

Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 93,33 (2001)	11-May-2001

Q(β⁻)=-1.120×10⁴ syst; S(n)=1.235×10⁴ syst; S(p)=4.11×10³ 4; Q(α)=1.80×10³ 4 2012Wa38
 Note: Current evaluation has used the following Q record -10871 syst 12239 syst 3638 syst 1934 syst 1995Au04.
 Δ(Q(β⁻))=861, Δ(S(n))=618, Δ(S(p))=585, Δ(Q(α))=643 (1995Au04).
 Q(εp)=2670 544 (syst,1995Au04).
¹³⁰Nd isotope identified (1977Bo02) in ¹⁰⁶Cd(³²S,8n) E=180-190 MeV followed by mass-separation of heavy-ion products. In 2000Xu08, ¹³⁰Nd is produced by ⁹⁶Ru(³⁶Ar,2n) reaction at 220 MeV.
 Direct mass measurement (2000Be42) by penning-trap method: mass excess=-66509 121, but this value is considered as tentative by 2000Be42 due to poor statistics. From syst, mass excess= -66341 500 (1995Au04).

¹³⁰Nd Levels

Cross Reference (XREF) Flags

- A ¹³⁰Pm ε decay (2.6 s)
- B ¹³¹Sm εp decay (1.2 s)
- C ⁹²Mo(⁴⁰Ca,2pγ),⁹⁶Ru(⁴⁰Ca,2pαγ)
- D ⁹⁴Mo(⁴⁰Ca,2p2nγ)

E(level)	J ^π †	T _{1/2} ‡	XREF	Comments
0.0#	0 ⁺	13 s 3	ABCD	%ε+%β ⁺ =100 T _{1/2} : from 2000Xu08, timing of intense γ rays from ¹³⁰ Nd decay. Other: 28 s 3 (1977Bo02,timing of β ⁺ and x rays).
159.05# 14	2 ⁺	0.60 ns 25	ABCD	J ^π : E2 γ to 0 ⁺ .
485.50# 16	4 ⁺	<28 ps	A CD	J ^π : ΔJ=2, E2 γ to 2 ⁺ .
939.94# 17	(6 ⁺)		A CD	
946.4 4			A	
952.4 4			A	
1032.7 4			A	
1185.2 4			A	
1487.10# 19	(8 ⁺)		CD	
1825.1@ 7	(5 ⁻)		D	
2100.41# 21	(10 ⁺)		CD	
2143.9@ 7	(7 ⁻)		D	
2294.3 8			D	
2586.8@ 7	(9 ⁻)		D	
2689.6& 7	(8 ⁺)		D	
2763.9# 7	(12 ⁺)		CD	
3076.1& 8	(10 ⁺)		D	
3133.1@ 8	(11 ⁻)		D	
3468.1# 7	(14 ⁺)		CD	
3578.1& 8	(12 ⁺)		D	
3764.6@ 10	13 ⁽⁻⁾		D	
3858.3 ^a 8	(13 ⁻)		D	
4177.1& 10	(14 ⁺)		D	
4211.6# 8	(16 ⁺)		CD	
4462.9@ 11	(15 ⁻)		D	

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Adopted Levels, Gammas (continued)

¹³⁰Nd Levels (continued)

E(level)	J ^π †	XREF	E(level)	J ^π †	XREF	E(level)	J ^π †	XREF
4585.3 ^a 8	(15 ⁻)	D	6909.2 [#] 12	(22 ⁺)	D	9476.4 ^a 18	(25 ⁻)	D
4845.4 ^{&} 11	(16 ⁺)	D	6910.3 [@] 14	(21 ⁻)	D	9518.3 ^{&} 18	(26 ⁺)	D
5020.9 [#] 9	(18 ⁺)	CD	7334.4 ^{&} 14	(22 ⁺)	D	10120.5 [@] 21	(27 ⁻)	D
5213.5 [@] 12	(17 ⁻)	D	7340.3 ^a 11	(21 ⁻)	D	10425.5 [#] 17	(28 ⁺)	D
5435.1 ^a 8	(17 ⁻)	D	7896.5 [@] 15	(23 ⁻)	D	10756.3 [?] 21	(28 ⁺)	D
5581.8 ^{&} 12	(18 ⁺)	D	7993.9 [#] 13	(24 ⁺)	D	11296.5 [?] 23	(29 ⁻)	D
5918.3 [#] 10	(20 ⁺)	D	8372.3 ^{&} 15	(24 ⁺)	D	11745.5 [#] 20	(30 ⁺)	D
6020.7 [@] 13	(19 ⁻)	D	8375.3 ^a 15	(23 ⁻)	D	13080.6 [?] 22	(32 ⁺)	D
6359.9 ^a 10	(19 ⁻)	D	8978.5 [@] 18	(25 ⁻)	D			
6406.0 ^{&} 13	(20 ⁺)	D	9167.5 [#] 14	(26 ⁺)	D			

† For J>4, the assignments are from probable band assignment.

