^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh and Jun Chen	NDS 185, 2 (2022)	23-Aug-2022

1979Ha19 (also 1978HaYV thesis): ^{148}Nd(α,3nγ),E=20-37 MeV and ^{150}Nd(^{3}He,4nγ),E=19-27 MeV from the Stockholm 225-cm cyclotron. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, γ(t), ce, ce(t) and excitation functions; $\gamma(\theta)$ data in both reactions from 90° to 165° in steps of 15°. Internal conversion data were obtained using ^{3}He beam. Main data at E(^{3}He)=27 MeV and Eα=33 MeV.

1990UrZR (also 1990UrZW,1990UrZX,1986UrZZ): ^{148}Nd(α,3nγ) at KVI. γ(lin pol) reported and level scheme extended to high-spin states, but details of this work are not available.

1994Ba01: ^{148}Nd(α,3nγ),E=37 MeV from the variable-energy cyclotron at VECC, Calcutta. Measured Eγ, Iγ, $\gamma\gamma$. The γ-ray energy precision (typical ΔE=1.5 keV) in this study is less than in 1979Ha19 and 1977Kl04. Also, there are disagreements in γ-branching ratios as compared to those in other studies.

1977Kl04: ^{148}Nd(α,3nγ),E=35-45 MeV from the 88-inch cyclotron at LBNL. Measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, $\gamma(\theta$,lin pol) and excitation functions; $\gamma(\theta)$ data from 90° to 165° in steps of 15°. This work deals mainly with high-J states. Main data recorded at 38 MeV.

Others:

1976SiZW: ^{146}Nd(α,nγ),E=15-22 MeV and ^{148}Nd(α,3nγ),E=20-35 MeV; measured Eγ, Iγ, $\gamma\gamma$, $\gamma(\theta)$, ce, and excitation functions; $\gamma(\theta)$ from 0° to 90° in steps of 15°. The γ, ce and $\gamma(\theta)$ data reported at 18 MeV for (α,nγ) and at 33 MeV for (α,3nγ). The (α,nγ) studies were carried out at McMaster tandem accelerator, and (α,3nγ) at the Chalk River tandem accelerator.

1976Ga10 (also 1976Le15): ^{148}Nd(α,3nγ),E=34 MeV. $\gamma(\theta)$ for selected levels. Only the 591 and 664 levels studied.

1976KiZM: Nd(α,xnγ) and Te(^{22}Ne,xnγ). Measured γ, $\gamma\gamma$(t). Details of this work are not available.

^{149}Sm Levels

The band assignments are from 1977Kl04, 1979Ha19, 1990UrZR and 1994Ba01.

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$	Comments
0.0[a]	7/2$^-$		
22.50[e] 5	5/2$^-$		
277.40 14	5/2$^-$		
286.01[b] 19	9/2$^-$		
350.02 16	3/2$^-$		
528.57 18	3/2$^-$		
558.38 16	(5/2$^-$)		
591.09[e] 17	9/2$^-$	≤0.5 ns	T$_{1/2}$: from γ(t) (1979Ha19).
636.13 18	7/2$^-$		
664.32[a] 18	11/2$^-$		
747.89[b] 22	13/2$^-$		
789.67[@] 22	11/2$^+$		
879.06[&] 24	13/2$^+$		
994.5 4			
1132.6 4	(11/2$^-$)		
1192.88[d] 26	(13/2$^+$)		J$^{\pi}$: from 1990UrZR. Other: (9/2$^+$,13/2$^+$) in 1979Ha19.
1240.50[@] 27	15/2$^+$		
1308.85[c] 24	11/2$^-$		
1344.36[e] 24	(13/2$^-$,11/2$^-$)		
1361.23[b] 30	17/2$^-$		
1362.88[&] 34	17/2$^+$		
1398.45[a] 25	15/2$^-$		
1413.5 4	15/2$^{(+)}$		J$^{\pi}$: from 1990UrZR. Other: (11/2$^-$,15/2$^-$) in 1979Ha19. J^{π}=13/2$^+$,15/2$^+$ in the Adopted Levels.

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^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

^{149}Sm Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$	Comments
1574.8[c] 4	13/2−		
1670.65[@] 31	19/2+		
1695.80[d] 33	(17/2+)		Jπ: band member.
1847.0[c] 4	15/2−		
1851.3[#] 6	(17/2+)[#]		
1926.2[&] 4	21/2+		
2041.2[#a] 4	(19/2−)[#]		
2130.7[c] 4	17/2−		
2142.6[b] 4	21/2−		
2145.3? 4			
2192.6[@] 4	23/2+		
2262.0? 8			Level proposed by 1994Ba01, based on placements of 336 and 566 transitions. The level is considered uncertain (evaluators) since both these γ rays reported by 1994Ba01 are likely to be complex, as suggested by other studies. This level is not included in the Adopted dataset.
2344.8[#d] 5	(21/2+)[#]		
2404.6[#] 7	(21/2+)[#]		
2427.2[c] 5	19/2−		
2537.4[&] 5	25/2+		
2702.0[#a] 6	(23/2−)[#]		
2735.0[c] 5	(21/2−)		
2828.6[#] 9	(25/2−)[#]		
2834.7[@] 5	27/2+		
2842.6[#b] 5	(25/2−)[#]		
2875.8[#d] 5	(25/2+)[#]		
2933.2? 5			
2987.6[#] 9	(25/2)[#]		
3008.6[#] 12	(25/2+)[#]		
3051.6? 11			Level from 1976SiZW only. This level is not included in the Adopted dataset.
3055.3[c] 7	(23/2−)		
3159.7[#] 8	(25/2)[#]		
3181.4[&] 5	29/2+		
3180.9+x		4 ns 1	E(level): x≤200 (1979Ha19). $T_{1/2}$: from γ(t) (1979Ha19).
3220.7[#] 9	(25/2)[#]		
3328.2[#a] 8	(27/2−)[#]		
3361.6[#b] 5	(29/2−)[#]		
3365.1[#d] 5	(29/2+)[#]		
3384.1[#c] 9	(25/2−)[#]		
3564.5[#] 5	(29/2−)[#]		
3652.2[@] 6	31/2+		
3777.7[#] 8	(29/2)[#]		
3859.6[&] 6	33/2+		
3880.4[#] 11	(31/2−)[#]		The 31/2− member of $f_{7/2}$ band is at 3880 or 3953.
3919.2? 13			Level proposed by 1994Ba01 as the 31/2− member of $f_{7/2}$ band. It is considered uncertain (evaluators) since main 591γ deexcites a 591 level and firm evidence for placement from a 3919 level is not given by 1994Ba01. This level is not included in the Adopted dataset.
3953.4[#a] 11	(31/2−)[#]		The 31/2− member of $f_{7/2}$ band is at 3880 or 3953.

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^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

^{149}Sm Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	Comments
3968.8[#b] 6	(33/2$^-$)[#]	
4006.3[#] 6	(33/2$^-$)[#]	
4055.7[#d] 7	(33/2$^+$)[#]	
4487.2[#] 12	(33/2)[#]	
4543.7[#a] 7	(35/2$^-$)[#]	
4575.5[#@] 9	(35/2$^+$)[#]	
4597.3[#&] 7	(37/2$^+$)[#]	
4607.1[#] 10	(37/2$^-$)[#]	
4686.8[#b] 7	(37/2$^-$)[#]	1994Ba01 propose that 37/2$^-$ member of this band is at 4605 deexciting through a 637γ to 33/2$^-$ level at 3968 level.
4799.9[#d] 10	(37/2$^+$)[#]	
5140.5[#a] 10	(39/2$^-$)[#]	
5174.0[#] 11	(39/2$^+$)[#]	
5325.8[#] 12	(39/2)[#]	
5361.3[#&] 12	(41/2$^+$)[#]	
5373.1[#] 12	(41/2$^-$)[#]	
5477.8[#b] 12	(41/2$^-$)[#]	
5792.1[#] 16	(43/2)[#]	
5801.5[#a] 14	(43/2$^-$)[#]	
6190.1[#] 19	(45/2)[#]	

[†] From least-squares fit to Eγ data, assuming 0.3 keV uncertainty when Eγ stated to nearest tenth of a keV, and 1 keV when stated to nearest keV.
[‡] As given by 1979Ha19 and 1977Kl04, unless otherwise stated.
[#] From 1990UrZR and 1990UrZX.
[@] Band(A): $\nu i_{13/2}$,7/2[633] band. From observation of interconnecting E1 transitions, 1994Ba01 suggest octupole deformation and propose that this band and the band with configuration $h_{9/2}$,9/2[505] form an alternating parity band with simplex quantum number s=−i.
[&] Band(B): $\nu i_{13/2}$,9/2[624] band. From observation of interconnecting E1 transitions, 1994Ba01 suggest octupole deformation and propose that this band and the band with configuration $f_{7/2}$,7/2[514] form an alternating parity band with simplex quantum number s=+i.
[a] Band(C): $\nu f_{7/2}$,7/2[514] band.
[b] Band(D): $\nu h_{9/2}$,9/2[505] band.
[c] Band(E): $\nu h_{11/2}$,11/2[505] band.
[d] Band(F): Band based on (13/2$^+$).
[e] Band(G): Band based on 5/2$^-$.

