(HI,xnγ):SD **2005Jo10,1998Va18,1995Fa11**

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong and Kang Mengxiao	NDS 121, 395 (2014)	1-Mar-2014

1995Fa11: ^{174}Yb(^{26}Mg,5nγ) E=130 MeV. Measured Eγ, Iγ, γγγ, SD bands using GAMMASPHERE array (29 detectors).
1998Va18: ^{174}Yb(^{26}Mg,5nγ) E=137 MeV. Gammasphere array of 98 large- volume Compton-suppressed Ge detectors. Measured lifetimes by DSAM (line shape and centroid-shift analyses) and deduced intrinsic quadrupole moments.
2005Jo10: ^{174}Yb(^{26}Mg,5nγ) E=132 MeV. Measured Eγ, Iγ, γγγ using GAMMASPHERE array with 95 Ge detectors. Deduced SD-1 and SD-2 bands, decay out of SD bands, quasicontinuum spectra associated with the decay of the SD bands.

^{195}Pb Levels

E(level)	Jπ†	Comments
0.0	3/2⁻	
134	(5/2)⁻	
203	13/2⁺	E(level): level energy held fixed In least-squares adjustment.
979	(11/2)⁺	
1119	(9/2⁻)	
1173	17/2⁺	
1754	21/2⁺	
2372	(25/2⁺)	
x#	(15/2⁻)	E(level): level energy held fixed In least-squares adjustment.
141.80+x# *20*	(19/2⁻)	
323.7+x# *3*	(23/2⁻)	
545.8+x# *3*	(27/2⁻)	
807.7+x# *4*	(31/2⁻)	
1109.1+x# *4*	(35/2⁻)	
1450.0+x# *4*	(39/2⁻)	
1830.5+x# *4*	(43/2⁻)	
2250.2+x# *5*	(47/2⁻)	
2708.8+x# *5*	(51/2⁻)	
3206.2+x# *6*	(55/2⁻)	
3740.8+x# *6*	(59/2⁻)	
4314.9+x# *10*	(63/2⁻)	
4927.6+x# *10*	(67/2⁻)	
5578.5+x# *11*	(71/2⁻)	
6267.5+x?# *15*	(75/2⁻)	
y@	(17/2⁻)	35% feeding to normal-deformed bands. This level is expected to populate 13/2⁻ member of the band from which 9% feeding to normal-deformed bands is estimated by 2005Jo10.
162.22+y@ *15*	(21/2⁻)	33% feeding to normal-deformed bands.
364.67+y@ *21*	(25/2⁻)	23% feeding to normal-deformed bands.
608.17+y@ *21*	(29/2⁻)	
892.90+y@ *21*	(33/2⁻)	
1218.41+y@ *22*	(37/2⁻)	
1584.98+y@ *22*	(41/2⁻)	
1992.77+y@ *25*	(45/2⁻)	
2441.5+y@ *3*	(49/2⁻)	
2930.6+y@ *4*	(53/2⁻)	
3461.0+y@ *5*	(57/2⁻)	
4030.9+y@ *6*	(61/2⁻)	

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(HI,xnγ):SD 2005Jo10,1998Va18,1995Fa11 (continued)

^{195}Pb Levels (continued)

E(level)	Jπ†	E(level)	Jπ†	E(level)	Jπ†
4641.6+y@ 6	(65/2⁻)	2688.2+z& 6	J+16	1106.7+u[a] 6	J1+8
5292.2+y@ 7	(69/2⁻)	3197.7+z& 6	J+18	1484.4+u[a] 6	J1+10
5981.2+y?@ 12	(73/2⁻)	3743.2+z& 6	J+20	1902.0+u[a] 6	J1+12
z&	J≈(15/2)‡	4324.2+z& 6	J+22	2356.2+u[a] 6	J1+14
198.2+z& 4	J+2	4940.2+z& 7	J+24	2847.9+u[a] 7	J1+16
434.3+z& 5	J+4	5589.9+z& 9	J+26	3376.5+u[a] 7	J1+18
711.8+z& 5	J+6	6274.3+z& 12	J+28	3940.4+u[a] 8	J1+20
1029.4+z& 5	J+8	u[a]	J1≈(17/2)‡	4541.0+u[a] 9	J1+22
1386.6+z& 5	J+10	213.6+u[a] 4	J1+2	5172.9+u[a] 10	J1+24
1782.7+z& 5	J+12	471.2+u[a] 5	J1+4		
2216.7+z& 5	J+14	768.9+u[a] 5	J1+6		