‡ From recoil-distance method in (⁴⁰Ca,2pαγ),(⁴⁰Ca,2pγ).

Band(A): yrast band.

@ Band(B): Band based on (5⁻). possible configuration=E(d)=ν[7/2[523],α=-1/2]ν[1/2[411],α=-1/2].

& Band(C): Band based on (8⁺). possible configuration=EH=ν[7/2[523],α=-1/2]ν[1/2[541],α=+1/2].

^a Band(D): Band based on (13⁻).

γ(¹³⁰Nd)

E _i (level)	J _i ^π	E _γ †	I _γ	E _f	J _f ^π	Mult.#	α [@]	Comments
159.05	2 ⁺	159.05 14	100	0.0	0 ⁺	E2	0.43	B(E2)(W.u.)=240 100
485.50	4 ⁺	326.45 8	100	159.05	2 ⁺	E2	0.041	B(E2)(W.u.)>140
939.94	(6 ⁺)	454.44 6	100	485.50	4 ⁺	Q		
946.4		787.4 4	100	159.05	2 ⁺			
952.4		793.4 4	100	159.05	2 ⁺			
1032.7		547.2 4	100	485.50	4 ⁺			
1185.2		1026.2 4	100	159.05	2 ⁺			
1487.10	(8 ⁺)	547.16 8	100	939.94	(6 ⁺)	Q		
1825.1	(5 ⁻)	885.5 5	100	939.94	(6 ⁺)			
2100.41	(10 ⁺)	613.31 9	100	1487.10	(8 ⁺)	Q		
2143.9	(7 ⁻)	318.4 5	28 2	1825.1	(5 ⁻)			
		657.5 5	100 6	1487.10	(8 ⁺)	D		
		1205.4 5	10 1	939.94	(6 ⁺)			
2294.3		1355 1		939.94	(6 ⁺)			
2586.8	(9 ⁻)	442.9 2	100 6	2143.9	(7 ⁻)	Q		
		486.7 5	44 4	2100.41	(10 ⁺)	D		
		1100.0 5	26 3	1487.10	(8 ⁺)			
2689.6	(8 ⁺)	395.2 5	88 12	2294.3				
		545.9 5	76 12	2143.9	(7 ⁻)			
		1203.0 5	100 12	1487.10	(8 ⁺)			
2763.9	(12 ⁺)	664.0 [‡] 2	100	2100.41	(10 ⁺)	Q		
3076.1	(10 ⁺)	386.7 5	100 8	2689.6	(8 ⁺)			
		489.5 5	30 4	2586.8	(9 ⁻)			
3133.1	(11 ⁻)	546.0 5	100	2586.8	(9 ⁻)	Q		
3468.1	(14 ⁺)	704.2 [‡] 2	100	2763.9	(12 ⁺)	Q		
3578.1	(12 ⁺)	444.7 5	22 3	3133.1	(11 ⁻)			
		502.3 5	100 9	3076.1	(10 ⁺)			
3764.6	13 ⁽⁻⁾	631.5 5	100	3133.1	(11 ⁻)	Q		
3858.3	(13 ⁻)	390.1 5	85 10	3468.1	(14 ⁺)			

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Adopted Levels, Gammas (continued) $\gamma(^{130}\text{Nd})$ (continued)

