(HI,xnγ):SD 1997Ha24,1994Hu10

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 177, 1 (2021)	3-Sep-2021

Includes low-lying transitions in normal bands in coincidence with transitions in SD band.

Yb(Mg,xnγ) measurements:

1998Va18: ^{174}Yb(^{26}Mg,6nγ) E=137 MeV at LBNL. GAMMASPHERE array of 84 large-volume Ge detectors. Measured Doppler-shift attenuation (DSA). Deduced quadrupole moment for yrast SD band (line shape and centroid-shift analyses).

1997Ha24 (also 1997Di03): ^{174}Yb(^{25}Mg,5nγ) E=130 MeV at LBNL. Measured Eγ, Iγ of linking single-step transitions for SD-1 band using GAMMASPHERE array of 88 HPGe detectors. Deduced levels, J, π for SD band.

1996Br07: ^{174}Yb(^{25}Mg,5nγ) E=130 MeV at LBNL. Measured Eγ, Iγ, γγγ with GAMMASPHERE array (27 Compton-suppressed Ge detectors). Deduced levels, connecting transitions deexciting SD band into normal band.

1994Hu10: ^{174}Yb(^{25}Mg,5nγ) E=130 MeV at LBNL. Measured Eγ, Iγ, γγγ-coin using a 32-detector array GAMMASPHERE. Deduced yrast and excited SD bands.

1990Br10: ^{176}Yb(^{24}Mg,6nγ) E=122, 127, 132 MeV. Measured γγ; deduced superdeformed band using the HERA spectrometer. Deduced SD bands.

2000Mc01 (also 2000Ci05): ^{174}Yb(^{25}Mg,5nγ) E=130 MeV. Measured Eγ, Iγ, γγ. Deduced SD band decay quasicontinuum transitions.

1998Cl06: ^{172}Yb(^{26}Mg,4nγ) E=139 MeV, ^{174}Yb(^{26}Mg,6nγ) E=137 MeV and ^{176}Yb(^{26}Mg,8nγ) E=135 MeV, at LBNL. Measured lifetimes by DSAM for four transitions in one of the magnetic-dipole rotational band, using the Gammasphere array of 97 Ge detectors.

Dy(S,xnγ) measurements:

1997Kr03: ^{164}Dy(^{34}S,4nγ) E=166 MeV at LBNL. Measured lifetimes by recoil-distance Doppler shift method (RDDS) for SD-1 band members using GAMMASPHERE array of 95 HPGe detectors.

1994Kr18: ^{162}Dy(^{36}S,4nγ) E=168 MeV from XTU tandem at Laboratori Nazionali di Legnaro, Italy. Measured $T_{1/2}$ by RDDS (differential decay curve method) for three members of SD band using GASP array.

1993Ha20: ^{162}Dy(^{36}S,4nγ) E=162 MeV from the Daresbury Laboratory Tandem. Measured Eγ, Iγ, γγ-coin using EUROGAM array. Deduced SD band. The authors report seven transitions (in normal bands) in coincidence with transitions in SD band.

1993Ko08: ^{164}Dy(^{34}S,4nγ) E=160 MeV from the Tandem Accelerator Laboratory of the Niels Bohr Institute, University of Copenhagen. Measured Eγ, Iγ, γγγ-coin using a 20-detector array (NORDBALL); deduced SD band. Connecting transitions were searched for in γγ data but none were found.

W(O,xnγ) measurements:

1996Lo12 (also 1997Ha44): ^{184}W(^{16}O,6nγ) E=113 MeV from the Vivitron of C.R.N. Strasbourg. Measured Eγ, Iγ, γγγ and higher fold γγ coin with EUROGAM array (54 Compton-suppressed Ge detectors). Deduced connecting transitions between SD band and normal bands.

1995Ga10: ^{184}W(^{16}O,6nγ) E=113 MeV from the Van de Graaff at Daresbury. Measured Eγ, Iγ, γγγ, SD bands using EUROGAM array (45 detectors). Deduced SD band.

1995De26: ^{184}W(^{16}O,6nγ) E=113 MeV; ^{184}W(^{17}O,7nγ) E=120 MeV; ^{164}Dy(^{34}S,4nγ) E=157, 160 MeV; ^{162}Dy(^{36}S,4nγ) E=162 MeV. Measured yield of SD band from different reactions using EUROGAM array. See also 1995De65 for methodology of SD band spectral analysis using reaction: ^{184}W(^{16}O,6nγ) at 159 MeV, intensity pattern for SD-1 band is given.

Sm(Ca,xnγ) measurements:

1993Wi02: ^{150}Sm(^{48}Ca,4nγ) E=205 MeV at LBNL. γ rays were detected with the HERA array consisting of 20 Compton-suppressed Ge detectors and an inner BGO ball of 32 elements as a sum-energy and multiplicity filter. Measured Eγ, γγ-coin, Doppler-shift attenuation (DSA). Deduced lifetimes and quadrupole moments for superdeformed (SD) states.

Gd(Ar,xnγ) measurements:

1990Hu10: ^{158}Gd(^{40}Ar,4nγ) E=178-188 MeV from VICKSI accelerator of the HMI Berlin. Measured Eγ, Iγ, γγ-coin with the OSIRIS array. Deduced SD band. See also 1990Th01.

Others:

Analysis and systematics of SD band data: 2004Lo06, 2001Kr22, 1998We14, 1997Fa15, 1996Kr10.

Spreading width, decay out-features calculated: 2005Wi04.

(HI,xnγ):SD 1997Ha24,1994Hu10 (continued)

