235
		614.0[d] *1*	100[h] *5*	5899.72	18^+	E2	0.00690
6807.03	(21^-)	293.3[d] *1*	100[h]	6513.73	20^+	(E1)	0.01436
7165.7	1^-	3891[e] *3*	1[e] *1*	3275.9	1^+		
		4583[e] *3*	2[e] *1*	2583	2^+		
		4701[e] *3*	3[e] *1*	2459.97	$(1,2^+)$		
		4807[e] *3*	3[e] *1*	2355.95	1^+		

$^{146}_{60}Nd_{86}$-19

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[l]	Comments
7165.7	1⁻	5383[e] *3*	5[e] *1*	1787.30	2⁺			populates J=2 state (from A_2=+0.03 *13*; A_2(theor)=0.05 for J=1→J=2, 1977Be05).
		5475[e] *3*	3[e] *1*	1697.23	0⁺			
		6709[e] *3*	13[e] *1*	453.84	2⁺			populates J=2 state (from A_2=+0.03 *4*; A_2(theor)=0.05 for J=1→J=2, 1977Be05).
		7163[e] *3*	100[e]	0.0	0⁺	E1		Mult.: from A_2=+0.46 *9*, and linear polarization measurement (1977Be05).
7364.23	(22⁺)	557.2[d] *1*	24[h]	6807.03	(21⁻)	(E1)	0.00309	
		850.5[d] *1*	100[h]	6513.73	20⁺	(E2)	0.00319	
7564.73	3⁻,4⁻	2175.4[a] *16*		5389.7				
		2266.8[a] *3*		5297.9				
		2449.4[a] *15*		5115.7				
		2567.8[a] *15*		4997.3				
		2616.7[a] *18*		4948.4	(2⁺)			
		3079.7[a] *17*		4485.5	(3⁻)			
		3110.9[a] *15*		4454.3	(3⁻)			
		3602.2[a] *15*		3962.8				
		3737.2[a] *15*		3827.6	1(⁻)			
		3752.3[a] *15*		3813.3	3⁻			
		3770.2[a] *10*		3794.8	1			
		3826.2[a] *15*		3738.8	3⁻			
		3851.7[a] *20*		3713.5	(2,3,4)			
		4092.5[a] *17*		3472.6	4⁺			
		4180.0[a] *11*		3384.9	(2,3,4)			
		4317.8[a] *15*		3246.9	2⁺ to 4⁺			
		4334.9[b] *4*		3229.8	3⁺,4⁺	E1	0.00187	
		4354.8[a] *20*		3210.3	4⁺			
		4386.3[ab] *5*		3178.81	3⁺,(5⁺)	E1	0.00188	E_γ: weighted average of 4386.4 *5* (n,γ), E=0.2-0.5 keV and 4385.8 *13* (n,γ), E=thermal.
		4392.6[b] *5*		3172.1	2⁺	E1	0.00189	
		4418.7[a] *7*		3145.4	2⁺			
		4473.4[a] *3*		3091.3	(2⁺,4⁺)			
		4500.0[b] *5*		3064.7	⁺	E1	0.00192	
		4522.4[ab] *5*		3042.5	2⁺	E1	0.00193	E_γ: weighted average of 4522.4 *5* (n,γ), E=0.2-0.5 keV and 4522.3 *15* (n,γ), E(n)=thermal.
		4530.0[b] *5*		3034.7	(2)⁺	E1	0.00193	
		4551.4[ab] *4*		3013.3	4⁺	E1	0.00194	
		4567.9[ab] *5*		2996.5	3⁺,4⁺	E1	0.00194	
		4595.0[a] *3*		2970.32	2⁺			
		4606.1[b] *5*		2958.6		E1	0.00196	

$^{146}_{60}Nd_{86}$-20

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ[†]	E_f	J_f^π	Mult.[#]	α[l]	Comments
7564.73	3⁻,4⁻	4634.0[ab] 5	2930.4	4⁺	E1	0.00196	
		4643.4[a] 15	2923.3	5⁻			
		4658.9[b] 6	2905.7	3⁺,4⁺	E1	0.00197	
		4679.3[a] 3	2885.4	(4⁺)			
		4694.0[a] 3	2870.6	2⁺			
		4720.0[a] 3	2844.6	3⁻			
		4761.6[b] 5	2803.4	2⁺,(3⁺)	E1	0.00201	
		4780.8[ab] 4	2783.8	(3⁺,4⁺)	E1	0.00201	
		4814.5[ab] 5	2750.1	5⁻	E1	0.00202	
		4857.5[ab] 5	2707.1	(3⁺,4⁺)	(E1)	0.00204	E_γ,I_γ,Mult.: the transition may have admixture of ^{144}Nd.
		4903.8[ab] 3	2660.88	3⁺,4⁺	E1	0.00205	
		4963.0[ab] 6	2602.20	2⁻,3⁻	M1	1.72×10^{-3}	E_γ: weighted average of 4963.1 6 (n,γ), E=0.2-0.5 keV and 4962.6 15 (n,γ), E(n)=thermal.
		4975.1[ab] 3	2590.26	4⁺	E1	0.00207	
		4990.0[ab] 3	2574.30	2⁺	E1	0.00207	
		5002.5[ab] 5	2561.93	3⁺	E1	0.00208	
		5008.7[b] 3	2555.80	3⁺,4⁺	E1	0.00208	
		5011.9[ab] 2	2552.20	2⁺	E1	0.00208	
		5016.9[b] 4	2546.72	2⁺,(4⁺)	E1	0.00208	
		5036.3[ab] 3	2528.4	2⁺	E1	0.00208	
		5043.3[ab] 4	2521.55	2⁺ to 4⁺	E1	0.00209	
		5048.3[ab] 3	2516.28	2⁻	M1	1.74×10^{-3}	
		5073.2[ab] 5	2491.45	2⁺,3⁺	E1	0.00210	
		5079.3[ba] 5	2484.2	2⁺	E1	0.00210	
		5094.7[ab] 3	2469.68	2⁺,5⁺,(3⁺,4⁺)	E1	0.00210	
		5125.8[ab] 5	2437.58	2⁺	E1	0.00211	
		5128.2[ab] 5	2435.34	4⁺	E1	0.00211	
		5131.0[ab] 5	2433.6	(3⁻,4⁻)	M1	1.76×10^{-3}	
		5145.3[b] 3	2419.3	2⁺ to 5⁺	E1	0.00212	
		5207.6 2	2356.85	4⁺	E1	0.00213	
		5262.6[b] 5	2302.1	(2⁺ to 5⁺)	E1	0.00215	
		5272.8[a] 15	2292.2				
		5277.6[b] 6	2286.42	2⁺	E1	0.00215	
		5333.7[b] 7	2231.4	3⁻	M1	0.00182	
		5338.2[ab] 5	2226.05	3⁺,4⁺	E1	0.00217	
		5344.8[ab] 5	2220.03	3⁺	E1	0.00217	

$^{146}_{60}Nd_{86}$-21

Adopted Levels, Gammas (continued)

γ(^{146}Nd) (continued)