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

$\gamma(^{149}Sm)$

A_2, A_4 and α(K)exp values are from 1979Ha19, unless otherwise indicated, two sets of values correspond to data from (^{3}He,4nγ) and (α,3nγ). Values available from 1977Kl04 are also listed.

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[c]	Comments
22.50		22.50	5/2$^-$	0.0	7/2$^-$			E_γ: rounded value from the Adopted Gammas.
72.5	1.4 *4*	350.02	3/2$^-$	277.40	5/2$^-$			I_γ: value given by 1979Ha19 is too high; probably contributed largely by a contaminant. Iγ=2.4 (1977Kl04).
73.3	3.1 *4*	664.32	11/2$^-$	591.09	9/2$^-$			Iγ=8.0 in (α,3nγ) for a complex peak (1979Ha19).
84 *1*		747.89	13/2$^-$	664.32	11/2$^-$			γ from 1994Ba01 only, observed in different gated spectra, no Iγ available.
89.5	2.7 *4*	879.06	13/2$^+$	789.67	11/2$^+$	D		A_2=−0.32 *7*; A_4=−0.04 *9* (1977Kl04) Iγ=3.3 in (α,3nγ) (1979Ha19).
121.0 *8*		1361.23	17/2$^-$	1240.50	15/2$^+$			E_γ: from 1994Ba01, Iγ=4.55 *12* (1994Ba01). Placement is shown in 1990UrZR and 1994Ba01. Iγ(121γ)/Iγ(614γ)=0.114 *3* (1994Ba01).
125.4	3.8 *3*	789.67	11/2$^+$	664.32	11/2$^-$	D		A_2=+0.30 *22*; A_4=+0.21 *36* A_2=+0.41 *10*; A_4=0.00 *13* (1977Kl04) Iγ=4.6 in (α,3nγ) (1979Ha19), 3.01 *11* (1994Ba01). Mult.: $\gamma(\theta)$ data consistent with ΔJ=0, dipole.
131[@]		879.06	13/2$^+$	747.89	13/2$^-$			
141[@]		2842.6	(25/2$^-$)	2702.0	(23/2$^-$)			
159[@]		2987.6	(25/2)	2828.6	(25/2$^-$)			
174[@]		2875.8	(25/2$^+$)	2702.0	(23/2$^-$)			
198.6	21 *1*	789.67	11/2$^+$	591.09	9/2$^-$	E1	0.0431 *6*	A_2=−0.26 *16*; A_4=−0.13 *20*; α(K)exp=0.0473 *15* A_2=−0.16 *7*; A_4=−0.08 *6*; pol=+0.41 *6* (1990UrZW) α(K)=0.0366 *5*; α(L)=0.00508 *7*; α(M)=0.001085 *15* δ(M2/E1)=0.09 *+10−15* from α(K)exp, −0.02 *10* from $\gamma(\theta)$ (1979Ha19). Iγ=23.0 in (α,3nγ) for a complex peak (1979Ha19), 39.5 *3* (1994Ba01). Iγ(198γ)/Iγ(125γ)=13.2 (1994Ba01) is high by a factor of ≈2, as compared to results from many other studies. It is likely that Iγ(198γ) as reported by 1994Ba01 contains contribution from an impurity.
199[@]		5373.1	(41/2$^-$)	5174.0	(39/2$^+$)			
203.1[@]		3564.5	(29/2$^-$)	3361.6	(29/2$^-$)			pol=−0.06 *18* (1990UrZW)
208.4	1.4 *3*	558.38	(5/2$^-$)	350.02	3/2$^-$			
214.7	38 *1*	879.06	13/2$^+$	664.32	11/2$^-$	E1	0.0350 *5*	A_2=−0.26 *2*; A_4=+0.06 *4*; α(K)exp=0.0311 *20* A_2=−0.12 *4*; A_4=−0.06 *3* A_2=−0.19 *1*; A_4=−0.06 *1*; pol=+0.35 *15* (1977Kl04); pol=+0.39 *5* (1990UrZW) α(K)=0.0298 *4*; α(L)=0.00411 *6*; α(M)=0.000878 *12* δ(M2/E1)=0.00 *8* from α(K)exp, −0.06 *3* from $\gamma(\theta)$ (1979Ha19). Iγ=60.0 in (α,3nγ) (1979Ha19), 48.6 *3* (1994Ba01).
251.3	4.6 *3*	528.57	3/2$^-$	277.40	5/2$^-$			A_2=+0.05 *5*; A_4=+0.03 *8*; α(K)exp=0.172 *40*

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^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

$\gamma(^{149}Sm)$ (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ[b]	α[c]	Comments
									I_γ: Iγ=4.6 in (α,3nγ) (1979Ha19).
255.7	7.5 *4*	277.40	5/2$^-$	22.50	5/2$^-$	M1+E2		0.108 *15*	All data for a complex peak, mixed with a line from ^{150}Nd. A_2=0.00 *3*; A_4=+0.15 *6*; α(K)exp=0.074 *20* α(K)=0.088 *17*; α(L)=0.0161 *15*; α(M)=0.0035 *4* δ: −0.4 or ≈+6 from $\gamma(\theta)$ (1979Ha19); >0.8 from α(K)exp in 1979Ha19.
266.0	4.0 *3*	1574.8	13/2$^-$	1308.85	11/2$^-$	M1+E2	−0.60 *30*	0.104 *6*	I_γ: mostly contributed by an impurity. From the Adopted Gammas, Iγ should be ≈1.4. Iγ=1.3 in (α,3nγ) (1979Ha19). A_2=−0.69 *4*; A_4=−0.09 *7*; α(K)exp=0.090 *10* A_2=−0.80 *2*; A_4=−0.04 *3* A_2=−0.64 *8*; A_4=−0.05 *10* (1977Kl04); pol=0.00 *14* (1990UrZW) α(K)=0.086 *6*; α(L)=0.0137 *4*; α(M)=0.00297 *11* δ: −0.60 *30* from $\gamma(\theta)$, 0.42 *15* from α(K)exp (1979Ha19).
272.1	3.5 *3*	1847.0	15/2$^-$	1574.8	13/2$^-$	M1+E2	−0.25 *20*	0.1032 *34*	Iγ=2.5 in (α,3nγ) (1979Ha19), 2.03 *11* (1994Ba01, γ unplaced). pol=+0.08 *12* (1990UrZW) A_2=−0.51 *5*; A_4=−0.15 *9*; α(K)exp=0.165 *30* (1979Ha19) A_2=−0.64 *12*; A_4=−0.02 *16* (1977Kl04) α(K)=0.087 *4*; α(L)=0.01247 *24*; α(M)=0.00268 *6* δ: −0.25 *20* from $\gamma(\theta)$, 0.85 *40* from α(K)exp (1979Ha19).
277.2	7.7[&] *3*	277.40	5/2$^-$	0.0	7/2$^-$	M1+E2	+0.20 *10*	0.0987 *18*	Iγ=3.3 in (α,3nγ) (1979Ha19), 3.02 *17* (1994Ba01, γ unplaced). A_2=−0.13 *3*; A_4=+0.06 *6*; α(K)exp=0.0875 *50* α(K)=0.0837 *17*; α(L)=0.01182 *17*; α(M)=0.00254 *4* δ(E2/M1)=0.01 *8* from α(K)exp, +0.20 *10* from $\gamma(\theta)$ (1979Ha19).
									I_γ: complex peak in (^{3}He,4nγ). Iγ=2.4 in (α,3nγ) (1979Ha19). $\gamma(\theta)$ and α(K)exp for complex peak.
281.5	≤1	558.38	(5/2$^-$)	277.40	5/2$^-$				
283[@]		1695.80	(17/2$^+$)	1413.5	15/2$^{(+)}$				
283.8	0.7 *3*	2130.7	17/2$^-$	1847.0	15/2$^-$	M1		0.0937 *13*	α(K)exp=0.150 *50* (1979Ha19) α(K)=0.0797 *11*; α(L)=0.01105 *15*; α(M)=0.002370 *33* Iγ=3.0 in (α,3nγ) (1979Ha19). α(K)exp overlaps α(K)theory for M1 within 1.4 σ.
286.0	100	286.01	9/2$^-$	0.0	7/2$^-$	M1(+E2)	+0.02	0.0918 *13*	A_2=−0.14 *3*; A_4=+0.06 *4* A_2=−0.12 *3*; A_4=+0.01 *3* A_2=−0.10 *1*; A_4=−0.05 *1*; pol=−0.22 *6* (1977Kl04); pol=−0.39 *4* (1990UrZW) δ(E2/M1)=+0.02 (or <+6.5) from $\gamma(\theta)$ (1979Ha19). Iγ=100 in (α,3nγ) (1979Ha19), 100 (1994Ba01).
291[@]		3652.2	31/2$^+$	3361.6	(29/2$^-$)				Eγ=292, Iγ<0.21 (1994Ba01).
296[@]		1695.80	(17/2$^+$)	1398.45	15/2$^-$				
296.4	2.0 *2*	2427.2	19/2$^-$	2130.7	17/2$^-$	D			A_2=−0.22 *5*; A_4=+0.03 *5* A_2=−0.34 *3*; A_4=+0.03 *5*