^{194}Pb Levels

E(level)[†]	Jπ[‡]	$T_{1/2}$	Comments
0.0	0^+		
931.0 *5*	0^+		
964.7 *9*	2^+		
1308.0 *9*	(2^+)		
1540.0 *10*	4^+		
1636.7? *14*			E(level): from 1996Br07 only.
1820.1 *12*	$(5)^-$		
2134.8 *12*	$(6)^+$		
2240.7 *12*	$(7)^-$		
2298.2 *12*	$(5^-,6^-)$		E(level): level from 1996Lo12 and 1997Ha24.
2406.2 *14*	$(9)^-$		
2407.5 *12*	$(4^+,5,6^+)$		
2418.8 *13*	(8^-)		
2437.2 *13*	$(8)^+$		
2501.7 *16*	(8^-)		E(level),Jπ: from 1996Br07.
2523.9 *12*	(8^+)		E(level): level proposed by 1997Ha24.
2580.1 *17*	$(10)^+$		
2608.3 *13*			E(level): level from 1996Lo12 and 1997Ha24.
2627.1 *19*	(12^+)		
2698.7? *16*	(9)		E(level),Jπ: level from 1996Lo12 only; not placed in Adopted Levels.
2798.8 *16*			
2912.4 *14*	(9^-)		
2930.3 *13*	(9^+)		
2932.1 *19*	$(11)^-$		
3207.5 *14*	(10^-)		
3270.3 *14*	(11^-)		
3282.2 *14*	(10^+)		
3372.2 *13*	(11^-)		
3469.8 *19*			
3474.1 *21*	$(12)^-$		
3520.8 *19*			
3560.1 *22*	(14^+)		
3727.4 *15*	(12^-)		
3771.2 *17*	(11^+)		
3838.1 *21*	$(13)^-$		
3849.3 *15*	(13^-)		
4236.2 *17*	(12^+)		
4877.3[@] *12*	(6^+)		E(level): the 6^+ member was reported at 4711 by 1996Br07, but in a later paper (1997Ha24) at 4878 as in 1996Lo12 and 1997Ha44.
5046.8[@] *12*	(8^+)	14 ps *5*	$T_{1/2}$: RDDS (1997Kr03) for 170γ. Deduced Q(transition)=17.3 *+40−24* (1997Kr03).
5260.1[@] *12*	(10^+)	5.8 ps *12*	$T_{1/2}$: RDDS (1997Kr03). Other: 6.0 ps *22* (RDDS,1994Kr18). Deduced Q(transition)=20.7 *+25−18* (1997Kr03), 19.7 *+75−20* (1994Kr18).
5450	(20^-)		Additional information 1. E(level): rounded value from Adopted Levels.
5516.4[@] *12*	(12^+)	3.8 ps *7*	$T_{1/2}$: RDDS (1997Kr03). Other: 2.4 ps *+14−10* (RDDS,1994Kr18). Deduced Q(transition)=18.2 *+19−15* (1997Kr03), 23.6 *+73−50* (1994Kr18).
5710.0 *10*	(21^-)	0.16[#] ps *5*	
5814.9[@] *12*	(14^+)	1.8 ps *5*	$T_{1/2}$: RDDS (1997Kr03). Other: 1.8 ps *+10−7* (RDDS,1994Kr18). Deduced Q(transition)=18.5 *+32−20* (1997Kr03), 19.6 *+57−39* (1994Kr18).
6046.0 *15*	(22^-)	0.15[#] ps *3*	
6154.8[@] *12*	(16^+)		
6422.0 *18*	(23^-)	0.13[#] ps *4*	
6535.0[@] *12*	(18^+)	>0.5 ps	$T_{1/2}$: from DSAM in 1993Wi02.

Continued on next page (footnotes at end of table)

(HI,xnγ):SD 1997Ha24,1994Hu10 (continued)

^{194}Pb Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	Comments
6839.0 *20*	(24⁻)	0.13[#] ps *4*	
6955.0[@] *12*	(20⁺)	0.24 ps *+43−14*	$T_{1/2}$: from DSAM in 1993Wi02. Deduced Q(transition)=23 *+14−10* (1993Wi02).
7413.0[@] *12*	(22⁺)	0.17 ps *+10−7*	$T_{1/2}$: from DSAM in 1993Wi02. Deduced Q(transition)=22 *+7−5* (1993Wi02).
7908.8[@] *12*	(24⁺)	0.13 ps *5*	$T_{1/2}$: from DSAM in 1993Wi02. Deduced Q(transition)=20 *+5−3* (1993Wi02).
8441.3[@] *13*	(26⁺)	0.08 ps *+4−5*	$T_{1/2}$: from DSAM in 1993Wi02. Deduced Q(transition)=21 *+10−4* (1993Wi02).
9009.6[@] *13*	(28⁺)	0.07 ps *2*	$T_{1/2}$: from DSAM in 1993Wi02. Deduced Q(transition)=20 *+4−2* (1993Wi02).
9613.0[@] *13*	(30⁺)		
10251.1[@] *14*	(32⁺)		
10923.4[@] *14*	(34⁺)		
11629.6[@] *14*	(36⁺)		
12369.1[@] *15*	(38⁺)		
x[&]	J≈(10)		
241.2+x[&] *3*	J+2		
521.8+x[&] *5*	J+4		
842.5+x[&] *6*	J+6		
1202.5+x[&] *6*	J+8		
1601.5+x[&] *6*	J+10		
2038.3+x[&] *7*	J+12		
2512.3+x[&] *8*	J+14		
3023.4+x[&] *9*	J+16		
3567.2+x[&] *11*	J+18		
y[a]	J1≈(11)		
260.9+y?[a] *4*	J1+2		
562.9+y?[a] *5*	J1+4		
904.2+y?[a] *6*	J1+6		
1284.2+y?[a] *8*	J1+8		
1701.5+y?[a] *9*	J1+10		
2157.3+y?[a] *9*	J1+12		
2649.4+y?[a] *10*	J1+14		
3178.0+y?[a] *13*	J1+16		
3741.2+y?[a] *15*	J1+18		

[†] From least-squares fit to γ-ray energies, assuming ΔEγ=0.3 keV for those quoted to tenth of a keV and 1 keV for those quoted to keV, if not available.

[‡] From Adopted Levels.

[#] From DSAM in 1998Cl06, a 20% systematic uncertainty due to ion slowing-down theory, as stated by 1998Cl06, is included in quadrature by the evaluators.

[@] Band(A): SD-1 band. Band from 1997Ha24, 1996Br07, 1995Ga10, 1990Br10, 1990Hu10, 1993Wi02, 1993Ko08, 1993Ha20, 1994Hu10, 1994Kr18, 1995De26, 1996Lo12, 1997Ha44, 1997Kr03, 1998Va18, 1999Lu04, 2000Mc01). Average Q(intrinsic)=20.1 *+3−5* (centroid-shift method) (1998Va18), 20.7 *19* (line shape analysis) (1998Va18); 20.6 *13* (1994Kr18). Percent population (1995De26): 1.0 *2*, 1.0 *1*, 1.2 *3* in ^{184}W(^{16}O,6nγ); 1.1 *3* in ^{184}W(^{17}O,7nγ); 0.7 *2*, 0.9 *3* in ^{164}Dy(^{34}S,4nγ); 0.8 *2* in ^{162}Dy(^{36}S,4nγ). From smooth extrapolation to J=0, the bandhead is estimated at 4640.7 *4* (1997Ha24).

[&] Band(B): SD-2 band. Band from 1994Hu10. Percent population ≈0.05 (5% of SD-1 band).

[a] Band(C): SD-3 band (?). Tentative (possibly a signature partner of SD-2 band) band from 1994Hu10, with percent population ≈0.06 (6% of SD-1 band).