E_i(level)	J_i^π	E_γ †	E_f	J_f^π	Mult.#	α^l
7564.73	3$^-$,4$^-$	5367.3[ab] *3*	2197.49	2$^+$	E1	0.00218
		5397.3[b]	2167.97	3$^-$		
		5443.5[a] *15*	2119.84	2$^+$		
		5468.7[ab] *3*	2096.13	4$^+$	E1	0.00221
		5492.3[ab] *4*	2072.80	3$^-$	M1	0.00186
		5519.4[b]	2045.70	4$^-$,5		
		5575.3[ab] *3*	1989.32	4$^+$	E1	0.00224
		5587.45[ab] *38*	1978.36	2$^+$	E1	0.00224
		5645.7[ab] *2*	1918.91	4$^+$	E1	0.00226
		5656.2[a] *19*	1911.0			
		5659.5[b]	1905.58	2$^+$		
		5669.1[b] *10*	1895.5	(2 to 5)$^-$	M1	0.00191
7564.73	3$^-$,4$^-$	5680.0[b] *5*	1884.7	(2 to 4)$^-$	M1	0.00191
		5752.5[ab] *5*	1811.9	(2,3)$^-$	M1	0.00193
		5777.4[ab] *2*	1787.30	2$^+$	E1	0.00230
		5787.5[ab] *2*	1777.43	3$^+$	E1	0.00230
		5796.1[b]	1769.3	(2$^+$,3$^-$)		
		5818.3[abk] *3*	1745.15	4$^+$	E1	0.00231
		6047.4[b]	1517.58	5$^-$		
		6093.9[b] *3*	1470.63	2$^+$	E1	
		6375.0[ab] *3*	1189.60	3$^-$	M1	
		6521.3[ab] *4*	1043.21	4$^+$	E1	
		7110.8[ab] *3*	453.84	2$^+$	E1	

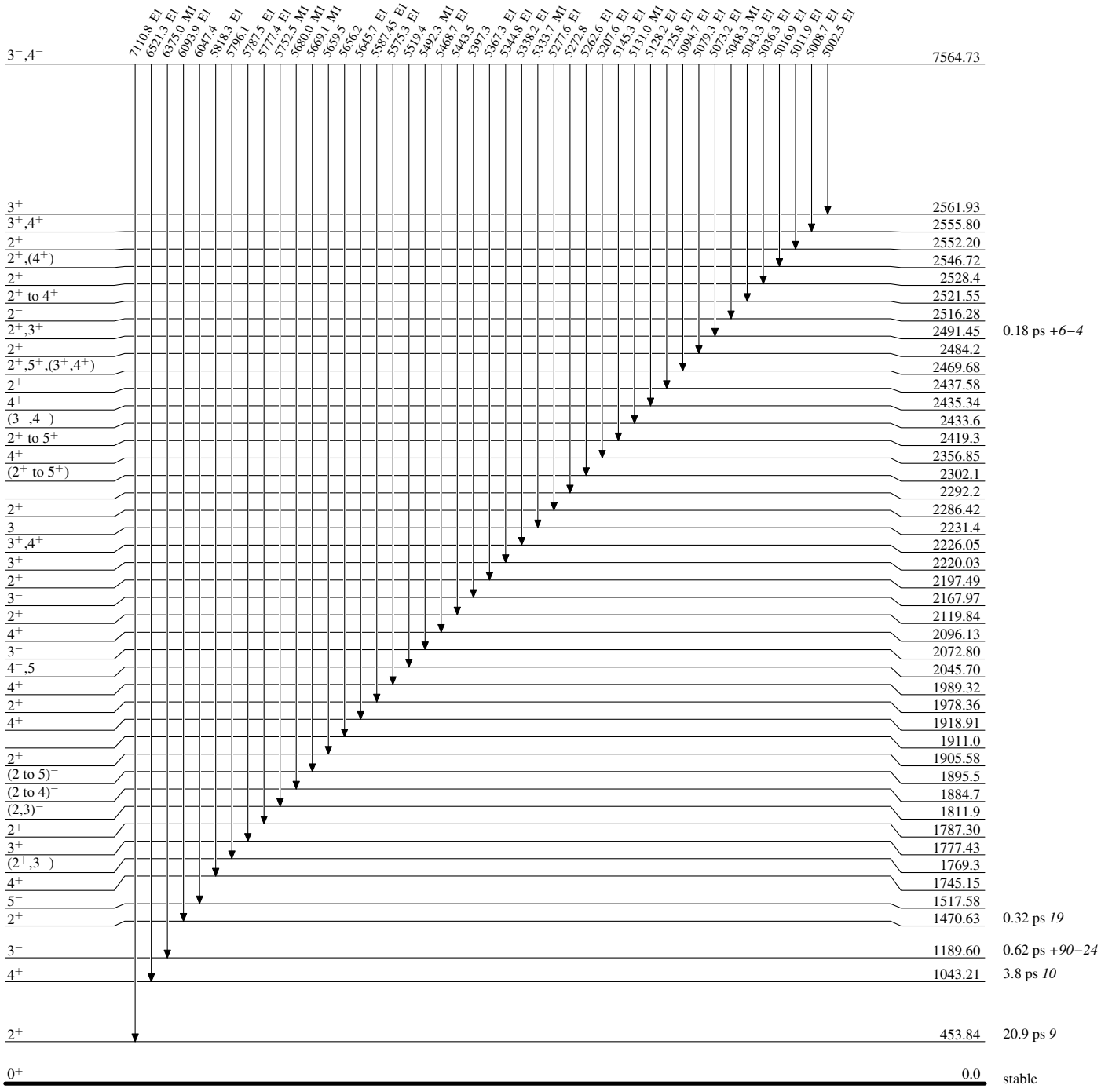
† Weighted average of available Eγ′s from ^{146}Pr β^- decay, ^{145}Nd(n,γ), ^{146}Nd(n,n′γ) and ^{136}Xe(^{13}C,3nγ), except as noted.
‡ From ^{146}Pr β^- decay, except as noted. The intensities of primary transitions in (n,γ) reactions, see the relevant data sets.
# From DCO ratios. Stretched quadrupoles are assumed to be E2 as no lifetimes longer than 8 ns were observed (1996Ia01).
@ From ^{146}Nd(n,n′γ), except as noted.
& From ^{146}Pr β^- decay.
a From ^{145}Nd(n,γ), E=thermal.
b From ^{145}Nd(n,γ), E=0.2-0.5 keV.
c From ^{146}Nd(n,n′γ).
d From ^{136}Xe(^{13}C,3nγ).
e From ^{146}Nd(γ,γ′).
f From ^{145}Nd(n,γ), E=thermal.
g From ^{146}Nd(n,n′γ).
h From ^{136}Xe(^{13}C,3nγ).
i From (n,n′γ) (1994YaZT).
j Branching deduced from (γ,γ′).
k Not used in least-square procedure as poor fit of Eγ.
l Additional information 2.
m Multiply placed with undivided intensity.
n Placement of transition in the level scheme is uncertain.