† From band assignments and similar assignments in neighboring nuclei. For SD-1 and SD-2 bands, the assignments are from 2005Jo10 based on observed coincidences with gamma rays in normal-deformed bands.

‡ Estimated by 1995Ha11 from rotational model.

Band(A): SD-1 band (1995Fa11,1998Va18,2005Jo10), α=−1/2. Q(intrinsic)=19.5 *+10−9* (centroid-shift method), 20.7 *22* (line shape analysis) (1998Va18). Percent population=0.25 (1995Fa11). Favored α=−1/2 signature of configuration=ν5/2[752], from $\nu 7_3$ intruder orbital (1995Fa11,2005Jo10).

@ Band(a): SD-2 band (1995Fa11,1998Va18,2005Jo10), α=+1/2. Q(intrinsic)=19.5 *+9−10* (centroid-shift method), 20.2 *21* (line shape analysis) (1998Va18). Percent population=0.25 (1995Fa11). Unfavored α=+1/2 signature of configuration=ν5/2[752], from $\nu 7_3$ intruder orbital (1995Fa11,2005Jo10).

& Band(B): SD-3 band (1995Fa11). percent population=0.25 (1995Fa11).

[a] Band(C): SD-4 band (1995Fa11). percent population=0.1 (1995Fa11). SD-3 and SD-4 are proposed as signature partners with the neutron in the 9/2[624] or 5/2[512] orbital.

γ(^{195}Pb)

Although multipolarities could not be determined there are expected to be E2 in data analysis (1995Fa11). 162γ, 203γ, 244γ of band-2 are in coincidence with band-1, while 182γ, 222γ of band-1 are in coincidence with band-2. Similarly, 214γ, 258γ, 298γ of band-4 are in coincidence with band-3 and 198γ, 235γ of band-3 are in coincidence with band-4. This crosstalk is evidence that band-1, band-2, band-3 and band-4 share the same basic structures and are signature partner pairs.

Eγ†	Ei(level)	J_i^π	E_f	J_f^π	$I_{(\gamma+ce)}$†#	Comments
134	134	(5/2)⁻	0.0	3/2⁻	0.58@ 2	$I_{(\gamma+ce)}$: 0.53 *3* from coin with SD-2 band (2005Jo10).
141.8‡ 2	141.80+x	(19/2⁻)	x	(15/2⁻)	0.09‡ 2	Eγ: reported by 2005Jo10 only.
162.20‡ 15	162.22+y	(21/2⁻)	y	(17/2⁻)	0.44‡ 4	Eγ: 162.58 *18* (1995Fa11).
181.94‡ 18	323.7+x	(23/2⁻)	141.80+x	(19/2⁻)	0.35‡ 2	Eγ: 182.13 *21* (1995Fa11).
198.2 4	198.2+z	J+2	z	J≈(15/2)	0.28	
202.44‡ 14	364.67+y	(25/2⁻)	162.22+y	(21/2⁻)	0.52‡ 5	Eγ: 203.22 *16* (1995Fa11).
213.6 4	213.6+u	J1+2	u	J1≈(17/2)	0.45	
222.03‡ 14	545.8+x	(27/2⁻)	323.7+x	(23/2⁻)	0.63‡ 3	Eγ: 222.33 *14* (1995Fa11).
236.19 14	434.3+z	J+4	198.2+z	J+2	0.70	
243.49‡ 3	608.17+y	(29/2⁻)	364.67+y	(25/2⁻)	0.90‡ 6	A_2=+0.4 *1* Eγ: 243.99 *11* (1995Fa11).