(HI,xnγ):SD 1997Ha24,1994Hu10 (continued)

γ(^{194}Pb)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	δ	α[a]	$I_{(\gamma+ce)}$	Comments
47 *1*		2627.1	(12^+)	2580.1	$(10)^+$					
86[b] *1*		2523.9	(8^+)	2437.2	$(8)^+$					
[x]124.9[b] *3*	≈5									E_γ,I_γ: from 1995Ga10, placed from the 6^+ bandhead of the SD-band. But 1996Br07 find no evidence for such a transition with I(γ+ce)<3% of the SD band intensity.
165	<9	2406.2	$(9)^-$	2240.7	$(7)^-$	E2		0.854 *23*		E_γ,I_γ: from 1993Ko08. Other: Eγ=166 (1996Lo12).
169.52 *4*	32 *2*	5046.8	(8^+)	4877.3	(6^+)	(E2)		0.773	57 *4*	E_γ: others: 169.6 *2* (1995Ga10), 169.6 (1990Br10), 169.9 (1993Ko08), 168.9 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 56 *4* (1997Ha24), 64 *9* (1996Br07), 49 *13* (Fig. 2 of 1990Hu10), and 57 *5* (Fig. 1 of 1995Ga10). Other: 32 *4* (1993Ko08) is discrepant. R(asymmetry)=1.48 *8* (1997Ha24).
173.9 *3*		2580.1	$(10)^+$	2406.2	$(9)^-$	E1		0.1102		E_γ: from 1990Br10. Other: 174 (1997Ha24).
178 *1*	9 *4*	2418.8	(8^-)	2240.7	$(7)^-$	(M1+E2)	<0.7	1.62 *20*		E_γ,I_γ: from 1996Br07.
195.8 *3*		2437.2	$(8)^+$	2240.7	$(7)^-$	(E1)		0.0822		E_γ: from 1997Ha24. R(asymmetry)=0.66 *12* (1997Ha24).
213.26 *3*	63 *4*	5260.1	(10^+)	5046.8	(8^+)	(E2)		0.343	84 *5*	E_γ: others: 213.5 *1* (1995Ga10), 213.2 *1* (1994Hu10), 213.1 (1990Br10), 213.5 (1993Ko08), 213.0 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 90 *5* (1997Ha24), 85 *6* (1996Br07), 73 *5* (1993Ko08), 102 *10* (Fig.1 of 1995Ga10), 73 *13* (Fig.2 of 1990Hu10). R(asymmetry)=1.45 *4* (1997Ha24).
232 *1*		1540.0	4^+	1308.0	(2^+)					
241.2[@] *3*	3.6[@] *4*	241.2+x	J+2	x	J≈(10)					
256.32 *3*	84 *4*	5516.4	(12^+)	5260.1	(10^+)	(E2)		0.187	100 *5*	E_γ: others: 256.5 *1* (1995Ga10), 256.3 *1* (1994Hu10), 256.4 (1990Br10), 256.3 (1993Ko08), 255.9 (1990Hu10). $I_{(\gamma+ce)}$: others: 100 *3* (1996Br07), 100 *6* (1993Ko08), 100 *10* (Fig.1 of 1995Ga10), 100 *16* (Fig.2 of 1990Hu10). R(asymmetry)=1.40 *5* (1997Ha24).
260		5710.0	(21^-)	5450	(20^-)	M1		0.632 *12*		E_γ: from 1998Cl06.
260.9[@] *4*	5.7[@] *7*	260.9+y?	J1+2	y	J1≈(11)					
261 *1*	6 *4*	2501.7	(8^-)	2240.7	$(7)^-$	(M1)		0.625 *11*		E_γ,I_γ: from 1996Br07.
272[b] *1*		2407.5	$(4^+,5,6^+)$	2134.8	$(6)^+$					
280.2 *3*	51 *4*	1820.1	$(5)^-$	1540.0	4^+	E1		0.0346		E_γ: other: 279.7 (1993Ko08). I_γ: weighted average of 41 *10* (1996Br07), 54 *4*

$^{194}_{82}Pb_{112}$-4

(HI,xnγ):SD 1997Ha24,1994Hu10 (continued)

$\gamma(^{194}Pb)$ (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.&	α a	$I_{(\gamma+ce)}$	Comments
									(1993Ha20), 54 *8* (1993Ko08), and 42 *7* (1995Ga10). R(asymmetry)=0.71 *2* (1997Ha24).
280.6@ *4*	9.6@ *10*	521.8+x	J+4	241.2+x	J+2				I_γ: excess intensity due to 280.6γ from 5^- level (1994Hu10).
283 *1*		2523.9	(8^+)	2240.7	$(7)^-$				
298.49 *3*	85 *4*	5814.9	(14^+)	5516.4	(12^+)	(E2)	0.1173	95 *4*	E_γ: others: 298.4 *1* (1994Hu10), 298.7 *1* (1995Ga10), 298.8 (1990Br10), 298.3 (1993Ko08), 298.1 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 94 *4* (1997Ha24), 88 *6* (1993Ko08), 110 *10* (Fig.1 of 1995Ga10), 110 *19* (Fig.2 of 1990Hu10). R(asymmetry)=1.47 *5* (1997Ha24).
302.0@ *3*	7.2@ *8*	562.9+y?	J1+4	260.9+y?	J1+2				
302.6 *3*	13 *3*	2437.2	$(8)^+$	2134.8	$(6)^+$	E2	0.1126		E_γ: other: 302.7 (1993Ko08). I_γ: weighted average of 8 *3* (1996Br07), 17 *3* (1993Ha20), and 15 *3* (1993Ko08). Other: 5 *2* (1995Ga10) is discrepant. R(asymmetry)=1.33 *12* (1997Ha24).
305 *1*		2932.1	$(11)^-$	2627.1	(12^+)	E1	0.0284 *5*		
315 *1*		2134.8	$(6)^+$	1820.1	$(5)^-$				
320.7@ *2*	5.2@ *5*	842.5+x	J+6	521.8+x	J+4				
336		6046.0	(22^-)	5710.0	(21^-)	M1	0.313		E_γ: from 1998Cl06.
339.90 *5*	84 *4*	6154.8	(16^+)	5814.9	(14^+)	(E2)	0.0804	91 *4*	E_γ: others: 340.1 *1* (1995Ga10), 339.5 *1* (1994Hu10), 339.7 (1990Br10), 339.7 (1993Ko08), 339.6 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 92 *4* (1997Ha24), 88 *6* (1993Ko08), 93 *10* (Fig.1 of 1995Ga10), 99 *13* (Fig.2 of 1990Hu10). R(asymmetry)=1.40 *5* (1997Ha24).
341.3@ *3*	2.7@ *4*	904.2+y?	J1+6	562.9+y?	J1+4				I_γ: this value seems low in comparison to the general pattern of intensities of γ rays in a typical SD band. The peak intensity shown in figure 1b (1994Hu10) also suggests a larger intensity for this γ ray.
352 *1*		2932.1	$(11)^-$	2580.1	$(10)^+$	E1	0.0205 *4*		
352 *1*		3282.2	(10^+)	2930.3	(9^+)				
358 *1*		3270.3	(11^-)	2912.4	(9^-)				
360.0@ *2*	6.0@ *6*	1202.5+x	J+8	842.5+x	J+6				
364 *1*		3838.1	$(13)^-$	3474.1	$(12)^-$	M1	0.252		
376		6422.0	(23^-)	6046.0	(22^-)	M1	0.231		E_γ: from 1998Cl06.
380.0@ *5*	4.6@ *6*	1284.2+y?	J1+8	904.2+y?	J1+6				
380.20 *5*	86 *4*	6535.0	(18^+)	6154.8	(16^+)	(E2)	0.0590	91 *4*	E_γ: others: 380.4 *1* (1995Ga10), 379.9 *1* (1994Hu10), 380.0 (1990Br10), 379.9 (1993Ko08), 379.9 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 91 *4* (1997Ha24), 88 *6* (1993Ko08), 94 *10* (Fig.1 of 1995Ga10), 100 *13* (Fig.2 of 1990Hu10). R(asymmetry)=1.42 *5* (1997Ha24).
399.0@ *2*	7.1@ *7*	1601.5+x	J+10	1202.5+x	J+8				
417		6839.0	(24^-)	6422.0	(23^-)	M1	0.175 *3*		E_γ: from 1998Cl06.
417.3@ *3*	4.8@ *6*	1701.5+y?	J1+10	1284.2+y?	J1+8				