$^{146}_{60}Nd_{86}$-22

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

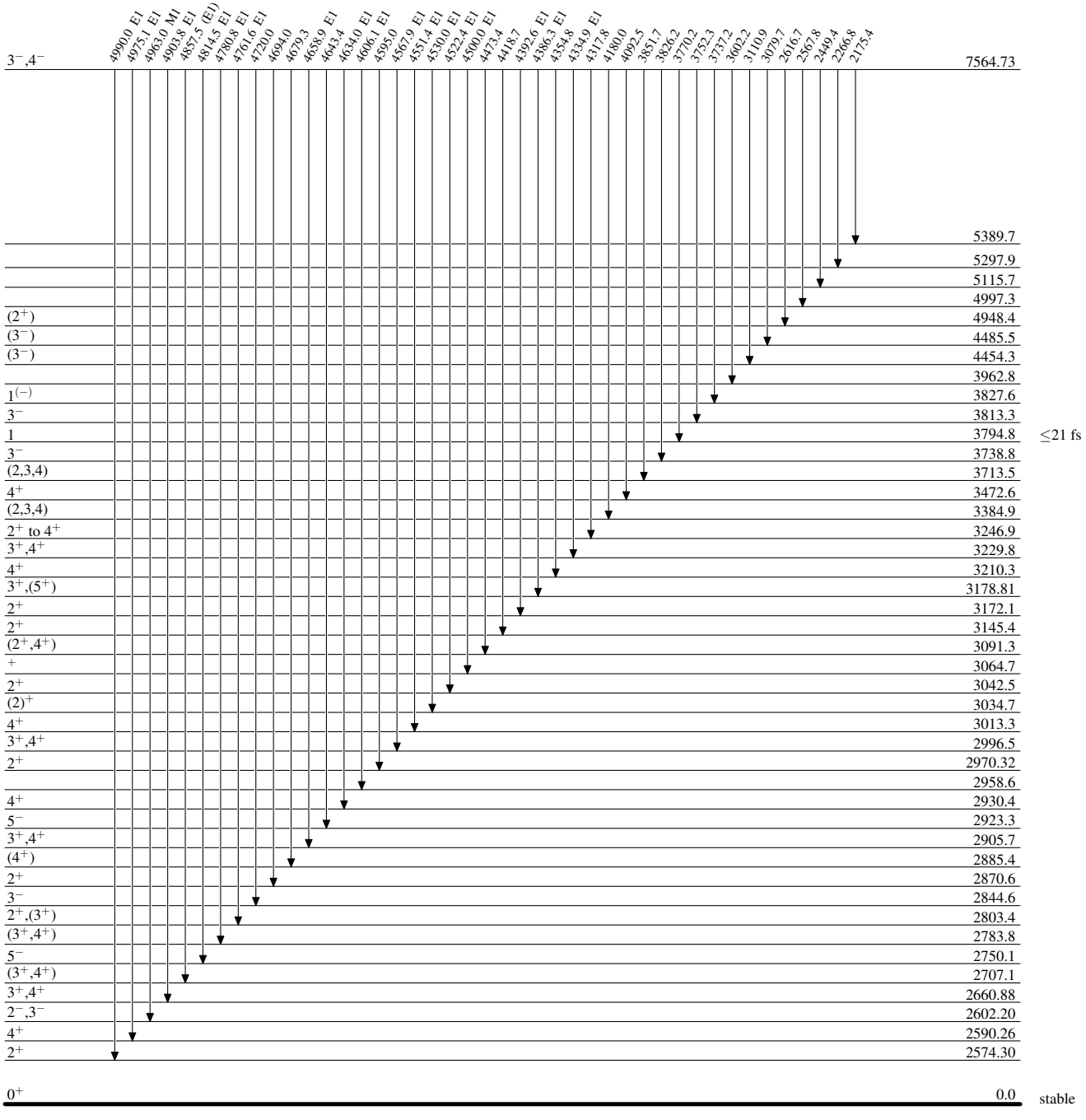


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

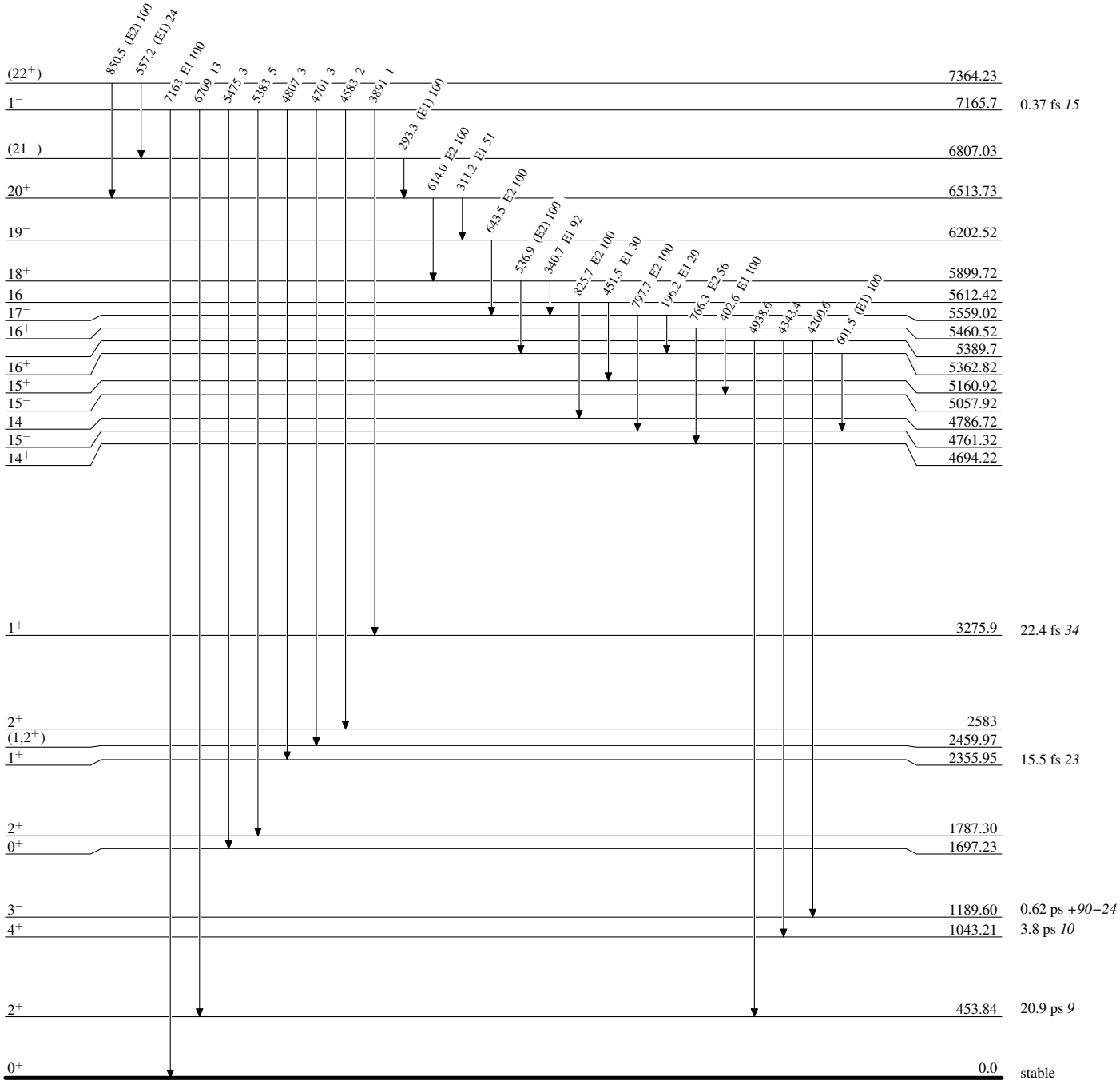