$E_i(\text{level})$	J_i^π	E_γ^\dagger	I_γ	E_f	J_f^π	Mult. #
3858.3	(13 ⁻)	1094.7 5	100 10	2763.9	(12 ⁺)	
4177.1	(14 ⁺)	599.0 5	100	3578.1	(12 ⁺)	
4211.6	(16 ⁺)	743.5 [‡] 2	100	3468.1	(14 ⁺)	Q
4462.9	(15 ⁻)	698.3 5	100	3764.6	13 ⁽⁻⁾	
4585.3	(15 ⁻)	373.8 5	65 6	4211.6	(16 ⁺)	
		727.1 5	82 12	3858.3	(13 ⁻)	
		1117.3 5	100 12	3468.1	(14 ⁺)	
4845.4	(16 ⁺)	668.3 5	100	4177.1	(14 ⁺)	
5020.9	(18 ⁺)	809.3 [‡] 5	100	4211.6	(16 ⁺)	Q
5213.5	(17 ⁻)	750.6 5	100	4462.9	(15 ⁻)	
5435.1	(17 ⁻)	850.0 5	100 9	4585.3	(15 ⁻)	
		1223.3 5	45 5	4211.6	(16 ⁺)	
5581.8	(18 ⁺)	736.4 5	100	4845.4	(16 ⁺)	
5918.3	(20 ⁺)	897.4 5	100	5020.9	(18 ⁺)	Q
6020.7	(19 ⁻)	807.2 5	100	5213.5	(17 ⁻)	
6359.9	(19 ⁻)	924.8 5	100	5435.1	(17 ⁻)	
6406.0	(20 ⁺)	824.2 5	100	5581.8	(18 ⁺)	
6909.2	(22 ⁺)	990.9 5	100	5918.3	(20 ⁺)	
6910.3	(21 ⁻)	889.6 5	100	6020.7	(19 ⁻)	
7334.4	(22 ⁺)	928.4 5	100	6406.0	(20 ⁺)	
7340.3	(21 ⁻)	980.4 5	100	6359.9	(19 ⁻)	
7896.5	(23 ⁻)	986.2 5	100	6910.3	(21 ⁻)	
7993.9	(24 ⁺)	1084.7 5	100	6909.2	(22 ⁺)	
8372.3	(24 ⁺)	1037.9 5	100	7334.4	(22 ⁺)	
8375.3	(23 ⁻)	1035 1	100	7340.3	(21 ⁻)	
8978.5	(25 ⁻)	1082 1	100	7896.5	(23 ⁻)	
9167.5	(26 ⁺)	1173.6 5	100	7993.9	(24 ⁺)	
9476.4?	(25 ⁻)	1101 ^{&} 1	100	8375.3	(23 ⁻)	
9518.3	(26 ⁺)	1146 1	100	8372.3	(24 ⁺)	
10120.5	(27 ⁻)	1142 1	100	8978.5	(25 ⁻)	
10425.5	(28 ⁺)	1258 1	100	9167.5	(26 ⁺)	
10756.3?	(28 ⁺)	1238 ^{&} 1	100	9518.3	(26 ⁺)	
11296.5?	(29 ⁻)	1176 ^{&} 1	100	10120.5	(27 ⁻)	
11745.5	(30 ⁺)	1320 1	100	10425.5	(28 ⁺)	
13080.6?	(32 ⁺)	1335 ^{&} 1	100	11745.5	(30 ⁺)	

[†] From ($^{40}\text{Ca},2p\gamma$),($^{40}\text{Ca},2p\alpha\gamma$) when a level is commonly populated in other studies, except when stated otherwise.

[‡] From ($^{40}\text{Ca},2p2n\gamma$).

From $\gamma\gamma(\theta)$ (DCO) in in-beam γ -ray data and RUL.

@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ -ray energies, assigned multiplicities, and mixing ratios, unless otherwise specified.

& Placement of transition in the level scheme is uncertain.