$^{194}_{82}Pb_{112}$-5

(HI,xnγ):SD 1997Ha24,1994Hu10 (continued)

γ(^{194}Pb) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.&	α[a]	$I_{(\gamma+ce)}$	Comments
420.0 *2*	86 *6*	6955.0	(20$^+$)	6535.0	(18$^+$)	[E2]	0.0454	90 *6*	E_γ: from 1995Ga10. Others: 418.6 *2* (1994Hu10), 419.1 (1990Br10), 419.6 (1993Ko08), 419.4 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 88 *6* (1993Ko08), 95 *10* (Fig.1 of 1995Ga10), 88 *13* (Fig.2 of 1990Hu10).
421.1 *3*	19 *5*	2240.7	(7)$^-$	1820.1	(5)$^-$	E2	0.0451		E_γ: from 1990Br10. Others: 419.6 (1993Ko08), 421 (1997Ha24). I_γ: weighted average of 23 *6* (1996Br07), 18 *5* (1993Ha20), and 18 *5* (1995Ga10). Other: 47 *8* (1993Ko08) is discrepant.
436.8@ *3*	6.4@ *7*	2038.3+x	J+12	1601.5+x	J+10				
455.8@ *3*	6.3@ *8*	2157.3+y?	J1+12	1701.5+y?	J1+10				
457 *1*		3727.4	(12$^-$)	3270.3	(11$^-$)				
458		2698.7?	(9)	2240.7	(7)$^-$				E_γ: from 1996Lo12.
458.0 *1*	82 *14*	7413.0	(22$^+$)	6955.0	(20$^+$)	[E2]	0.0364	85 *14*	E_γ: from 1994Hu10. Others: 458.4 *1* (1995Ga10), 458.4 (1990Br10), 457.6 (1993Ko08), 457.7 (1990Hu10). $I_{(\gamma+ce)}$: unweighted average of 110 *8* (1993Ko08), 85 *10* (Fig.1 of 1995Ga10), 61 *13* (Fig. 2 of 1990Hu10).
460 *1*		3372.2	(11$^-$)	2912.4	(9$^-$)	(Q)			
465 *1*		4236.2	(12$^+$)	3771.2	(11$^+$)				
474.0@ *3*	7.2@ *8*	2512.3+x	J+14	2038.3+x	J+12				
477 *1*		3849.3	(13$^-$)	3372.2	(11$^-$)				
478 *1*		2298.2	(5$^-$,6$^-$)	1820.1	(5)$^-$				E_γ: γ from 1996Lo12 and 1997Ha24.
489 *1*		3771.2	(11$^+$)	3282.2	(10$^+$)				
492.1@ *4*	8.1@ *10*	2649.4+y?	J1+14	2157.3+y?	J1+12				
493 *1*		2930.3	(9$^+$)	2437.2	(8)$^+$				E_γ: from 1996Lo12 and 1997Ha24.
495.8 *1*	69 *5*	7908.8	(24$^+$)	7413.0	(22$^+$)	[E2]	0.030	71 *5*	E_γ: from 1995Ga10. Others: 494.9 *1* (1994Hu10), 495.6 (1990Br10), 495.0 (1993Ko08), 495.6 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 70 *5* (1993Ko08), 83 *10* (Fig.1 of 1995Ga10), 59 *13* (Fig. 2 of 1990Hu10).
511.1@ *5*	5.1@ *6*	3023.4+x	J+16	2512.3+x	J+14				
520 *1*		3727.4	(12$^-$)	3207.5	(10$^-$)	(Q)			
528.6@ *8*	4.4@ *6*	3178.0+y?	J1+16	2649.4+y?	J1+14				
532.5 *2*	64 *8*	8441.3	(26$^+$)	7908.8	(24$^+$)	[E2]	0.0253	66 *8*	E_γ: from 1995Ga10. Others: 531.6 *2* (1994Hu10), 531.9 (1990Br10), 532.5 (1990Hu10). $I_{(\gamma+ce)}$: read off from Fig. 1 of 1995Ga10. Other: 67 *13* (Fig. 2 of 1990Hu10).
542 *1*		3474.1	(12)$^-$	2932.1	(11)$^-$	M1	0.0872		
543.8@ *5*	3.1@ *4*	3567.2+x	J+18	3023.4+x	J+16				
563.2@ *8*	6.9@ *9*	3741.2+y?	J1+18	3178.0+y?	J1+16				
568.3 *2*	52 *5*	9009.6	(28$^+$)	8441.3	(26$^+$)	[E2]	0.0218	53 *5*	E_γ: from 1995Ga10. Others: 568.4 *2* (1994Hu10), 567.9 (1990Br10), 568.5 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 52 *5* (Fig. 1 of 1995Ga10) and 56 *13* (Fig. 2 of 1990Hu10).
575.2 *3*	81 *5*	1540.0	4$^+$	964.7	2$^+$	E2	0.0212		E_γ: others: 575.4 (1990Br10), 574.2 (1993Ko08).