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

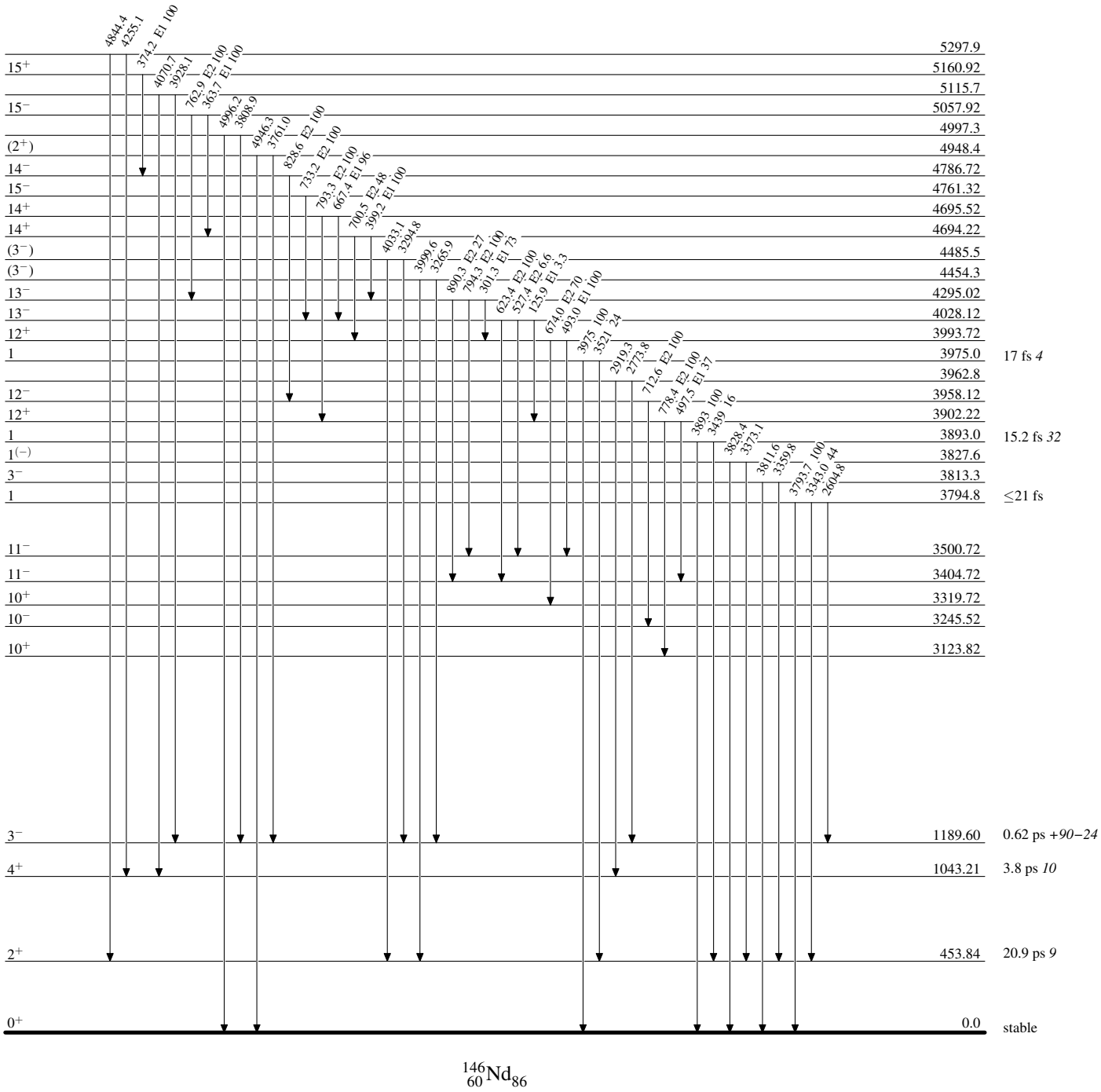


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

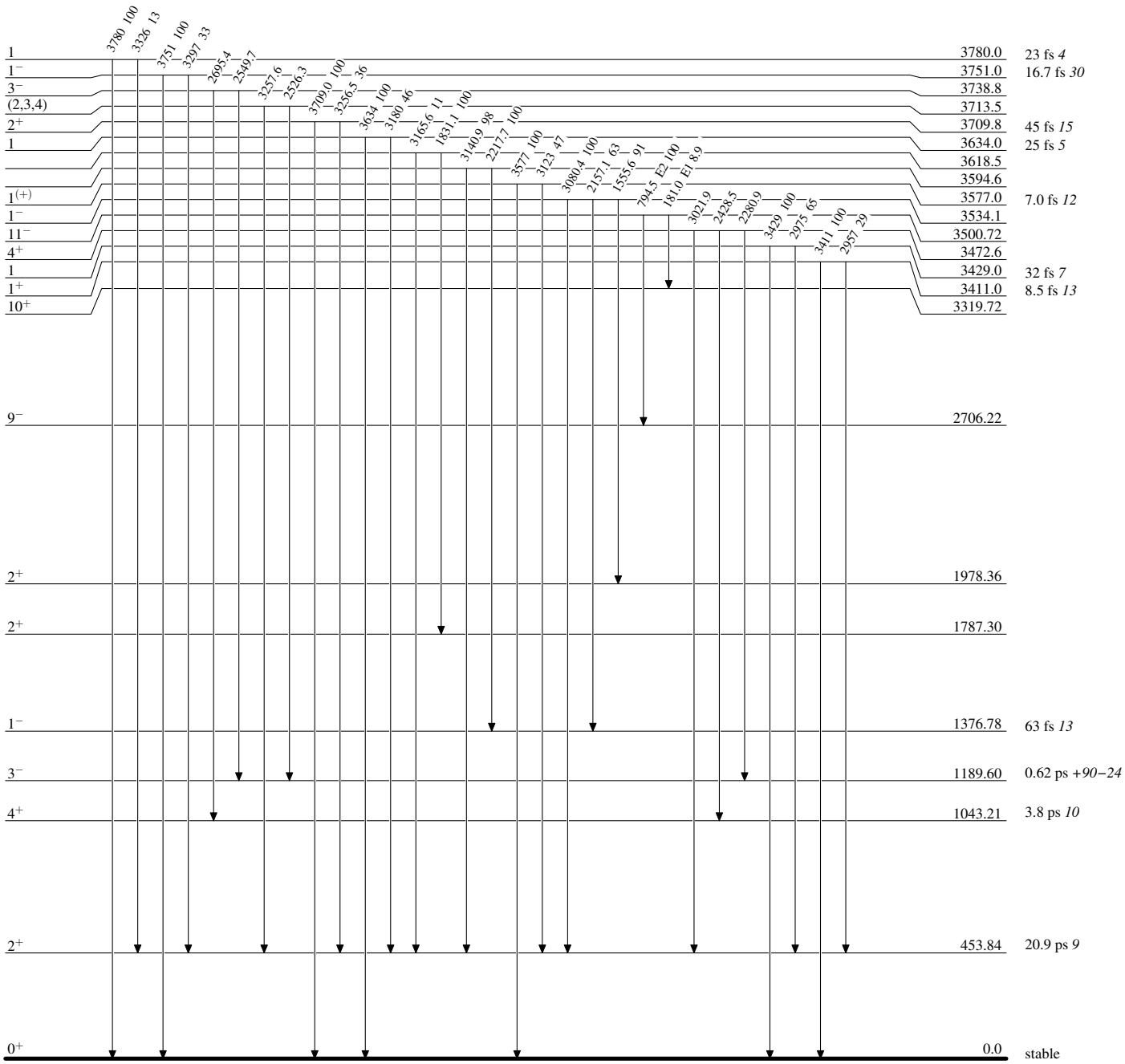


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