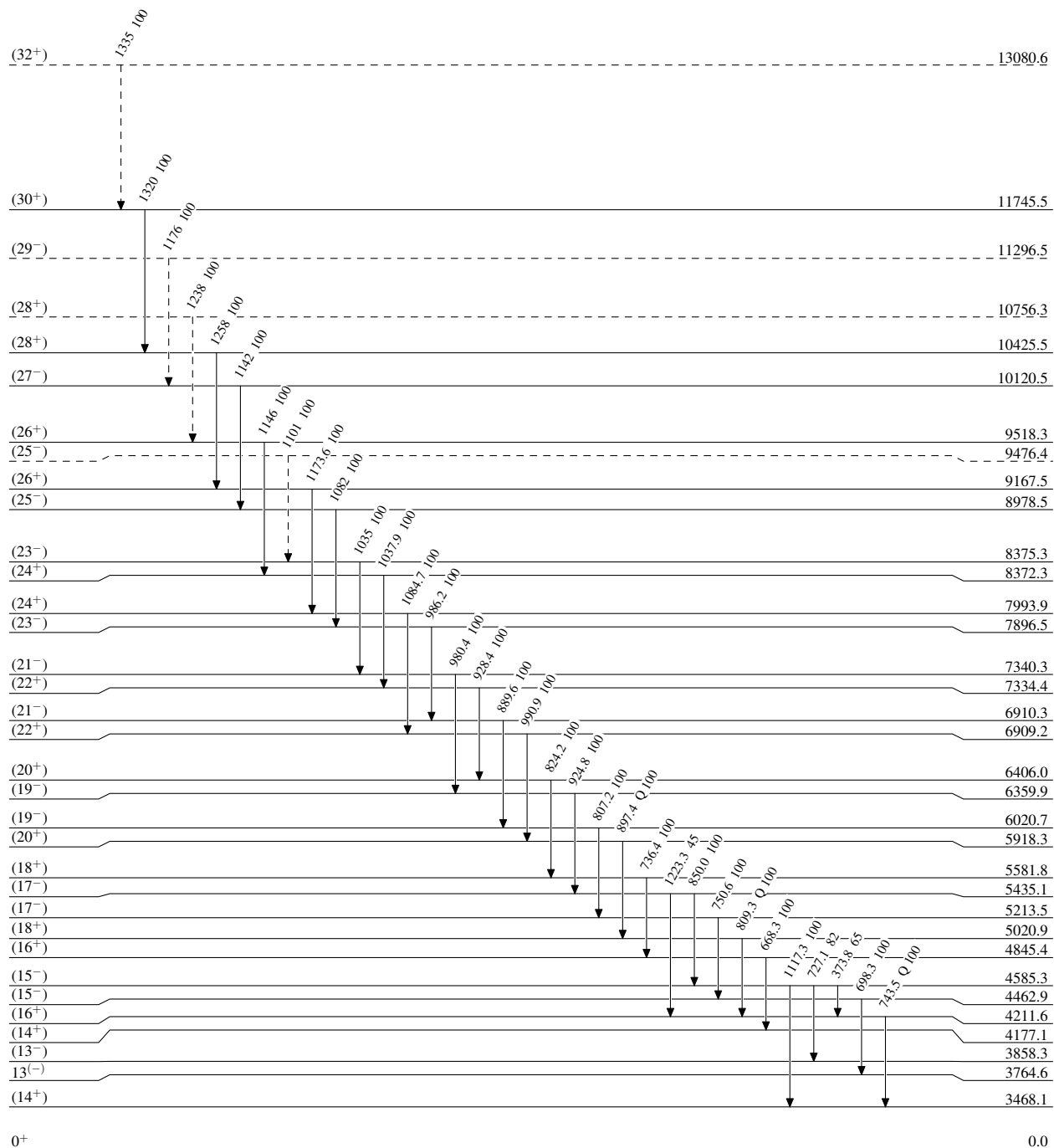
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