$^{194}_{82}Pb_{112}$-6

(HI,xnγ):SD 1997Ha24,1994Hu10 (continued)

γ(^{194}Pb) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.&	α[a]	$I_{(\gamma+ce)}$	Comments
									I_γ: weighted average of 77 *6* (1996Br07), 83 *5* (1993Ha20), 88 *6* (1993Ko08), and 75 *7* (1995Ga10). R(asymmetry)=1.34 *4* (1997Ha24).
579 *1*		3849.3	(13$^-$)	3270.3	(11$^-$)	(Q)			
595.4 *3*	29 *4*	2134.8	(6)$^+$	1540.0	4$^+$	E2	0.0196		E_γ: other: 595.2 (1993Ko08). I_γ: weighted average of 21 *6* (1996Br07), 32 *5* (1993Ha20), 28 *4* (1993Ko08), and 32 *4* (1995Ga10). R(asymmetry)=1.30 *8* (1997Ha24).
603.4 *2*	42 *5*	9613.0	(30$^+$)	9009.6	(28$^+$)	[E2]	0.019	43 *5*	E_γ: from 1995Ga10. Others: 602.5 *1* (1994Hu10), 603.3 (1990Br10), 603.2 (1990Hu10). $I_{(\gamma+ce)}$: weighted average of 42 *5* (Fig.1 of 1995Ga10) and 49 *13* (Fig.2 of 1990Hu10).
638.1 *4*	32 *5*	10251.1	(32$^+$)	9613.0	(30$^+$)	[E2]	0.0168	32 *5*	E_γ,$I_{(\gamma+ce)}$: from 1995Ga10, intensity read off Fig.1. Other: Eγ=637.4, Iγ=40 *13* (Fig.2 of 1990Hu10).
664 *1*		2798.8		2134.8	(6)$^+$				
671 *1*		3469.8		2798.8					
672 *1*	3 *2*	1636.7?		964.7	2$^+$				E_γ,I_γ: from 1996Br07.
672 *1*		2912.4	(9$^-$)	2240.7	(7)$^-$	(Q)			
672.3 *4*	18 *4*	10923.4	(34$^+$)	10251.1	(32$^+$)	[E2]	0.015	18 *4*	E_γ,$I_{(\gamma+ce)}$: from 1995Ga10, intensity read off Fig.1.
706.2 *2*	12 *4*	11629.6	(36$^+$)	10923.4	(34$^+$)	[E2]	0.0135	12 *4*	E_γ,$I_{(\gamma+ce)}$: from 1995Ga10, intensity read off Fig.1.
722 *1*		3520.8		2798.8					
739.5 *4*	10 *4*	12369.1	(38$^+$)	11629.6	(36$^+$)	[E2]	0.0122	10 *4*	E_γ,$I_{(\gamma+ce)}$: from 1995Ga10, intensity read off Fig.1.
788 *1*		2608.3		1820.1	(5)$^-$				E_γ: γ from 1996Lo12 and 1997Ha24.
789 *1*		3207.5	(10$^-$)	2418.8	(8$^-$)	(Q)			
801 *1*		3207.5	(10$^-$)	2406.2	(9)$^-$				
845 *1*		3282.2	(10$^+$)	2437.2	(8)$^+$				
864 *1*		3270.3	(11$^-$)	2406.2	(9)$^-$	(Q)			
867 *1*		2407.5	(4$^+$,5,6$^+$)	1540.0	4$^+$				
906 *1*		3838.1	(13)$^-$	2932.1	(11)$^-$	E2	0.00809		
933 *1*		3560.1	(14$^+$)	2627.1	(12$^+$)	E2	0.00763		
954 *1*		4236.2	(12$^+$)	3282.2	(10$^+$)				
964.7 *3*	77 *4*	964.7	2$^+$	0.0	0$^+$	E2	0.00714		E_γ: from 1993Ko08. I_γ: weighted average of 78 *9* (1996Br07), 82 *4* (1993Ha20), 82 *7* (1993Ko08), and 70 *4* (1995Ga10).
1308 *1*	17 *4*	1308.0	(2$^+$)	0.0	0$^+$	(E2)	0.00400		E_γ: from 1996Br07. I_γ: unweighted average of 24 *4* (1996Br07), 16 *3* (1993Ha20), and 12 *2* (1995Ga10).
1887.9 *3*	1.0 *4*	5260.1	(10$^+$)	3372.2	(11$^-$)	(E1)	1.29×10^{-3}		R(asymmetry)=0.9 *1* (1997Ha24) gives ΔJ=1, D or ΔJ=0, Q.
[x]1960‡ *1*									
[x]2049‡ *1*									
2116.5 *4*	0.9 *5*	5046.8	(8$^+$)	2930.3	(9$^+$)	(M1+E2)	0.0026 *6*		E_γ: other: 2115 (1996Lo12,1997Ha44). R(asymmetry)=0.3 *1* (1997Ha24).

$^{194}_{82}Pb_{112}$-7

(HI,xnγ):SD 1997Ha24,1994Hu10 (continued)

γ(^{194}Pb) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[&]	α[a]	Comments
x2128# *1*								
x2171‡ *1*								
x2192‡ *1*								
x2208# *1*								
x2215# *1*								
x2237‡ *1*								
x2269# *1*								
2353.4 *3*	2.8 *6*	4877.3	(6^+)	2523.9	(8^+)			E_γ,I_γ: others: Eγ=2348, Iγ=1.6 *3*) (1996Lo12,1997Ha44), placed from the 5047,8^+ level of SD-1 band. R(asymmetry)=0.8 *1* (1997Ha24) gives ΔJ=1, D or ΔJ=0, Q.
x2397# *1*								
2438.5 *4*	1.0 *3*	5046.8	(8^+)	2608.3				E_γ: other: 2439 (1996Lo12,1997Ha44). I_γ: weighted average of 0.9 *4* (1997Ha24) and 1.1 *3*(1996Lo12). R(asymmetry)=1.0 *2* (1997Ha24).
2469.7 *4*	1.5 *6*	4877.3	(6^+)	2407.5	$(4^+,5,6^+)$			R(asymmetry)=1.4 *3* (1997Ha24) gives ΔJ=0, D or ΔJ=2, Q.
x2566# *1*								
2579.1 *2*	3.0 *6*	4877.3	(6^+)	2298.2	$(5^-,6^-)$			E_γ,I_γ: other: Eγ=2579, Iγ=1.3 *3* (1996Lo12,1997Ha44). R(asymmetry)=0.7 *1* (1997Ha24) gives ΔJ=1, D or ΔJ=0, Q.
2609.6 *4*	1.7 *6*	5046.8	(8^+)	2437.2	$(8)^+$	(M1)	0.00241	E_γ: other: 2609 (1996Lo12,1997Ha44). R(asymmetry)=1.4 *3* (1997Ha24) gives ΔJ=0, D or ΔJ=2, Q.
2627.9 *4*	1.3 *6*	5046.8	(8^+)	2418.8	(8^-)	(E1)	1.43×10^{-3}	R(asymmetry)=1.4 *3* (1997Ha24) gives ΔJ=0, D or ΔJ=2, Q.
2636.6 *2*	1.9 *4*	4877.3	(6^+)	2240.7	$(7)^-$	(E1)	1.43×10^{-3}	E_γ: other: 2636 (1996Lo12,1997Ha44). I_γ: weighted average of 1.8 *6* (1997Ha24) and 2.0 *4* (1996Lo12). R(asymmetry)=0.8 *2* (1997Ha24) gives ΔJ=1, D or ΔJ=0, Q.
2742.5 *2*	2.7 *4*	4877.3	(6^+)	2134.8	$(6)^+$	(M1)	0.00231	E_γ: others: 2746 *2* (1996Br07), 2742 (1996Lo12,1997Ha44). I_γ: weighted average of 3.3 *6* (1997Ha24) and 2.5 *4* (1996Lo12). Other: 2746γ carrying 6% *2* of the full SD band intensity (1996Br07). R(asymmetry)=1.1 *2* (1997Ha24). 2746γ was shown (by 1996Br07) to deexcite (8^+) level at 4881 keV, thus defining 6^+ SD member at 4711. 1996Lo12, instead, propose this transition to deexcite 6^+ level. In a later report (1997Ha24, same group as 1996Br07) this level is deduced at 4878 in agreement with that from 1996Lo12.
2806.1 *3*	1.7 *3*	5046.8	(8^+)	2240.7	$(7)^-$	(E1)	1.48×10^{-3}	E_γ: other: 2806 (1996Lo12,1997Ha44). I_γ: from 1996Lo12. Other: 1.7 *5* (1997Ha24). R(asymmetry)=0.7 *1* (1997Ha24) gives ΔJ=1, D or ΔJ=0, Q.
x2996# *1*								
3056.4 *12*	0.8 *5*	4877.3	(6^+)	1820.1	$(5)^-$			