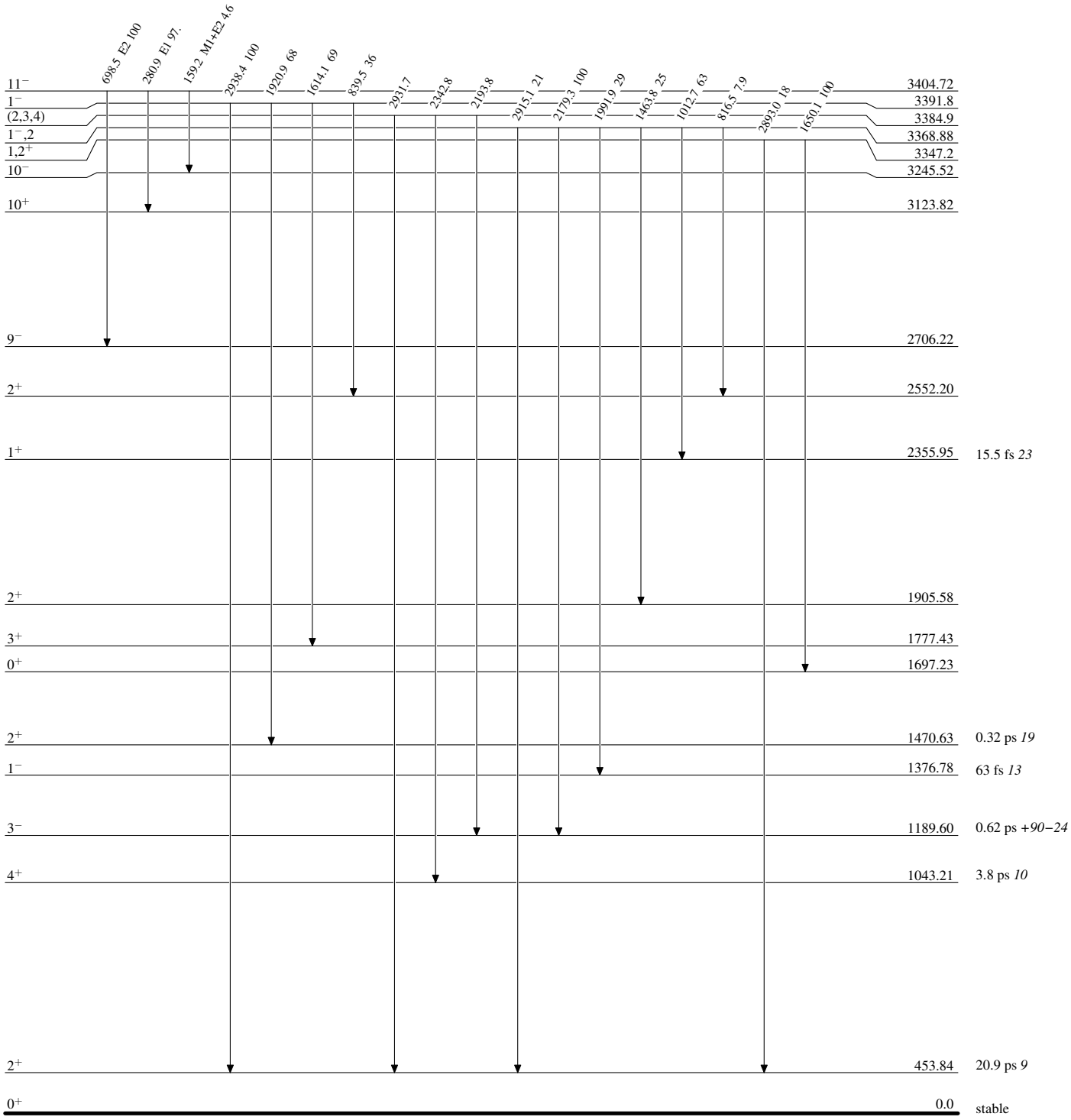


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

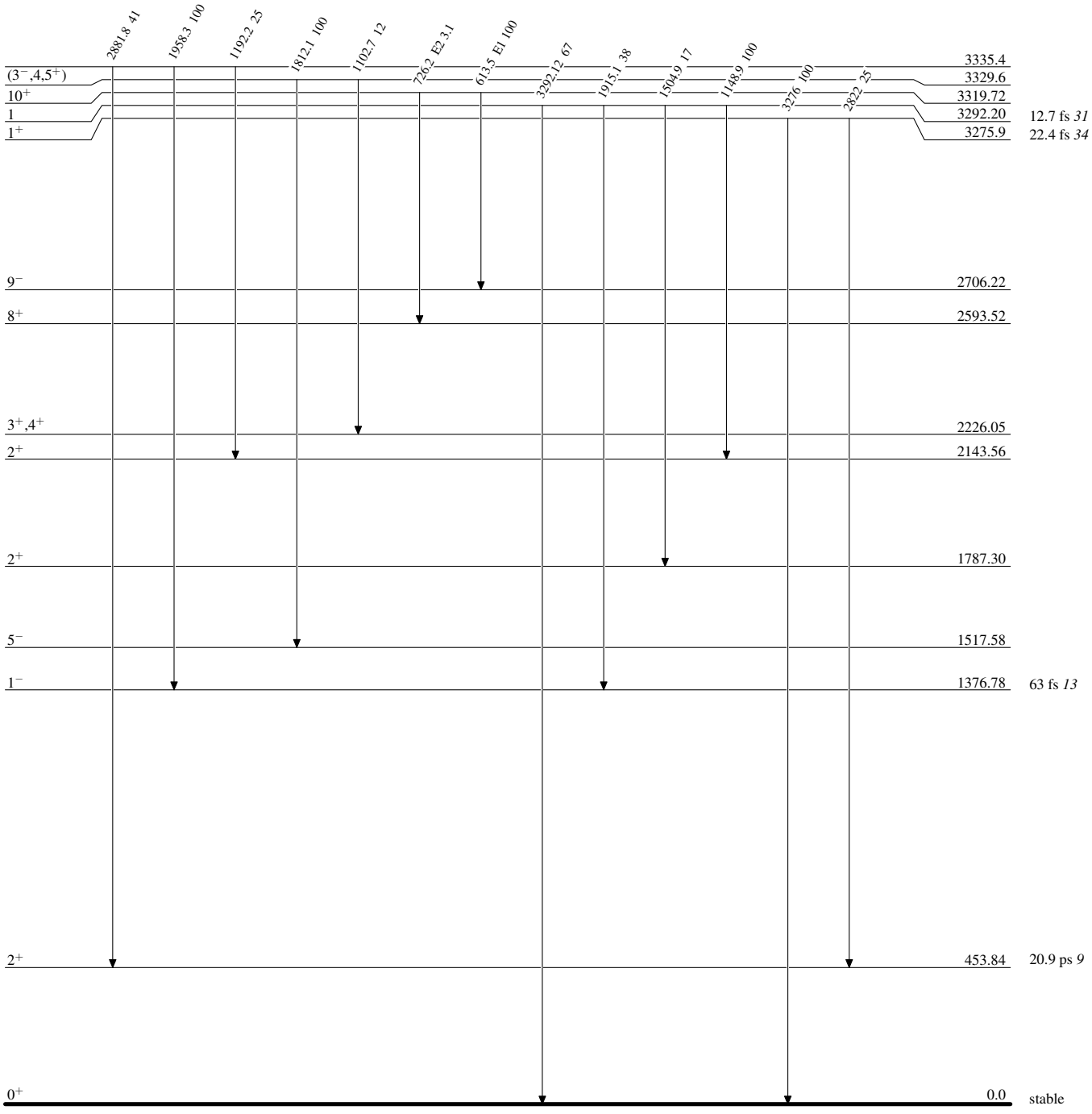


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