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^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

$\gamma(^{149}Sm)$ (continued)

E_γ †	I_γ #	E_i(level)	J_i^π	E_f	J_f^π	Mult. a	α c	Comments
								A_2=−0.67 *18*; A_4=+0.11 *5* (1977Kl04) Iγ=7.6 in (α,3nγ) (1979Ha19).
304 @		2344.8	(21/2$^+$)	2041.2	(19/2$^-$)			
305.1	1.0 *4*	591.09	9/2$^-$	286.01	9/2$^-$	D		A_2=−0.16 *6*; A_4=+0.13 *10* Iγ=0.8 in (α,3nγ) (1979Ha19).
307.5 ‡		2735.0	(21/2$^-$)	2427.2	19/2$^-$			
309.4	14.0 *4*	1670.65	19/2$^+$	1361.23	17/2$^-$	E1	0.01361 *19*	A_2=−0.27 *4*; A_4=+0.07 *7*; α(K)exp=0.0161 *30* A_2=−0.04 *2*; A_4=−0.04 *2* A_2=−0.22 *1*; A_4=−0.04 *2*; pol=+0.31 *16* (1977Kl04); pol=+0.43 *5* (1990UrZW) α(K)=0.01161 *16*; α(L)=0.001574 *22*; α(M)=0.000336 *5* δ: −0.06 *7* from $\gamma(\theta)$, 0.13 *9* from α(K)exp (1979Ha19). Iγ=31.3 in (α,3nγ) (1979Ha19), 37.3 *4* (1994Ba01).
313.9	3.3 *3*	1192.88	(13/2$^+$)	879.06	13/2$^+$	(M1)	0.0717 *10*	A_2=+0.24 *8*; A_4=−0.03 *13*; pol=+0.72 *31* (1990UrZW) Iγ=1.29 *11* for 314.2+316.7 (1994Ba01). Mult.: $\gamma(\theta)$ data in 1979Ha19 and pol value in 1990UrZW consistent with ΔJ=0, M1 transition (evaluators).
316.6 @		3968.8	(33/2$^-$)	3652.2	31/2$^+$			pol=+0.47 *19* (1990UrZW) Eγ=316.7, Iγ=1.29 *11* for 314.2+316.7 (1994Ba01).
320.1 *5*		3055.3	(23/2$^-$)	2735.0	(21/2$^-$)			Eγ: from 1977Kl04.
325 @		3159.7	(25/2)	2834.7	27/2$^+$			
327.7	5.3 & *5*	350.02	3/2$^-$	22.50	5/2$^-$	M1(+E2)	0.053 *11*	A_2=−0.08 *8*; A_4=+0.02 *10*; α(K)exp=0.0487 *40* α(K)=0.044 *10*; α(L)=0.00731 *23*; α(M)=0.001595 *28* Iγ=0.9 in (α,3nγ) (1979Ha19).
329 @		3384.1	(25/2$^-$)	3055.3	(23/2$^-$)			
333 @		1695.80	(17/2$^+$)	1362.88	17/2$^+$			Eγ: γ in 1990UrZR and 1994Ba01. Eγ=333.5, Iγ<7.3 for 333.5+336γ from (1994Ba01).
336 f		2262.0?		1926.2	21/2$^+$			γ from 1994Ba01 only, Eγ=336, Iγ<7.3 for 333.5γ+336γ.
339 @		2875.8	(25/2$^+$)	2537.4	25/2$^+$			
350.0	1.0 *4*	350.02	3/2$^-$	0.0	7/2$^-$			
354.0 @		4006.3	(33/2$^-$)	3652.2	31/2$^+$			pol=+0.6 *4* (1990UrZW)
358.8	1.0 *3*	636.13	7/2$^-$	277.40	5/2$^-$			
374 @		5174.0	(39/2$^+$)	4799.9	(37/2$^+$)			
378.3	2.7 *4*	664.32	11/2$^-$	286.01	9/2$^-$			pol=−0.06 *22* (1990UrZW) Iγ=2.8 in (α,3nγ) (1979Ha19).
398		6190.1	(45/2)	5792.1	(43/2)			
402.8 *5*		1192.88	(13/2$^+$)	789.67	11/2$^+$	D+Q		A_2=−0.6 *2*; A_4=0.0 *3* (1977Kl04); pol=+0.09 *38* (1990UrZW) Eγ: from 1977Kl04. This γ is not reported by 1979Ha19. Mult.: assigned by evaluators from $\gamma(\theta)$ data in 1977Kl04. Iγ=1.8 (1977Kl04), 1.69 *12* (1994Ba01). γ from 1977Kl04, 1976SiZW and 1994Ba01. This γ was unplaced in 1977Kl04.

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^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

γ(^{149}Sm) (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[c]	Comments
419[@]		2344.8	(21/2$^+$)	1926.2	21/2$^+$			
419[@]		5792.1	(43/2)	5373.1	(41/2$^-$)			
430.1	7.1 *4*	1670.65	19/2$^+$	1240.50	15/2$^+$	E2	0.01936 *27*	A$_2$=+0.24 *4*; A$_4$=−0.06 *7*; α(K)exp=0.0164 *24* A$_2$=+0.23 *9*; A$_4$=−0.10 *4* A$_2$=+0.36 *2*; A$_4$=−0.12 *3*; pol=+0.3 *5* (1977Kl04); pol=+0.54 *9* (1990UrZW) α(N)=0.0001410 *20*; α(O)=1.996×10^{-5} *28*; α(P)=8.89×10^{-7} *12* Iγ=21.0 in (α,3nγ) (1979Ha19), 13.3 *4* (1994Ba01).
442.0[@]		4006.3	(33/2$^-$)	3564.5	(29/2$^-$)			pol=+1.0 *4* (1990UrZW)
450.8	3.1[&] *5*	1240.50	15/2$^+$	789.67	11/2$^+$			Iγ=4.5 in (α,3nγ) (1979Ha19), 7.6 *3* (1994Ba01).
452[@]		1851.3	(17/2$^+$)	1398.45	15/2$^-$			
455[@]		1695.80	(17/2$^+$)	1240.50	15/2$^+$			
461.9	68.2	747.89	13/2$^-$	286.01	9/2$^-$	E2	0.01589 *22*	A$_2$=+0.24 *1*; A$_4$=−0.24 *1*; α(K)exp=0.0125 *15* A$_2$=+0.25 *7*; A$_4$=−0.19 *5* A$_2$=+0.36 *1*; A$_4$=−0.12 *1*; pol=+0.51 *13* (1977Kl04); pol=+0.60 *7* (1990UrZW) α(K)=0.01296 *18*; α(L)=0.002291 *32*; α(M)=0.000502 *7* Iγ=92.0 in (α,3nγ) (1979Ha19), 65.3 *6* (1994Ba01). Positive sign of A$_4$ in 1979Ha19 in (^{3}He,4nγ) seems a misprint.
472.0		2142.6	21/2$^-$	1670.65	19/2$^+$			Iγ=1.0 in (α,3nγ) (1979Ha19), 12.3 *3* (1994Ba01).
483.9	25.4 *6*	1362.88	17/2$^+$	879.06	13/2$^+$	E2	0.01400 *20*	A$_2$=+0.25 *2*; A$_4$=−0.02 *3*; α(K)exp=0.0128 *20* A$_2$=+0.28 *3*; A$_4$=−0.10 *6* A$_2$=+0.37 *1*; A$_4$=−0.12 *1*; pol=+0.73 *22* (1977Kl04); pol=+0.56 *7* (1990UrZW) α(K)=0.01147 *16*; α(L)=0.001988 *28*; α(M)=0.000435 *6* Iγ=55.0 in (α,3nγ) (1979Ha19). Eγ and Iγ not listed by 1994Ba01, although, transition is shown in the decay scheme.
489.4[d@]		3365.1	(29/2$^+$)	2875.8	(25/2$^+$)			pol=+0.4 *3* (1990UrZW)
489.4[d@] *10*		4543.7	(35/2$^-$)	4055.7	(33/2$^+$)			
492.6	18.0 *5*	1240.50	15/2$^+$	747.89	13/2$^-$	E1	0.00446 *6*	A$_2$=−0.23 *3*; A$_4$=+0.05 *5*; α(K)exp=0.0039 *10* A$_2$=−0.23 *5*; A$_4$=−0.06 *5* A$_2$=−0.14 *2*; A$_4$=−0.08 *3*; pol=+0.7 *3* (1977Kl04); pol=+0.39 *8* (1990UrZW) α(K)=0.00382 *5*; α(L)=0.000506 *7*; α(M)=0.0001079 *15* δ(M2/E1)=0.00 *+7−6* from α(K)exp, −0.02 *5* from $\gamma(\theta)$ (1979Ha19). Iγ=22.0 in (α,3nγ) (1979Ha19), 25.2 *4* (1994Ba01). Iγ(493γ)/Iγ(451γ)=3.3 (1994Ba01) is low by a factor of ≈2. δ(M2/E1)=0.00 *9* from $\gamma(\theta)$.
493[@]		2344.8	(21/2$^+$)	1851.3	(17/2$^+$)			
503.0	2.3 *4*	1695.80	(17/2$^+$)	1192.88	(13/2$^+$)	(E2)	0.01262 *18*	pol=+0.34 *21* (1990UrZW) Iγ=5.1 in (α,3nγ) (1979Ha19), 14.0 *3* (1994Ba01). Mult.: assigned by evaluators from pol value in 1990UrZW.