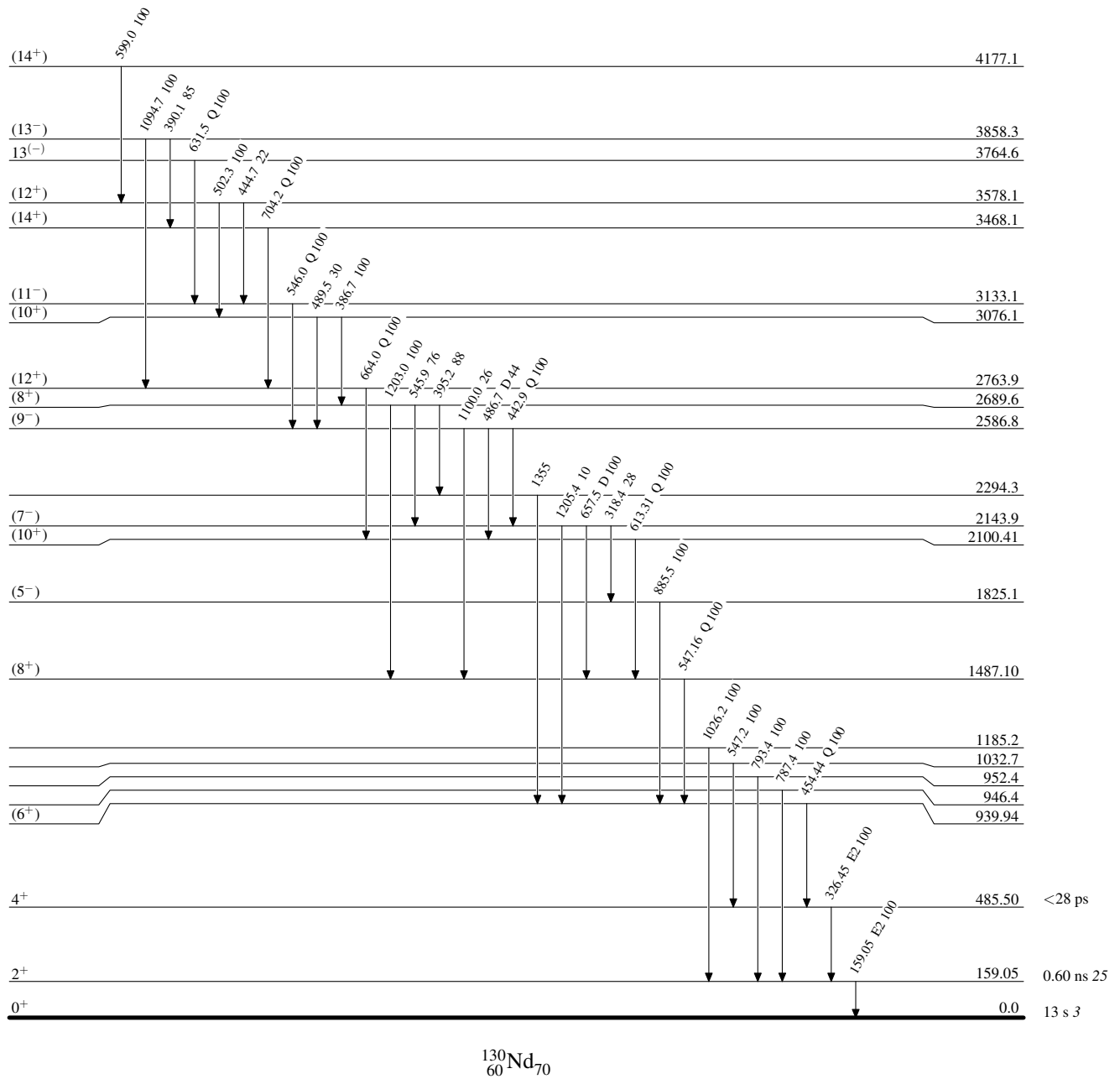
-----> γ Decay (Uncertain)



Adopted Levels, Gammas

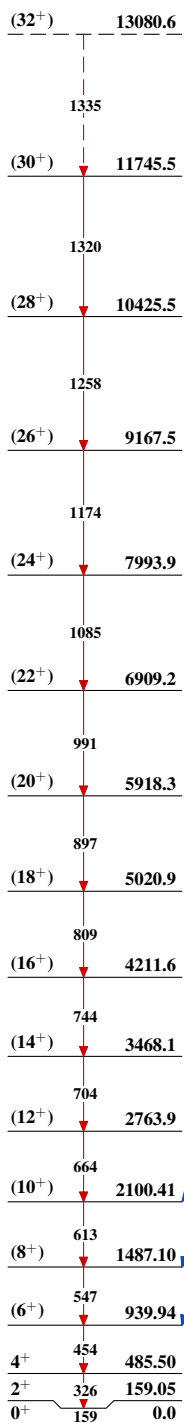
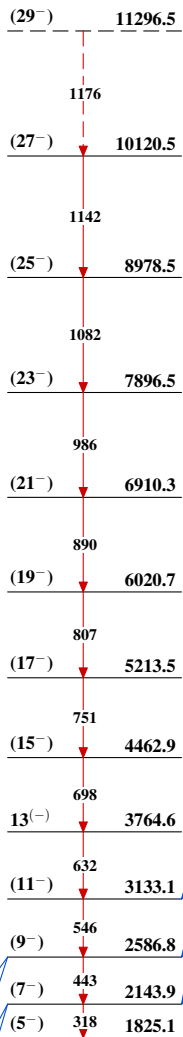
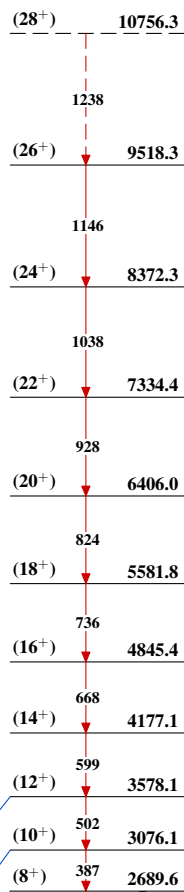
Level Scheme (continued)

Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Band(A): Yrast band

Band(B): Band based on (5^-) Band(C): Band based on (8^+) Band(D): Band based on (13^-) 