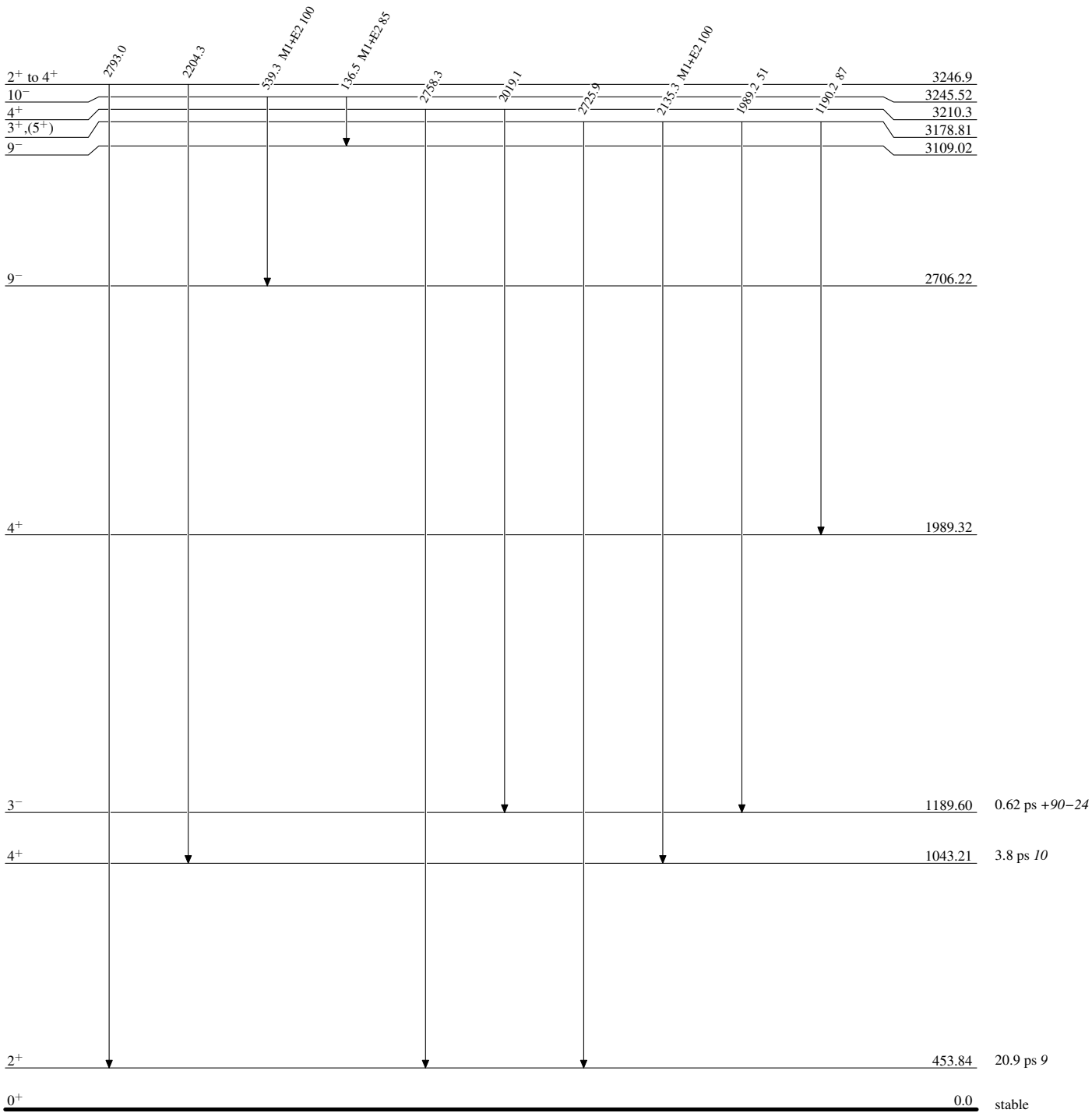


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

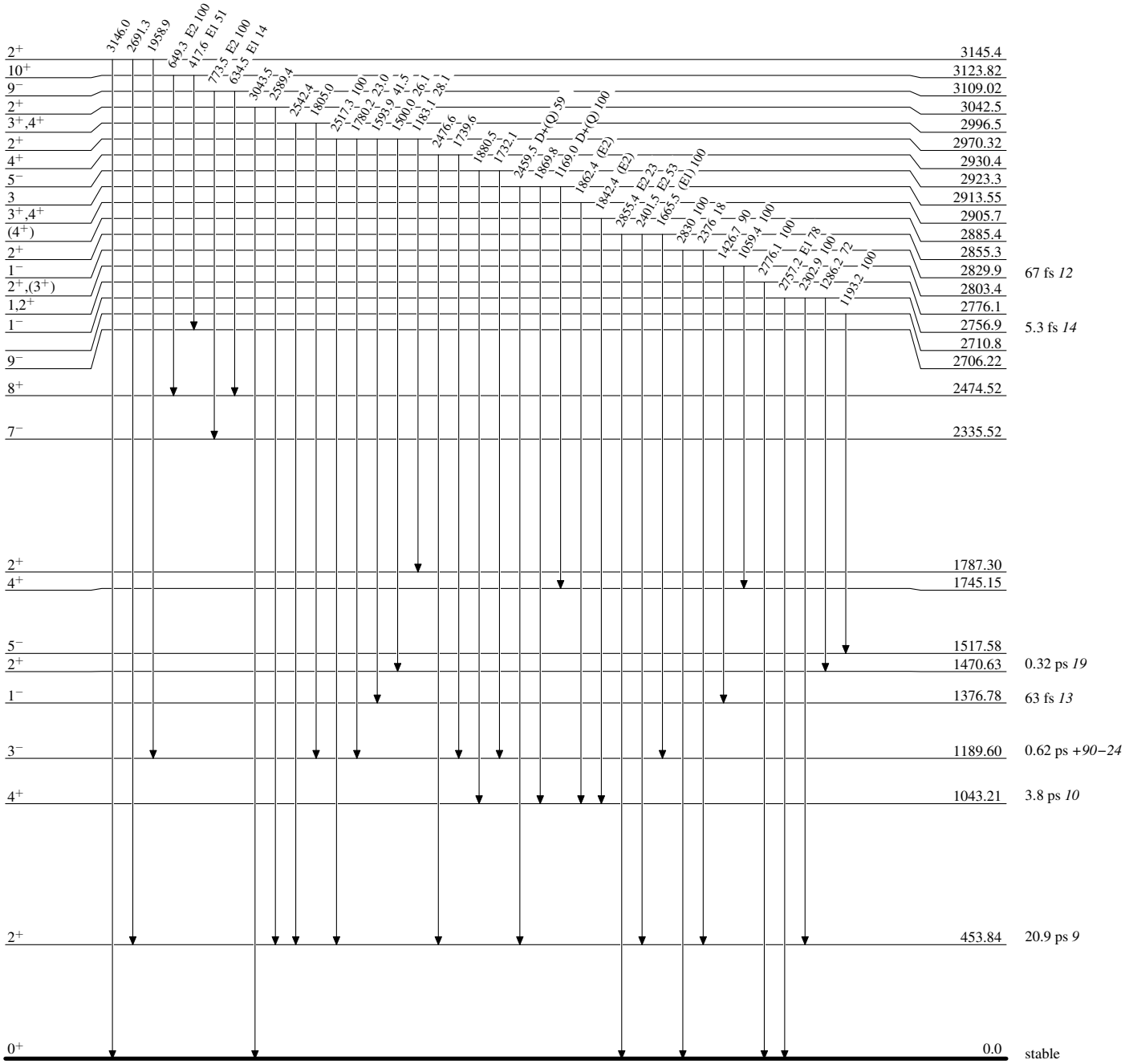


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

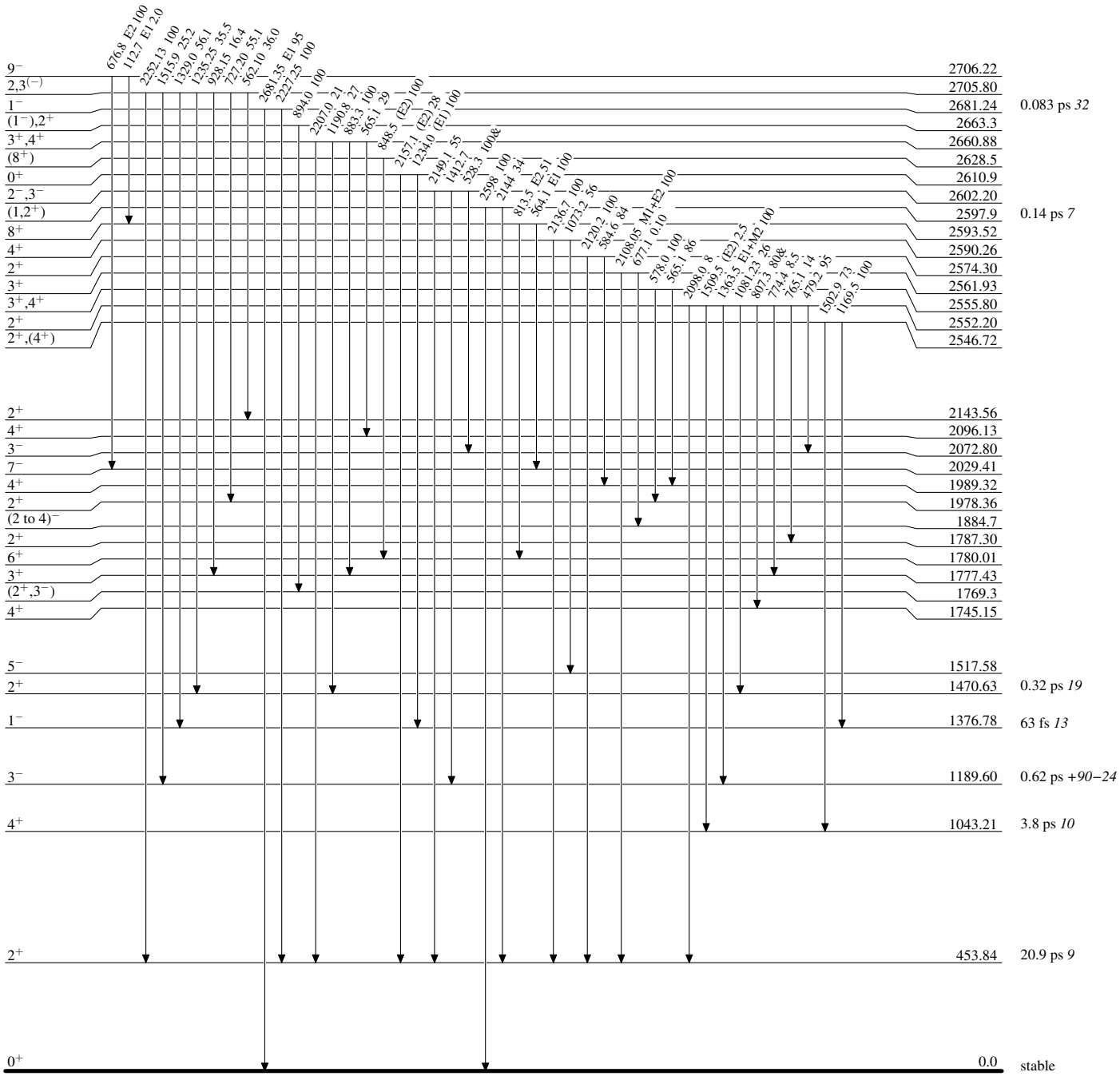