$^{149}_{62}Sm_{87}$-7

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

γ(^{149}Sm) (continued)

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[c]	Comments
505.8	23.4[&] *12*	528.57	3/2$^-$	22.50	5/2$^-$			Iγ=25.0 in (α,3nγ), for a complex peak in both reactions (1979Ha19).
519.0[@]		3361.6	(29/2$^-$)	2842.6	(25/2$^-$)			pol=+0.8 *6* (1990UrZW) Eγ=519, Iγ<1.4 (1994Ba01).
519.3		1398.45	15/2$^-$	879.06	13/2$^+$			E$_\gamma$: level-energy difference=520.3.
521.9	9.2 *4*	2192.6	23/2$^+$	1670.65	19/2$^+$	E2	0.01145 *16*	A$_2$=+0.24 *3*; A$_4$=−0.07 *5*; α(K)exp=0.0084 *15* A$_2$=+0.26 *8*; A$_4$=−0.10 *3* A$_2$=+0.36 *1*; A$_4$=−0.14 *2*; pol=+0.7 *3* (1977Kl04); pol=+0.55 *8* (1990UrZW) α(K)=0.00943 *13*; α(L)=0.001586 *22*; α(M)=0.000346 *5* Iγ=37.0 in (α,3nγ) (1979Ha19), 23.6 *4* (1994Ba01).
526.9[@]		3361.6	(29/2$^-$)	2834.7	27/2$^+$			A$_2$=−0.40 *10*; A$_4$=+0.05 *12* (1977Kl04); pol=+0.26 *13* (1990UrZW)
528.7[e]	3.9[e&] *4*	528.57	3/2$^-$	0.0	7/2$^-$			A$_2$=−0.27 *7*; A$_4$=−0.01 *10* Iγ=4.5 in (α,3nγ) (1979Ha19), >5.4 (1994Ba01, γ unplaced). γ(θ) for doublet.
528.7[e]	3.9[e] *4*	1192.88	(13/2$^+$)	664.32	11/2$^-$			Iγ=4.5 in (α,3nγ) (1979Ha19).
530[@]		3365.1	(29/2$^+$)	2834.7	27/2$^+$			
531.0[@]		2875.8	(25/2$^+$)	2344.8	(21/2$^+$)			pol=+0.46 *28* (1990UrZW) Eγ=532.0 *16*, Iγ=5.4 *3* (1994Ba01), unplaced.
535.4	2.4[&] *3*	558.38	(5/2$^-$)	22.50	5/2$^-$	D+Q		A$_2$=−0.22 *4*; A$_4$=−0.17 *6* Iγ=6.5 in (α,3nγ) (1979Ha19).
538[@]		1847.0	15/2$^-$	1308.85	11/2$^-$			
543[@]		5140.5	(39/2$^-$)	4597.3	(37/2$^+$)			
553[@]		2404.6	(21/2$^+$)	1851.3	(17/2$^+$)			
554.8[‡]		1344.36	(13/2$^-$,11/2$^-$)	789.67	11/2$^+$			
555.9[‡]		2130.7	17/2$^-$	1574.8	13/2$^-$			
557[@]		3777.7	(29/2)	3220.7	(25/2)			
558.3	17.3[&] *6*	558.38	(5/2$^-$)	0.0	7/2$^-$	M1+E2	0.0130 *34*	A$_2$=+0.19 *5*; A$_4$=+0.02 *9*; α(K)exp=0.0071 *15* α(K)=0.0109 *30*; α(L)=0.00160 *29*; α(M)=0.00034 *6* I$_\gamma$: for a complex peak. Iγ=21.5 in (α,3nγ) (1979Ha19). δ(E2/M1)>3 from α(K)exp.
561.0[‡]		1308.85	11/2$^-$	747.89	13/2$^-$			
563.4	12.7 *5*	1926.2	21/2$^+$	1362.88	17/2$^+$	E2	0.00939 *13*	A$_2$=+0.19 *4*; A$_4$=+0.06 *6*; α(K)exp=0.0074 *10* (1979Ha19) A$_2$=+0.25 *4*; A$_4$=−0.10 *4* A$_2$=+0.35 *2*; A$_4$=−0.13 *2*; pol=+0.5 *3* (1977Kl04); pol=+0.54 *8* (1990UrZW) α(K)=0.00777 *11*; α(L)=0.001272 *18*; α(M)=0.000277 *4* Iγ=35.1 in (α,3nγ) (1979Ha19), 24.5 *4* (1994Ba01).
566[f]		2262.0?		1695.80	(17/2$^+$)			γ from 1994Ba01 only, Eγ=566, Iγ=1.36 *31*.
567[@]		5174.0	(39/2$^+$)	4607.1	(37/2$^-$)			

$^{149}_{62}Sm_{87}$-8

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

γ(^{149}Sm) (continued)

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ[b]	α[c]	Comments
568.6	7.0 *4*	591.09	9/2$^-$	22.50	5/2$^-$	E2		0.00918 *13*	A_2=+0.24 *3*; A_4=−0.12 *6*; α(K)exp=0.0060 *15* A_2=+0.10 *8* A_2=+0.36 *9*; A_4=−0.10 *13* (1977Kl04); pol=+0.22 *19* (1990UrZW) α(K)=0.00760 *11*; α(L)=0.001239 *17*; α(M)=0.000270 *4* Iγ=4.0 in (α,3nγ) (1979Ha19).
580.2[‡]		2427.2	19/2$^-$	1847.0	15/2$^-$				pol=+0.8 *7* (1990UrZW) Iγ=1.2 in (α,3nγ) (1979Ha19).
591[f] *1*		3919.2?		3328.2	(27/2$^-$)				
591.1	22.4 *5*	591.09	9/2$^-$	0.0	7/2$^-$	E2+M1	−1.0 *4*	0.0112 *14*	A_2=−0.50 *2*; A_4=+0.07 *4*; α(K)exp=0.0081 *10* A_2=−0.80 *10*; A_4=+0.10 *10* A_2=−0.60 *3*; A_4=+0.04 *4*; pol=+0.3 *4* (1977Kl04); pol=+0.23 *9* (1990UrZW) α(K)=0.0095 *12*; α(L)=0.00137 *12*; α(M)=0.000295 *26* δ: other: 1.8 *+25−6* from α(K)exp in 1979Ha19. Iγ=15.4 in (α,3nγ) (1979Ha19), 20.5 *4* (1994Ba01).
596.4	9.1[&] *6*	1344.36	(13/2$^-$,11/2$^-$)	747.89	13/2$^-$				A_2=+0.06 *2*; A_4=+0.08 *3* Iγ=7.0 in (α,3nγ) (1979Ha19).
597[@]		5140.5	(39/2$^-$)	4543.7	(35/2$^-$)				
601[@]		4607.1	(37/2$^-$)	4006.3	(33/2$^-$)				
604[@]		3008.6	(25/2$^+$)	2404.6	(21/2$^+$)				
606[@]		2735.0	(21/2$^-$)	2130.7	17/2$^-$				
607[@]		3968.8	(33/2$^-$)	3361.6	(29/2$^-$)				
607[@f]		4575.5	(35/2$^+$)	3968.8	(33/2$^-$)				
611[@]		1851.3	(17/2$^+$)	1240.50	15/2$^+$				
611.2	7.0[&] *7*	2537.4	25/2$^+$	1926.2	21/2$^+$	E2		0.00765 *11*	A_2=+0.22 *6*; A_4=−0.15 *5*; α(K)exp=0.0090 *20* A_2=+0.20 *2*; A_4=−0.13 *3* (1977Kl04); pol=+0.48 *9* (1990UrZW) α(K)=0.00636 *9*; α(L)=0.001013 *14*; α(M)=0.0002200 *31* Iγ=28.0 in (α,3nγ) (1979Ha19), 19.0 *9* (1994Ba01).
613.5[e]	30.0[e] *8*	636.13	7/2$^-$	22.50	5/2$^-$				
613.5[e]	30.0[e] *8*	1361.23	17/2$^-$	747.89	13/2$^-$	E2		0.00758 *11*	A_2=+0.24 *4*; A_4=−0.13 *4*; α(K)exp=0.0073 *10* A_2=+0.35 *1*; A_4=−0.13 *2* (1977Kl04); pol=+0.61 *9* (1990UrZW) α(K)=0.00631 *9*; α(L)=0.001002 *14*; α(M)=0.0002177 *30* Iγ=55.0 in (α,3nγ) (1979Ha19), 39.8 *5* (1994Ba01).
618[@]		3777.7	(29/2)	3159.7	(25/2)				
626[@]		3328.2	(27/2$^-$)	2702.0	(23/2$^-$)				Eγ=626.0 *17*, Iγ=2.04 *20* (1994Ba01). Iγ(626γ)/Iγ(791γ)=2.1 (1994Ba01). But 626γ is likely a complex γ ray.
629[@]		3055.3	(23/2$^-$)	2427.2	19/2$^-$				
636		2828.6	(25/2$^-$)	2192.6	23/2$^+$				γ observed in 1990UrZR and 1994Ba01. Iγ not available.