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(HI,xnγ):SD 2005Jo10,1998Va18,1995Fa11 (continued)

γ(^{195}Pb) (continued)

E_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	$I_{(\gamma+ce)}$ [†#]	Comments
257.66 *23*	471.2+u	J1+4	213.6+u	J1+2	0.60	
261.96[‡] *10*	807.7+x	(31/2$^-$)	545.8+x	(27/2$^-$)	0.87[‡] *3*	A_2=+0.4 *2* E_γ: 261.97 *10* (1995Fa11).
277.47 *13*	711.8+z	J+6	434.3+z	J+4	0.56	
284.73[‡] *3*	892.90+y	(33/2$^-$)	608.17+y	(29/2$^-$)	1.00[‡] *5*	A_2=+0.4 *3* E_γ: 284.63 *9* (1995Fa11).
297.70 *17*	768.9+u	J1+6	471.2+u	J1+4	0.72	
301.33[‡] *10*	1109.1+x	(35/2$^-$)	807.7+x	(31/2$^-$)	0.99[‡] *3*	A_2=+0.4 *1* E_γ: 301.52 *9* (1995Fa11).
317.60 *12*	1029.4+z	J+8	711.8+z	J+6	0.62	
325.51[‡] *4*	1218.41+y	(37/2$^-$)	892.90+y	(33/2$^-$)	0.95[‡] *6*	A_2=+0.4 *2* E_γ: 325.64 *9* (1995Fa11).
337.83 *16*	1106.7+u	J1+8	768.9+u	J1+6	1.00	
340.93[‡] *9*	1450.0+x	(39/2$^-$)	1109.1+x	(35/2$^-$)	1.00[‡] *4*	A_2=+0.4 *1* E_γ: 341.09 *9* (1995Fa11).
357.22 *11*	1386.6+z	J+10	1029.4+z	J+8	0.85	
366.57[‡] *3*	1584.98+y	(41/2$^-$)	1218.41+y	(37/2$^-$)	0.99[‡] *6*	A_2=+0.3 *1* E_γ: 366.91 *10* (1995Fa11).
377.68 *17*	1484.4+u	J1+10	1106.7+u	J1+8	0.90	
380.51[‡] *14*	1830.5+x	(43/2$^-$)	1450.0+x	(39/2$^-$)	0.98[‡] *4*	A_2=+0.5 *2* E_γ: 380.54 *10* (1995Fa11).
396.08 *13*	1782.7+z	J+12	1386.6+z	J+10	0.90	
407.79[‡] *11*	1992.77+y	(45/2$^-$)	1584.98+y	(41/2$^-$)	0.99[‡] *6*	A_2=+0.3 *1* E_γ: 407.99 *11* (1995Fa11).
417.59 *19*	1902.0+u	J1+12	1484.4+u	J1+10	0.72	
419.72[‡] *19*	2250.2+x	(47/2$^-$)	1830.5+x	(43/2$^-$)	0.94[‡] *4*	A_2=+0.4 *1* E_γ: 419.29 *16* (1995Fa11).
434.02 *13*	2216.7+z	J+14	1782.7+z	J+12	0.80	
448.76[‡] *14*	2441.5+y	(49/2$^-$)	1992.77+y	(45/2$^-$)	0.99[‡] *6*	A_2=+0.4 *2* E_γ: 449.14 *9* (1995Fa11).
454.21 *14*	2356.2+u	J1+14	1902.0+u	J1+12	0.80	
458.55[‡] *22*	2708.8+x	(51/2$^-$)	2250.2+x	(47/2$^-$)	0.83[‡] *4*	E_γ: 458.26 *9* (1995Fa11).
471.52 *15*	2688.2+z	J+16	2216.7+z	J+14	0.70	
489.09[‡] *19*	2930.6+y	(53/2$^-$)	2441.5+y	(49/2$^-$)	0.87[‡] *6*	E_γ: 489.70 *8* (1995Fa11).
491.68 *20*	2847.9+u	J1+16	2356.2+u	J1+14	0.70	
497.39[‡] *22*	3206.2+x	(55/2$^-$)	2708.8+x	(51/2$^-$)	0.65[‡] *5*	E_γ: 497.38 *9* (1995Fa11).
509.46 *14*	3197.7+z	J+18	2688.2+z	J+16	0.70	
528.6 *3*	3376.5+u	J1+18	2847.9+u	J1+16	0.80	
530.4[‡] *3*	3461.0+y	(57/2$^-$)	2930.6+y	(53/2$^-$)	0.67[‡] *7*	E_γ: 530.51 *13* (1995Fa11).
534.6[‡] *3*	3740.8+x	(59/2$^-$)	3206.2+x	(55/2$^-$)	0.60[‡] *4*	E_γ: 535.69 *15* (1995Fa11).
545.51 *16*	3743.2+z	J+20	3197.7+z	J+18	0.65	
563.9 *3*	3940.4+u	J1+20	3376.5+u	J1+18	0.65	
569.9[‡] *4*	4030.9+y	(61/2$^-$)	3461.0+y	(57/2$^-$)	0.57[‡] *7*	E_γ: 570.32 *16* (1995Fa11).
574.1[‡] *8*	4314.9+x	(63/2$^-$)	3740.8+x	(59/2$^-$)	0.38[‡] *6*	E_γ: 574.52 *18* (1995Fa11).
581	1754	21/2$^+$	1173	17/2$^+$	0.30[@] *3*	$I_{(\gamma+ce)}$: 0.30 *4* from coin with SD-2 band (2005Jo10).
581.04 *17*	4324.2+z	J+22	3743.2+z	J+20	1.00	
600.6 *4*	4541.0+u	J1+22	3940.4+u	J1+20	0.45	
610.75 *23*	4641.6+y	(65/2$^-$)	4030.9+y	(61/2$^-$)	0.56	
612.7 *3*	4927.6+x	(67/2$^-$)	4314.9+x	(63/2$^-$)	0.42	
616.0 *3*	4940.2+z	J+24	4324.2+z	J+22	0.42	
618	2372	(25/2$^+$)	1754	21/2$^+$	0.15[@] *2*	$I_{(\gamma+ce)}$: 0.17 *4* from coin with SD-2 band (2005Jo10).
631.9 *4*	5172.9+u	J1+24	4541.0+u	J1+22	0.28	