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



$^{146}_{60}Nd_{86}$

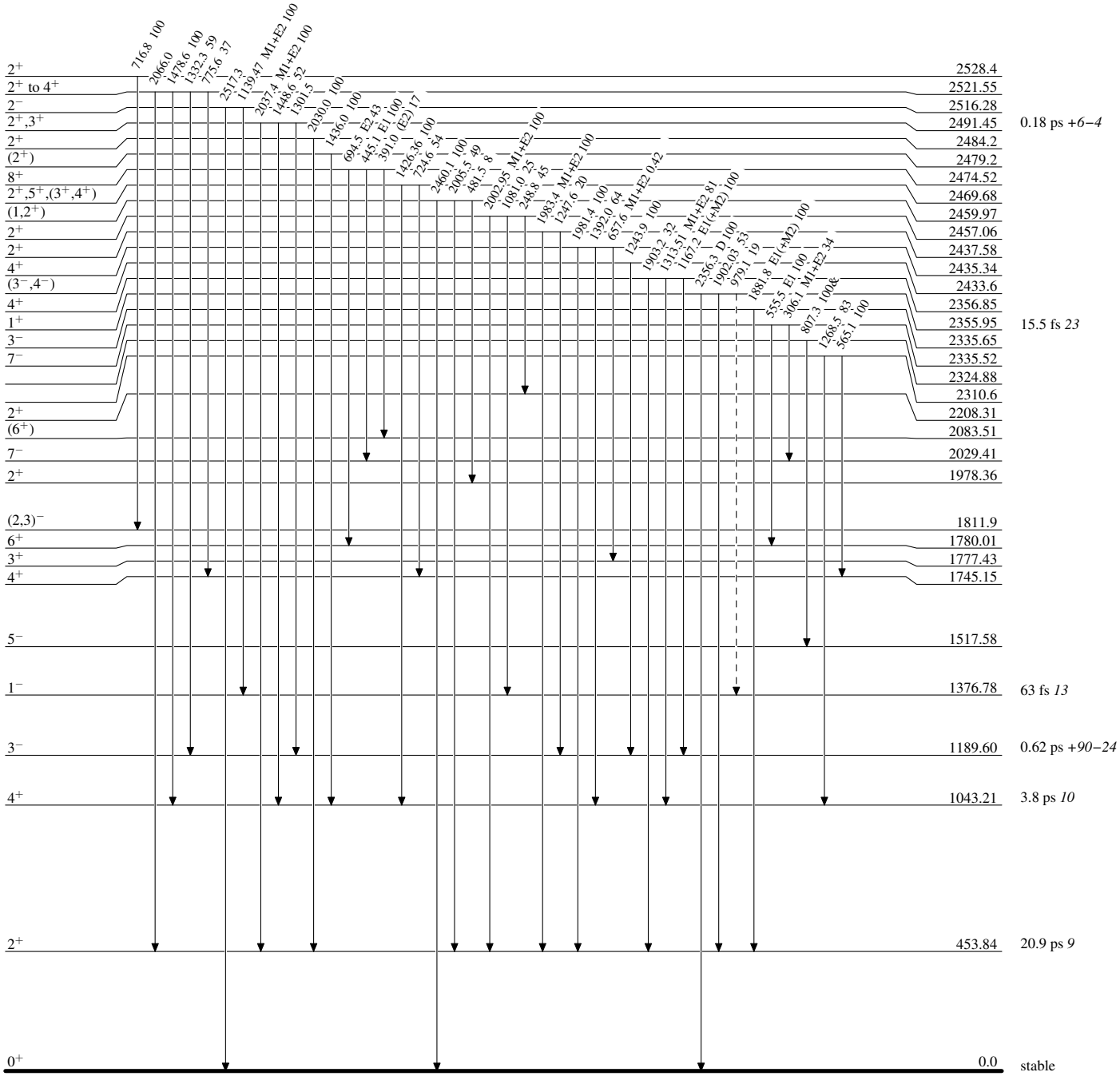
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

- - - - - - ► γ Decay (Uncertain)