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

γ(^{149}Sm) (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [a]	α [c]	Comments
636.2	3.0 *4*	636.13	7/2$^-$	0.0	7/2$^-$	M1(+E2)	0.0094 *24*	α(K)exp=0.0102 *10* (1979Ha19) α(K)=0.0079 *21*; α(L)=0.00113 *23*; α(M)=0.00024 *5* Iγ=2.57 *18* (1994Ba01, γ unplaced).
639 [@]		5325.8	(39/2)	4686.8	(37/2$^-$)			
641 [@]		2041.2	(19/2$^-$)	1398.45	15/2$^-$			Eγ=642.0 *17*, Iγ=9.7 *3* (1994Ba01).
642.0	2.2 *4*	2834.7	27/2$^+$	2192.6	23/2$^+$	E2	0.00678 *9*	A_2=+0.28 *4*; A_4=−0.18 *10* A_2=+0.38 *3*; A_4=−0.13 *4* (1977Kl04); pol=+0.61 *12* (1990UrZW) Iγ=17.0 in (α,3nγ) (1979Ha19), 9.7 *3* (1994Ba01).
644.0	1.1 *5*	3181.4	29/2$^+$	2537.4	25/2$^+$	(E2)	0.00673 *9*	A_2=+0.40 *10*; A_4=−0.15 *8* A_2=+0.29 *4*; A_4=−0.09 *5* (1977Kl04); pol=+0.21 *10* (1990UrZW) Iγ=7.2 in (α,3nγ) (1979Ha19), 7.1 *3* (1994Ba01). POL for a complex peak.
644 [@ f]		4006.3	(33/2$^-$)	3361.6	(29/2$^-$)			
644.5 [‡]		1308.85	11/2$^-$	664.32	11/2$^-$			
649 [@]		2344.8	(21/2$^+$)	1695.80	(17/2$^+$)			
649 [@]		3384.1	(25/2$^-$)	2735.0	(21/2$^-$)			
650 [@]		2842.6	(25/2$^-$)	2192.6	23/2$^+$			
650.4		1398.45	15/2$^-$	747.89	13/2$^-$			A_2=−0.30 *5*; A_4=+0.06 *2* A_2=−0.34 *14*; A_4=+0.1 *2* (1977Kl04) Iγ=2.0 in (α,3nγ) (1979Ha19), 4.93 *23* (1994Ba01).
661 [@]		2702.0	(23/2$^-$)	2041.2	(19/2$^-$)			
661 [@]		5801.5	(43/2$^-$)	5140.5	(39/2$^-$)			
664.3	58.7 *10*	664.32	11/2$^-$	0.0	7/2$^-$	E2	0.00624 *9*	A_2=+0.20 *2*; A_4=+0.02 *3*; α(K)exp=0.0051 *6* A_2=+0.22 *6*; A_4=−0.08 *3* A_2=+0.34 *1*; A_4=−0.12 *1*; pol=+0.55 *18* (1977Kl04); pol=+0.42 *8* (1990UrZW) α(K)=0.00521 *7*; α(L)=0.000809 *11*; α(M)=0.0001752 *25* Iγ=77.0 in (α,3nγ) (1979Ha19), 51.7 *6* (1994Ba01).
665.7	9.1 *6*	1413.5	15/2$^{(+)}$	747.89	13/2$^-$			Iγ=5.0 in (α,3nγ) (1979Ha19).
674 [@]		2344.8	(21/2$^+$)	1670.65	19/2$^+$			
678 [@]		2041.2	(19/2$^-$)	1362.88	17/2$^+$			
678.0 [‡]		3859.6	33/2$^+$	3181.4	29/2$^+$	(E2)	0.00594 *8*	A_2=+0.11 *10*; A_4=−0.24 *14* (1977Kl04); pol=+0.6 *4* (1990UrZW) Complex peak in 1979Ha19. Iγ=2.5 *3* (1994Ba01).
680.2 [@]		2041.2	(19/2$^-$)	1361.23	17/2$^-$			pol=+0.62 *19* (1990UrZW)
683 [@]		2875.8	(25/2$^+$)	2192.6	23/2$^+$			
684.0 [@]		4543.7	(35/2$^-$)	3859.6	33/2$^+$			pol=+1.5 *6* (1990UrZW)
691 [@]		4055.7	(33/2$^+$)	3365.1	(29/2$^+$)			
699 [@]		3880.4	(31/2$^-$)	3181.4	29/2$^+$			
700 [@]		2842.6	(25/2$^-$)	2142.6	21/2$^-$			
708.5	3.0 *3*	994.5		286.01	9/2$^-$			Iγ=1.0 in (α,3nγ) (1979Ha19).

$^{149}_{62}Sm_{87}$-10

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

γ(^{149}Sm) (continued)

E_γ [†]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	α[c]	Comments
709[@]		2404.6	(21/2$^+$)	1695.80	(17/2$^+$)			
718.0[@]		4686.8	(37/2$^-$)	3968.8	(33/2$^-$)			pol=+0.47 *13* (1990UrZW)
730[@]		3564.5	(29/2$^-$)	2834.7	27/2$^+$			
734.0	4.7 *7*	1398.45	15/2$^-$	664.32	11/2$^-$	E2	0.00493 *7*	A_2=+0.47 *24*; A_4=+0.25 *30*; α(K)exp=0.0037 *10* A_2=+0.30 *6*; A_4=−0.12 *8* A_2=+0.35 *16*; A_4=0.0 *2* (1977Kl04) α(N)=3.04×10^{-5} *4*; α(O)=4.45×10^{-6} *6*; α(P)=2.438×10^{-7} *34* Iγ=10.4 in (α,3nγ) (1979Ha19), 3.01 *24* (1994Ba01). Iγ(735γ)/Iγ(651γ)=0.61 (1994Ba01) is low by a factor of ≈16. Mult.: α(K)exp in 1979Ha19 gives δ(E2/M1)>2.
734[@]		2404.6	(21/2$^+$)	1670.65	19/2$^+$			
737.7[@]		4597.3	(37/2$^+$)	3859.6	33/2$^+$			pol=+0.4 *3* (1990UrZW) Eγ=736.0 *18*, Iγ=3.01 *24* (1994Ba01).
744[@]		4799.9	(37/2$^+$)	4055.7	(33/2$^+$)			
746.8[f]	1.2 *5*	2145.3?		1398.45	15/2$^-$			Iγ=9.0 in (α,3nγ) (1979Ha19).
753.2	3.0 *5*	1344.36	(13/2$^-$,11/2$^-$)	591.09	9/2$^-$			E_γ: from level-scheme Fig. 11 in 1979Ha19; Eγ=735.2 in authors′ Table 3 is a misprint. Iγ=2.9 in (α,3nγ) (1979Ha19).
764[@]		5361.3	(41/2$^+$)	4597.3	(37/2$^+$)			
766[@]		5373.1	(41/2$^-$)	4607.1	(37/2$^-$)			
772[@]		3953.4	(31/2$^-$)	3181.4	29/2$^+$			
776		2702.0	(23/2$^-$)	1926.2	21/2$^+$			γ observed in 1990UrZR and 1994Ba01. Iγ not available.
781.4	2.6 *7*	2142.6	21/2$^-$	1361.23	17/2$^-$	(E2)	0.00427 *6*	A_2=+0.36 *10*; A_4=−0.1 *2* (1977Kl04); pol=+0.28 *19* (1990UrZW) Iγ=7.0 in (α,3nγ) (1979Ha19), 2.95 *24* (1994Ba01). Iγ(781γ)/Iγ(472γ)=0.24 (1994Ba01) is low by a factor of ≈30.
790.6[f]	1.1 *3*	2933.2?		2142.6	21/2$^-$			Iγ=6.0 in (α,3nγ) (1979Ha19).
791[@]		3328.2	(27/2$^-$)	2537.4	25/2$^+$			Eγ=791.8 *18*, Iγ=0.95 *13* (1994Ba01).
791[@]		5477.8	(41/2$^-$)	4686.8	(37/2$^-$)			
795[@]		2987.6	(25/2)	2192.6	23/2$^+$			
817.0 *7*		3652.2	31/2$^+$	2834.7	27/2$^+$	E2	0.00386 *5*	A_2=+0.24 *11*; A_4=−0.3 *2* (1977Kl04); pol=+0.60 *31* (1990UrZW) E_γ: from (α,3nγ), Iγ=3.5 *4* (1976SiZW), 0.72 *6* (1994Ba01).
828[@]		3365.1	(29/2$^+$)	2537.4	25/2$^+$			
835[@]		4487.2	(33/2)	3652.2	31/2$^+$			
846.6	15.9[&] *4*	1132.6	(11/2$^-$)	286.01	9/2$^-$			A_2=−0.17 *7*; A_4=+0.18 *11* δ(Q/D)=−6.5 *25* from γ(θ) for a complex line (1979Ha19). Complex γ, contaminated by a line in ^{56}Fe. Iγ=2.0 in (α,3nγ) (1979Ha19).
875[@]		4055.7	(33/2$^+$)	3181.4	29/2$^+$			
909[f] *1*		3051.6?		2142.6	21/2$^-$			γ from 1976SiZW only.