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(HI,xnγ):SD 2005Jo10,1998Va18,1995Fa11 (continued)

γ(^{195}Pb) (continued)

E_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	$I_{(\gamma+ce)}$ [†#]	Comments
649.7 *5*	5589.9+z	J+26	4940.2+z	J+24	0.30	
650.6 *3*	5292.2+y	(69/2$^-$)	4641.6+y	(65/2$^-$)	0.38	
650.9 *4*	5578.5+x	(71/2$^-$)	4927.6+x	(67/2$^-$)	0.35	
684.4 *8*	6274.3+z	J+28	5589.9+z	J+26	0.24	
689[&]	6267.5+x?	(75/2$^-$)	5578.5+x	(71/2$^-$)	0.10	E_γ,I_γ: from figure 1 of 1995Fa11.
689[&]	5981.2+y?	(73/2$^-$)	5292.2+y	(69/2$^-$)	0.10	E_γ,I_γ: from figure 1 of 1995Fa11.
776	979	(11/2)$^+$	203	13/2$^+$	0.10[@] *2*	$I_{(\gamma+ce)}$: 0.12 *4* from coin with SD-2 band (2005Jo10).
970	1173	17/2$^+$	203	13/2$^+$	0.32[@] *2*	$I_{(\gamma+ce)}$: 0.35 *4* from coin with SD-2 band (2005Jo10).
985	1119	(9/2$^-$)	134	(5/2)$^-$	0.08[@] *2*	$I_{(\gamma+ce)}$: 0.13 *3* from coin with SD-2 band (2005Jo10).