$^{194}_{82}Pb_{112}$-8

γ(^{194}Pb) (continued)

† From 1997Ha24, unless otherwise noted. Intensities are relative to Iγ(256.3γ)=100 *5* (1997Ha24).
‡ Unplaced transitions in coin with 170γ (8^+ to 6^+) in SD-1 band (1997Ha24).
# Unplaced transitions in coin with 213γ (10^+ to 8^+) in SD-1 band. (1997Ha24).
@ From 1994Hu10.
& From Adopted Gammas. Adopted values are supported by R(asymmetry) given under comments where available; if different, values from R(asymmetry) are given under comments.
a 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.
b Placement of transition in the level scheme is uncertain.
x γ ray not placed in level scheme.

(HI,xnγ):SD 1997Ha24,1994Hu10

Level Scheme

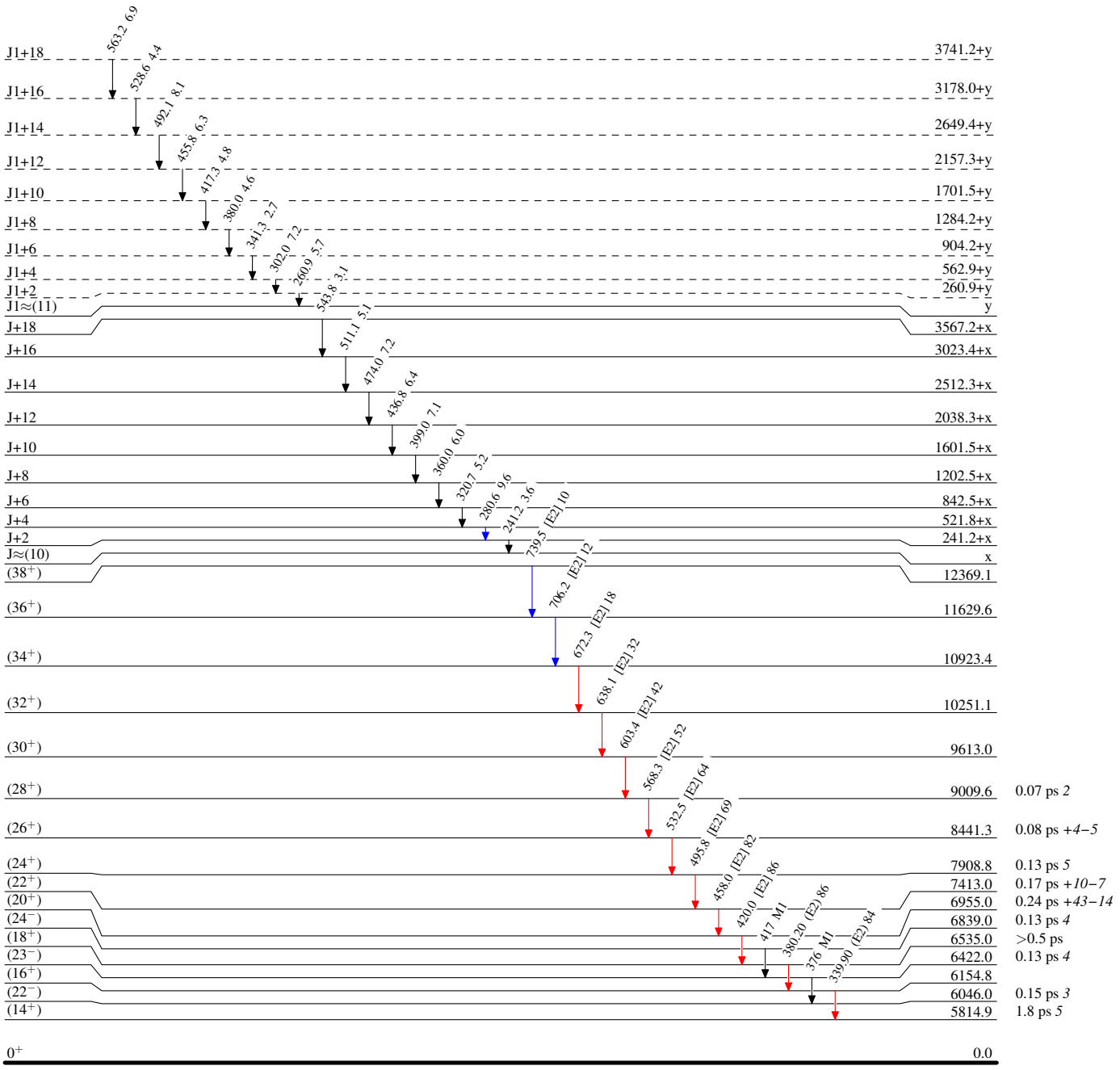
Intensities: Relative I_γ

Legend

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

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

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



$^{194}_{82}Pb_{112}$

(HI,xnγ):SD 1997Ha24,1994Hu10

Level Scheme (continued)