$^{149}_{62}Sm_{87}$-11

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

γ(^{149}Sm) (continued)

E_γ[†]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[a]	δ[b]	α[c]	Comments
923[@]		4575.5	(35/2$^+$)	3652.2	31/2$^+$				
943[@]		3777.7	(29/2)	2834.7	27/2$^+$				
967[@]		3159.7	(25/2)	2192.6	23/2$^+$				
1022.8	3.0 *4*	1308.85	11/2$^-$	286.01	9/2$^-$	M1+E2	+2.5 *10*	0.00256 *23*	A_2=−0.44 *12*; A_4=+0.18 *21*; α(K)exp=0.0022 *10* A_2=−0.35 *15* (1979Ha19) A_2=−0.46 *20*; A_4=+0.1 *3* (1977Kl04) α(K)=0.00217 *20*; α(L)=0.000302 *24*; α(M)=6.5×10^{-5} *5* δ(E2/M1)=3.5 *15* from α(K)exp, +2.5 *10* from $\gamma(\theta)$ (1979Ha19). Iγ=4.0 in (α,3nγ) (1979Ha19), 3.7 *4* (1994Ba01, γ not placed). Evaluators assume that A_4 listed in Table 3 of 1979Ha19 from (α,3nγ) refers to A_2, instead.
1028[@]		3220.7	(25/2)	2192.6	23/2$^+$				
1309[@]		1308.85	11/2$^-$	0.0	7/2$^-$				

[†] From 1979Ha19 unless otherwise stated. Uncertainties not given by the authors. Evaluators assume 0.3 keV for fitting purpose.
[‡] From $\gamma\gamma$-coin only (1979Ha19). Iγ is not available.
[#] From (^{3}He,4nγ) at E=27 MeV (1979Ha19). Relative intensities from (α,3nγ) at E=33 MeV (1979Ha19), and from (α,3nγ) at 37 MeV (1994Ba01) are given in comments.
[@] From level energy differences in the scheme shown by 1990UrZR. For γ rays of measured linear polarization, values are from 1990UrZW. Uncertainty of 0.3 keV in Eγ is assumed for fitting purpose when Eγ stated to nearest tenth of a keV, and 1 keV when stated to nearest keV.
[&] Complex peak in (^{3}He,4nγ) (1979Ha19).
[a] From $\gamma(\theta)$ and ce data (1979Ha19). The $\gamma(\theta)$ data from 1977Kl04, as well as polarization data from 1977Kl04 and 1990UrZW are also used in the assignments.
[b] From $\gamma(\theta)$ in 1979Ha19, unless otherwise noted.
[c] 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.
[d] Multiply placed.
[e] Multiply placed with undivided intensity.
[f] Placement of transition in the level scheme is uncertain.

$^{149}_{62}Sm_{87}$-12

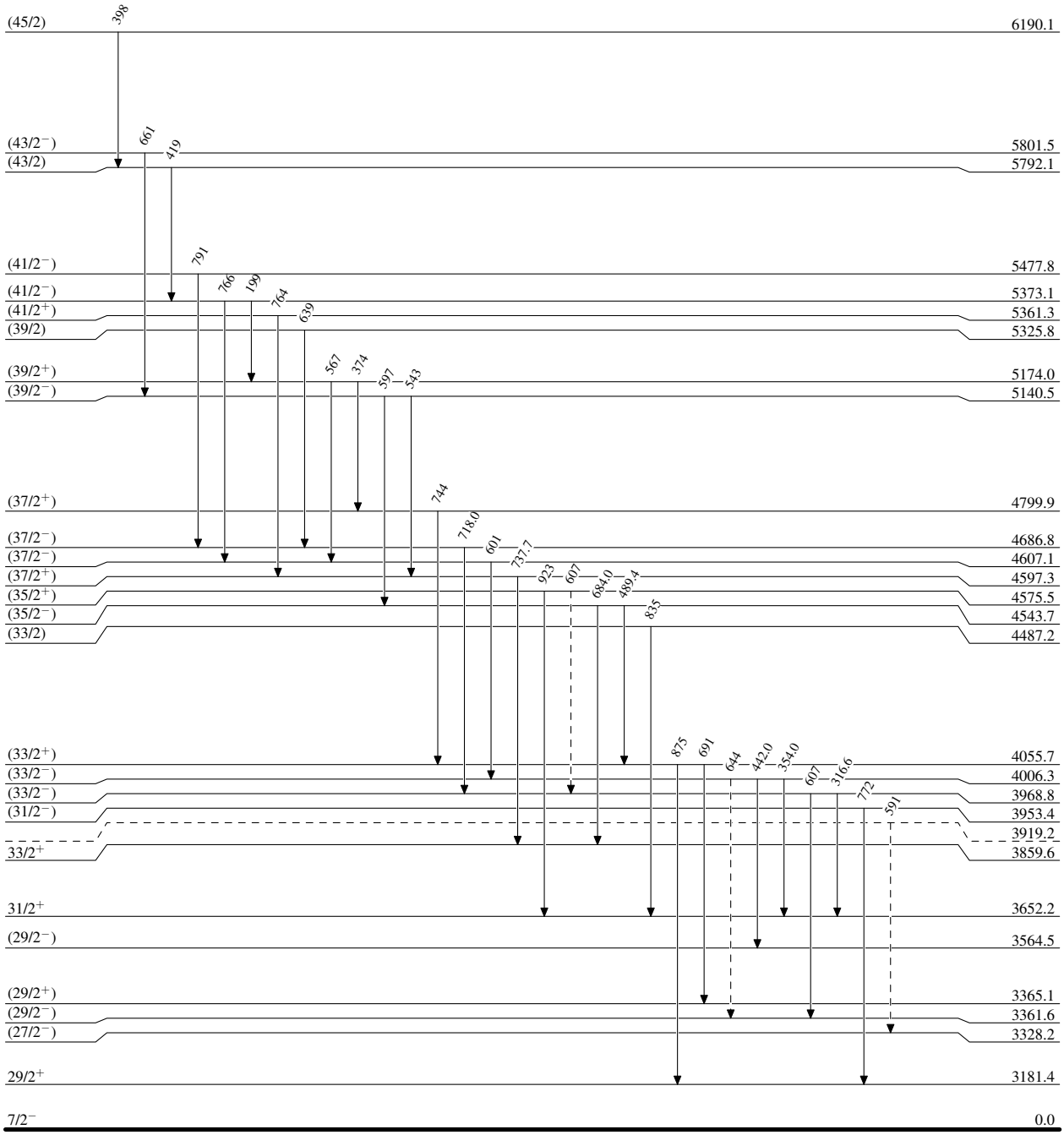
^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) **1979Ha19,1990UrZR,1994Ba01**

Legend

Level Scheme

Intensities: Relative I_γ

γ Decay (Uncertain)