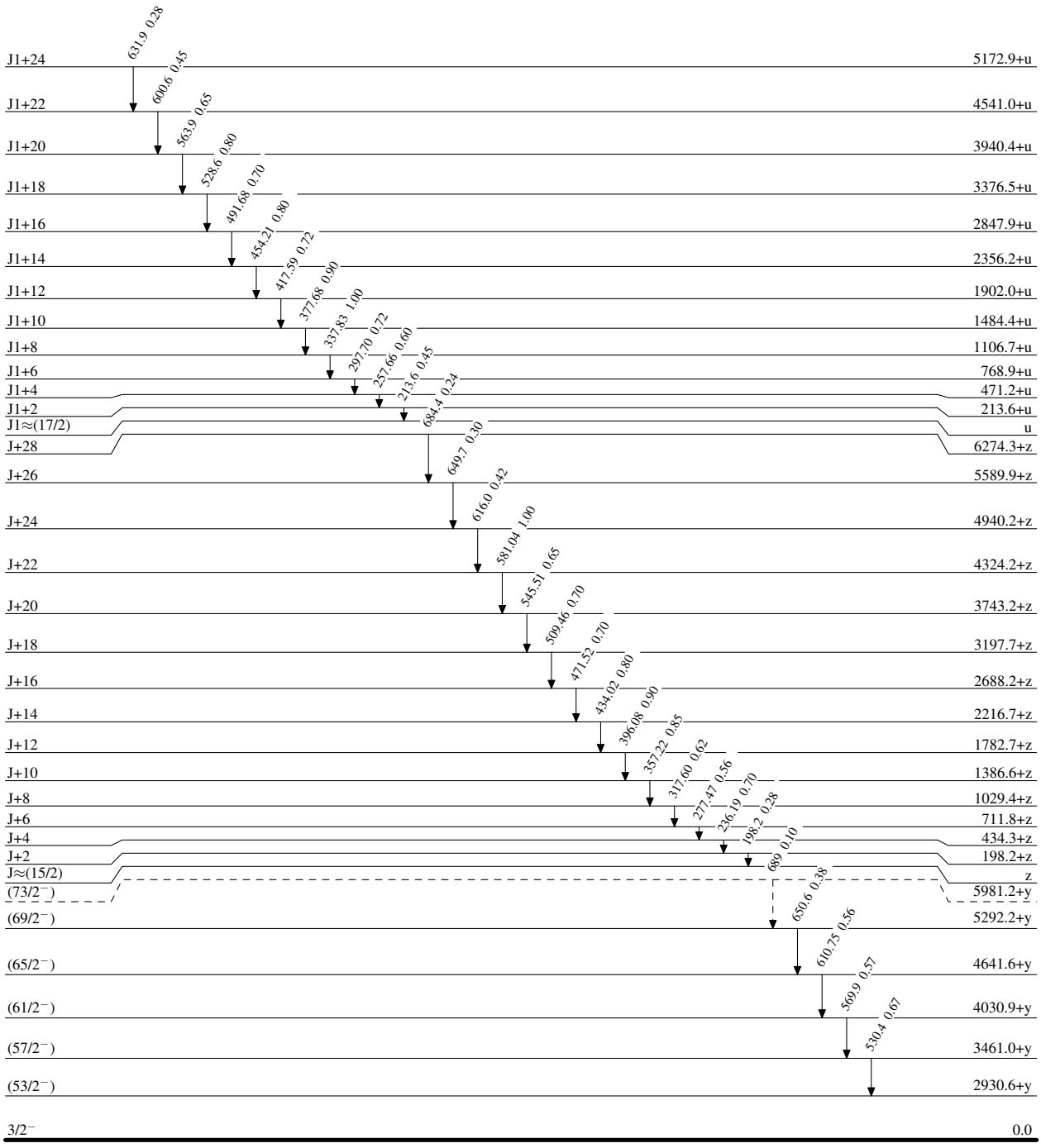
† From 1995Fa11 unless otherwise stated. Values for SD-3 and SD-4 bands are from 1995Fa11 only.
‡ From 2005Jo10.
# Relative transition intensity within the SD band.
@ From coin with SD-1 band (2005Jo10).
& Placement of transition in the level scheme is uncertain.