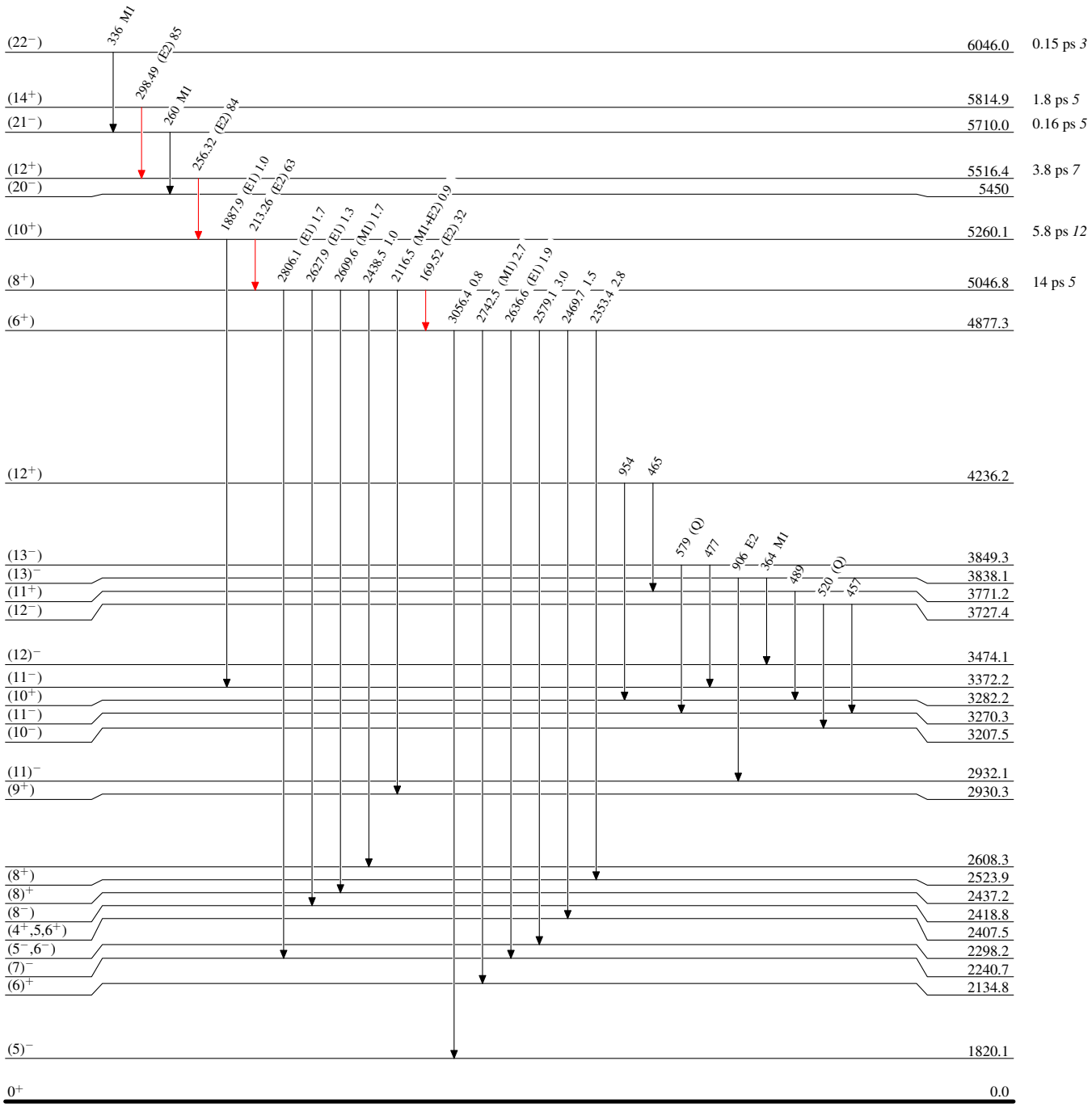
Intensities: Relative I_γ

Legend

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

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

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



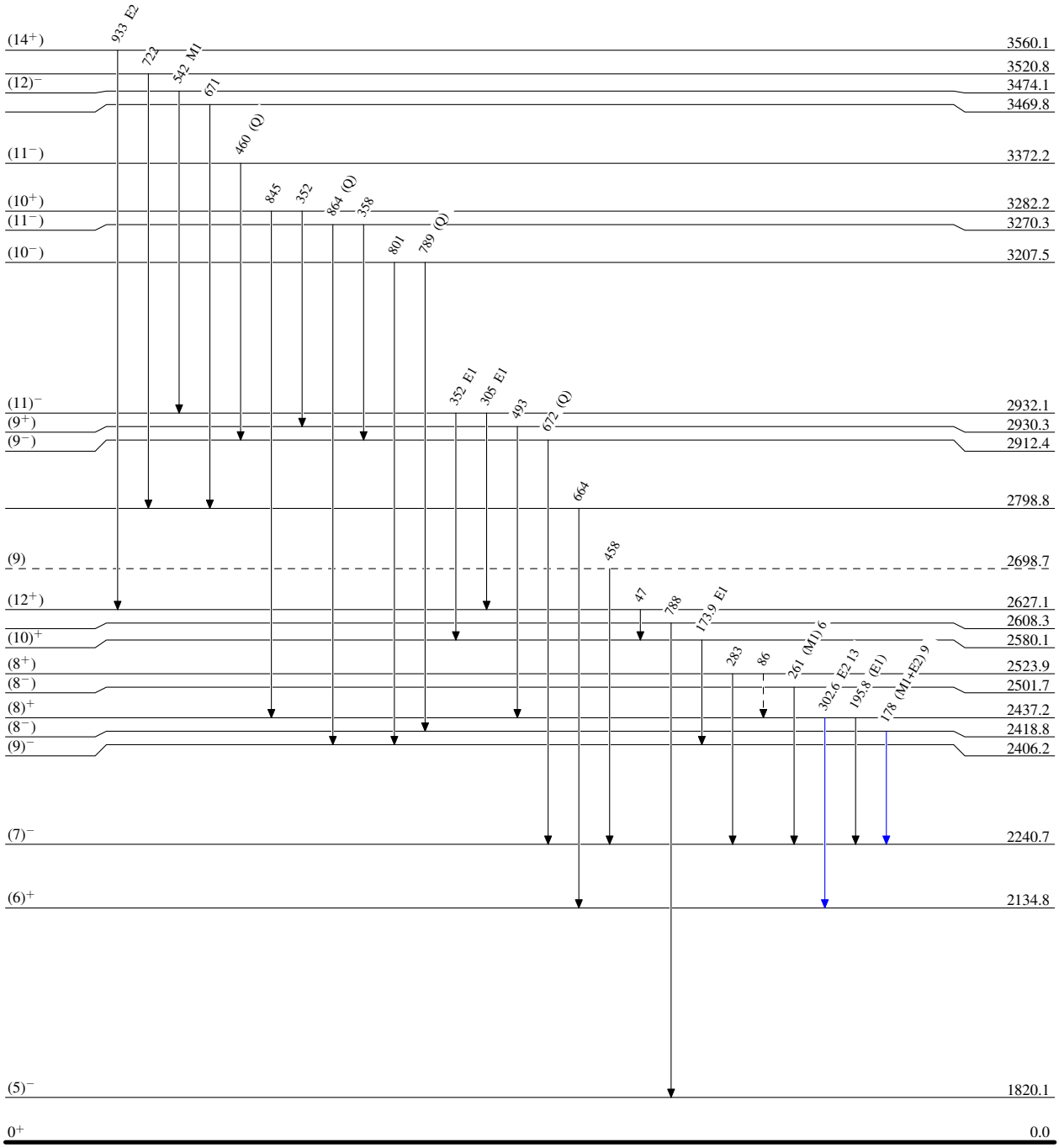
$^{194}_{82}Pb_{112}$

(HI,xnγ):SD 1997Ha24,1994Hu10