$^{149}_{62}Sm_{87}$

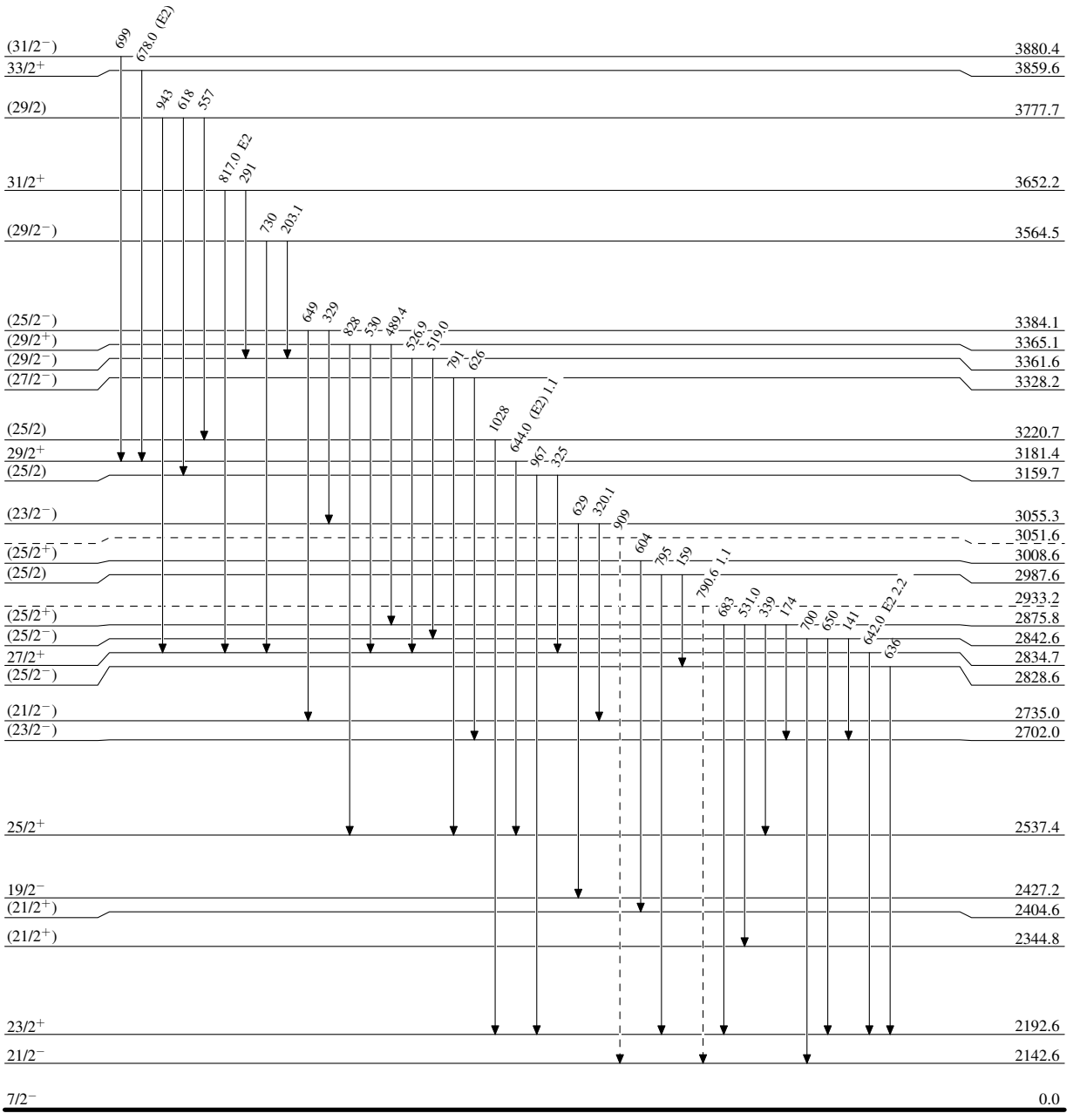
^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01

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)

Level Scheme (continued)

Intensities: Relative I_γ



$^{149}_{62}Sm_{87}$

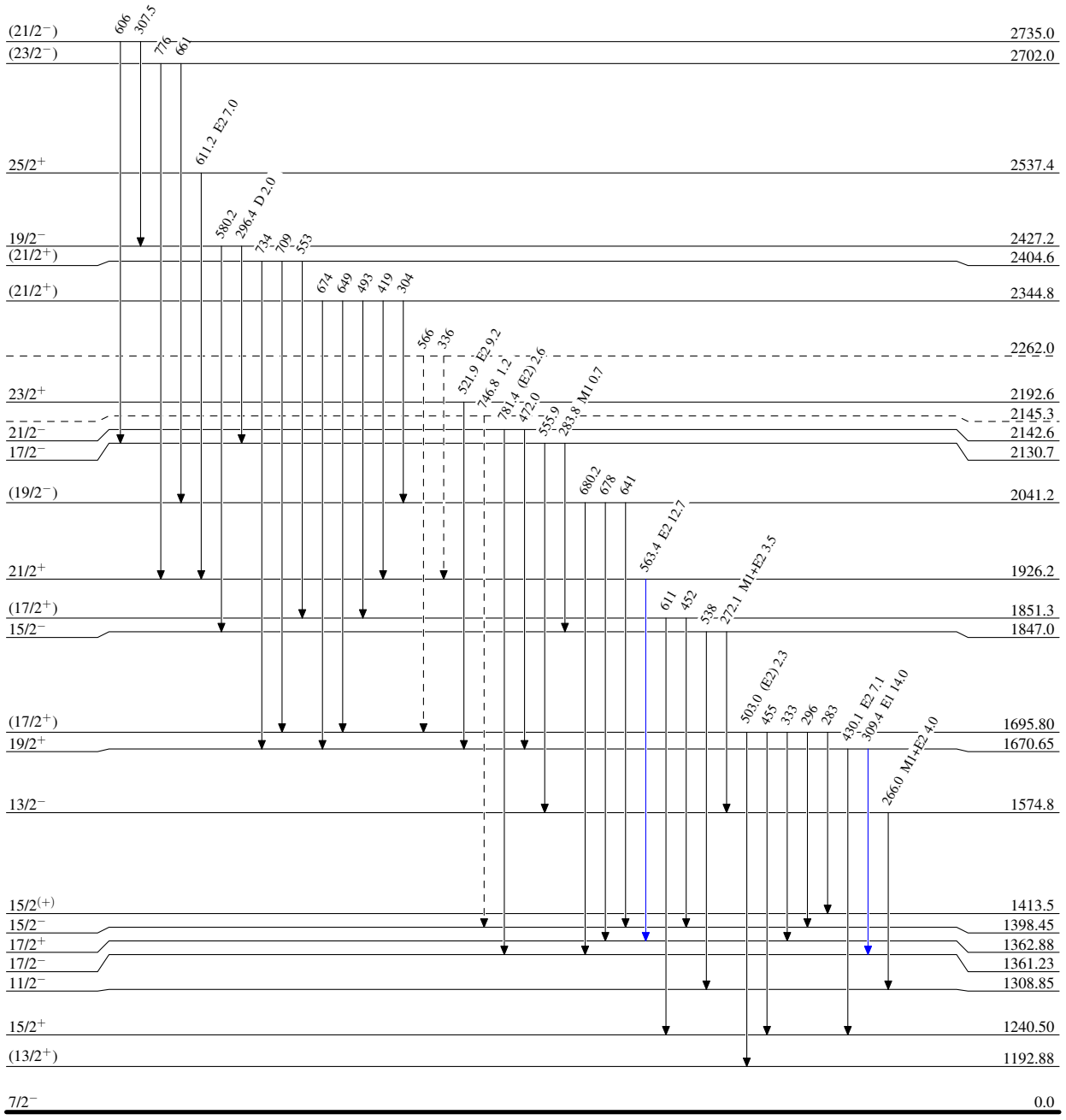
^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) **1979Ha19,1990UrZR,1994Ba01**

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)

Level Scheme (continued)