Legend

(HI,xnγ):SD 2005Jo10,1998Va18,1995Fa11

Level Scheme

γ Decay (Uncertain)



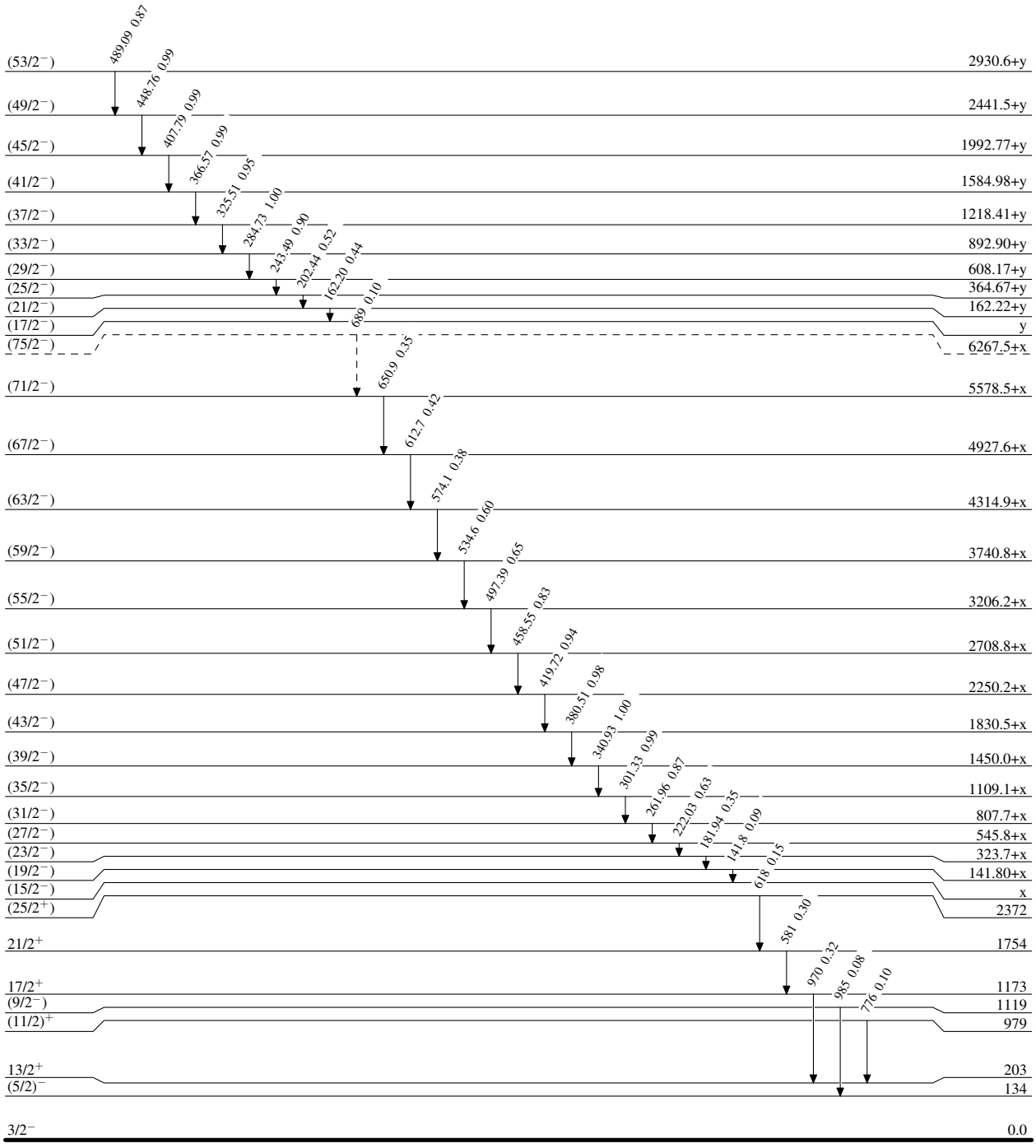
$^{195}_{82}Pb_{113}$

Legend