Level Scheme (continued)

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)

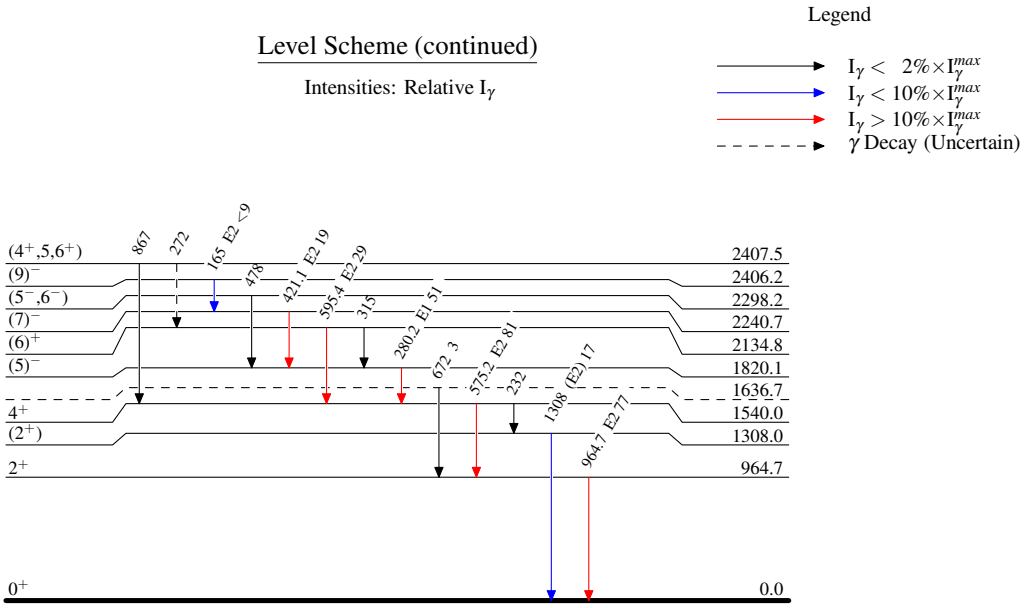


$^{194}_{82}Pb_{112}$

(HI,xnγ):SD 1997Ha24,1994Hu10

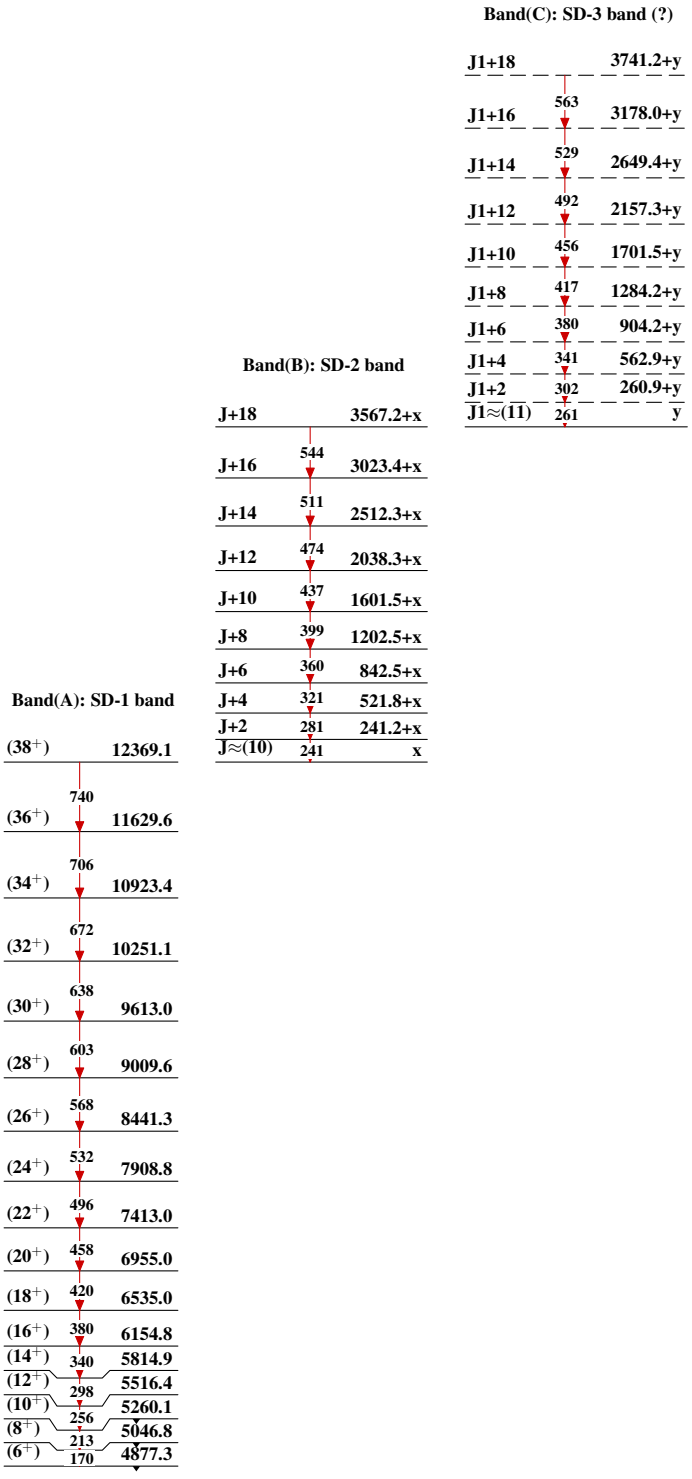
Level Scheme (continued)

Intensities: Relative I_γ



$^{194}_{82}Pb_{112}$

(HI,xnγ):SD 1997Ha24,1994Hu10



$^{194}_{82}Pb_{112}$