Intensities: Relative I_γ



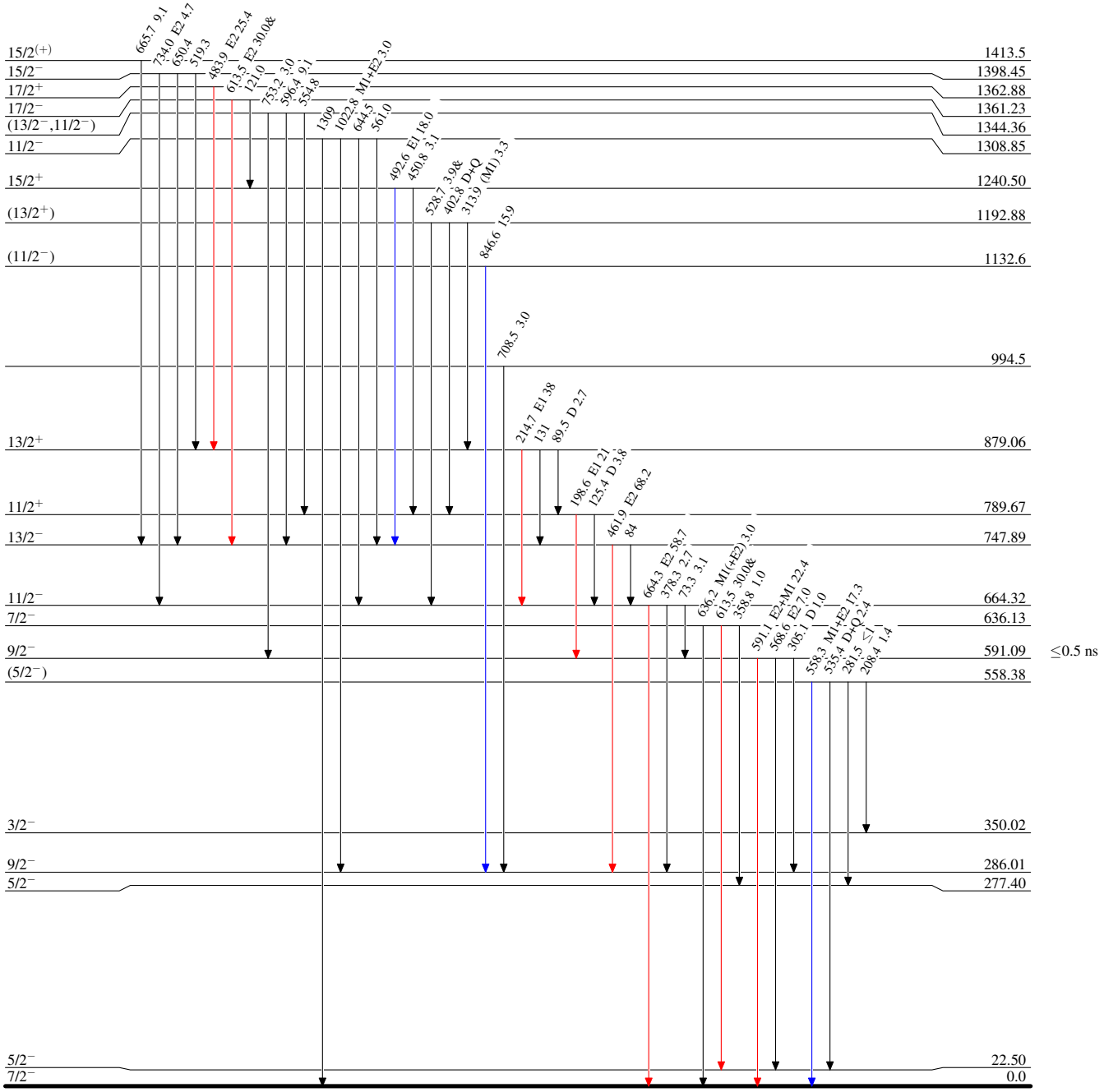
$^{149}_{62}Sm_{87}$

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



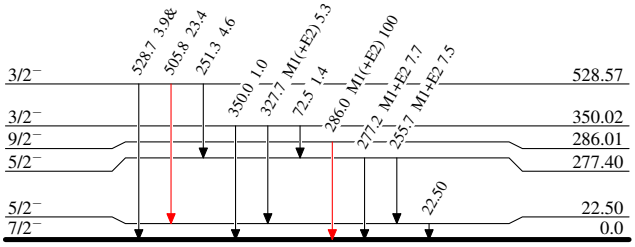
$^{149}_{62}Sm_{87}$

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01

Level Scheme (continued)

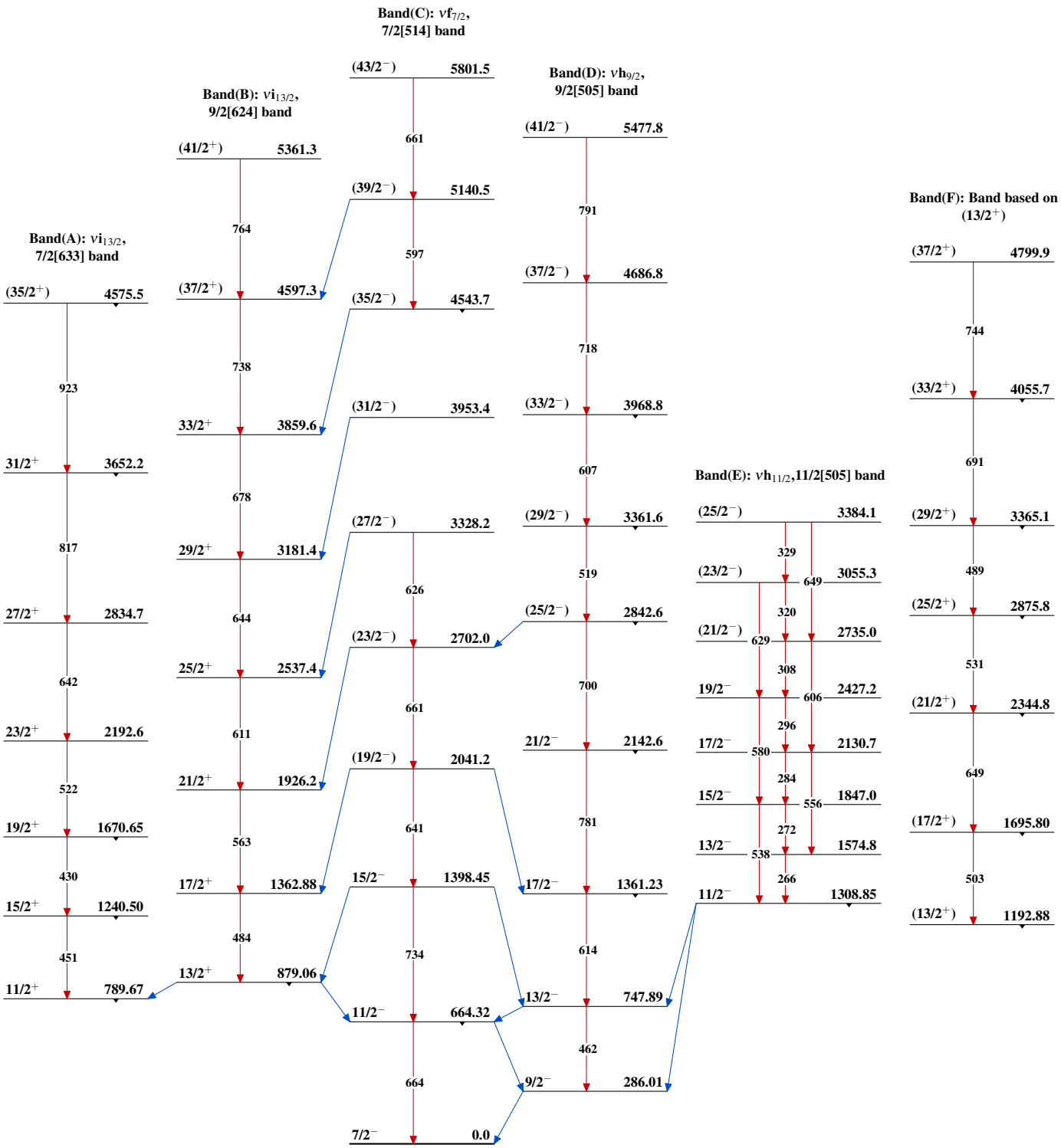
Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$



$^{149}_{62}Sm_{87}$

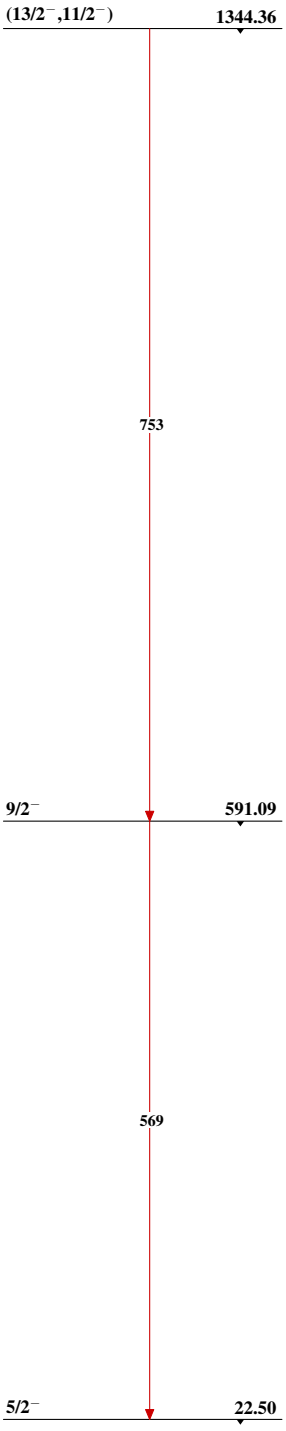
^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01



$^{149}_{62}Sm_{87}$

^{148}Nd(α,3nγ),^{150}Nd(^{3}He,4nγ) 1979Ha19,1990UrZR,1994Ba01 (continued)

Band(G): Band based on 5/2$^-$



$^{149}_{62}Sm_{87}$