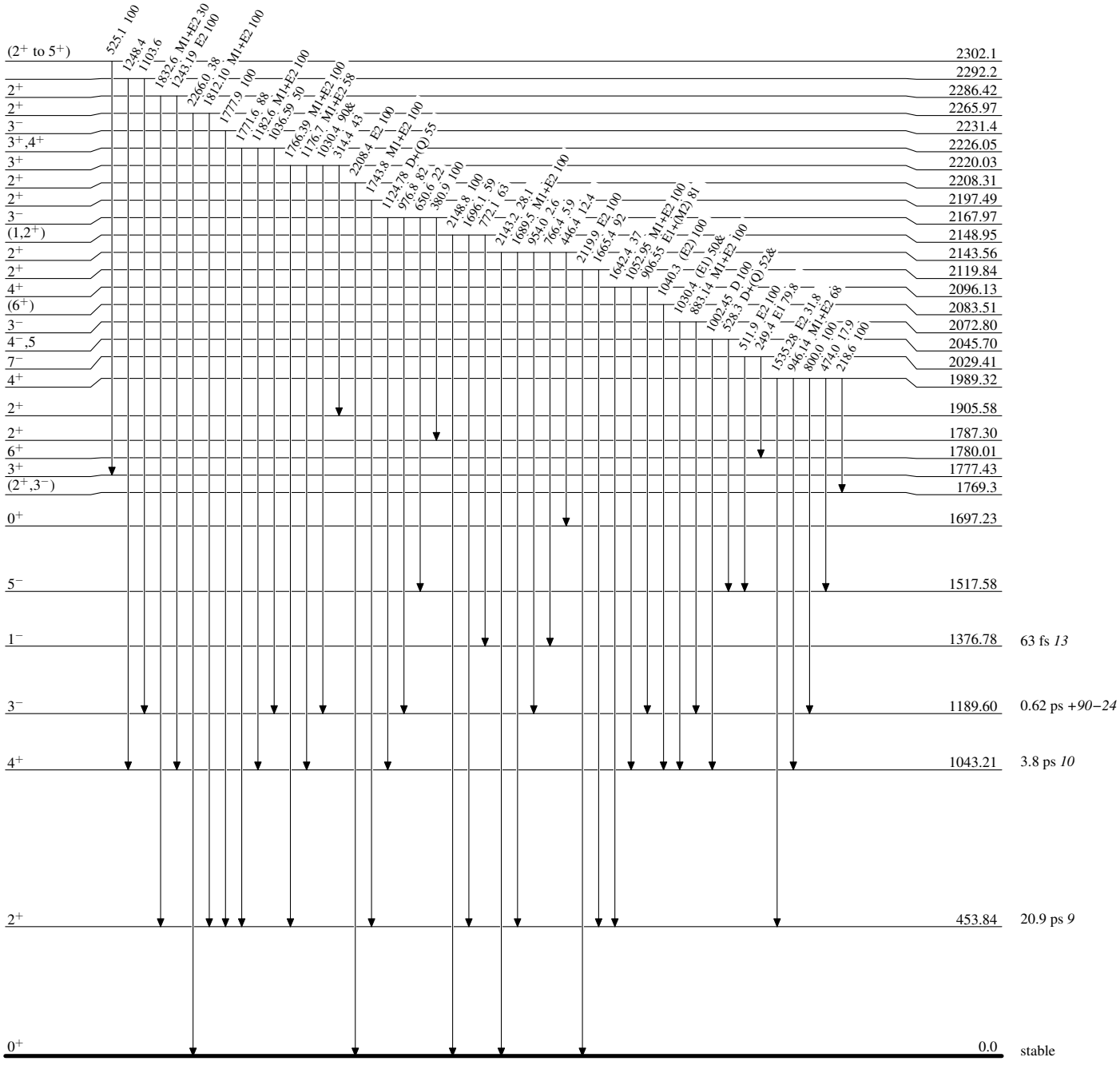


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

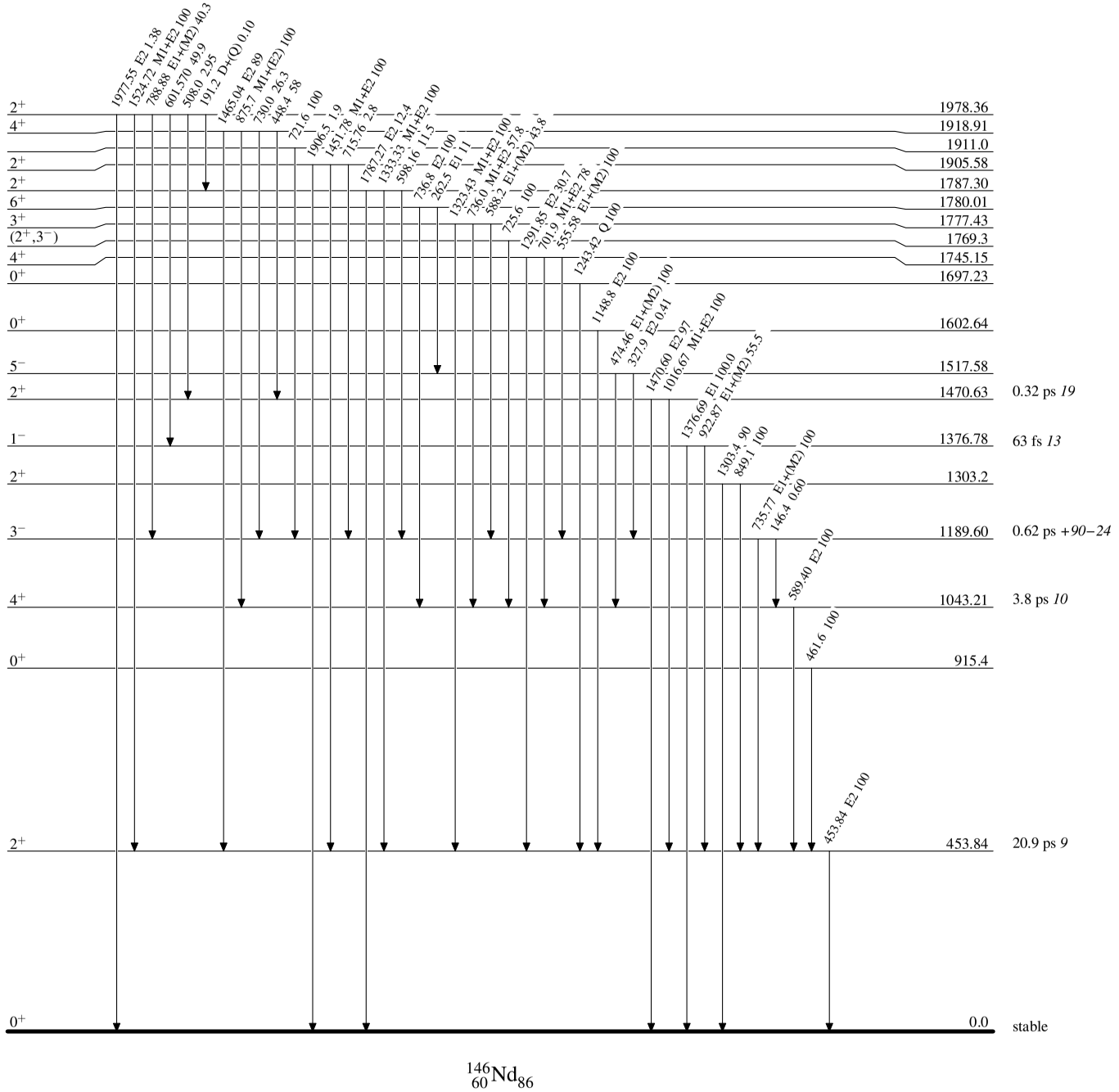


$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



$^{146}_{60}Nd_{86}$

Adopted Levels, Gammas