(HI,xnγ):SD 2005Jo10,1998Va18,1995Fa11

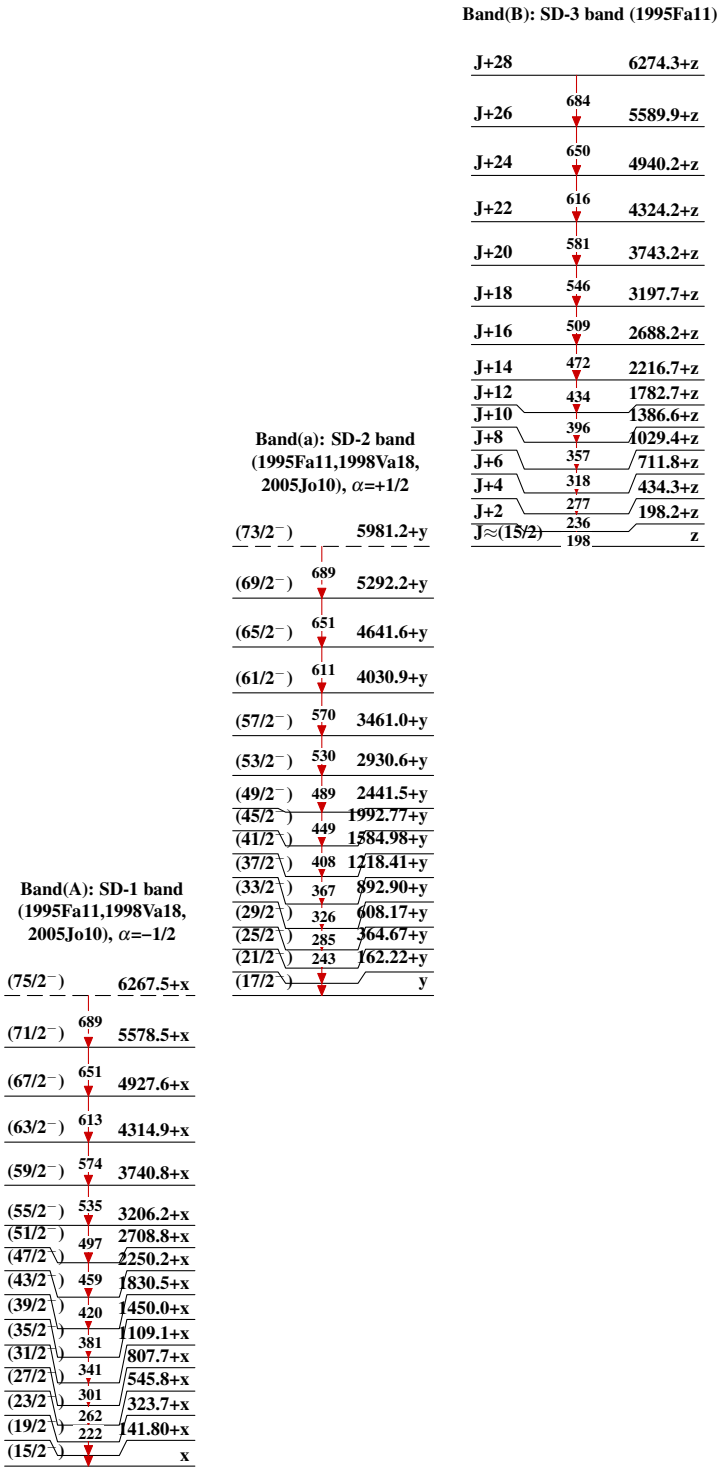
Level Scheme (continued)

γ Decay (Uncertain)



$^{195}_{82}Pb_{113}$

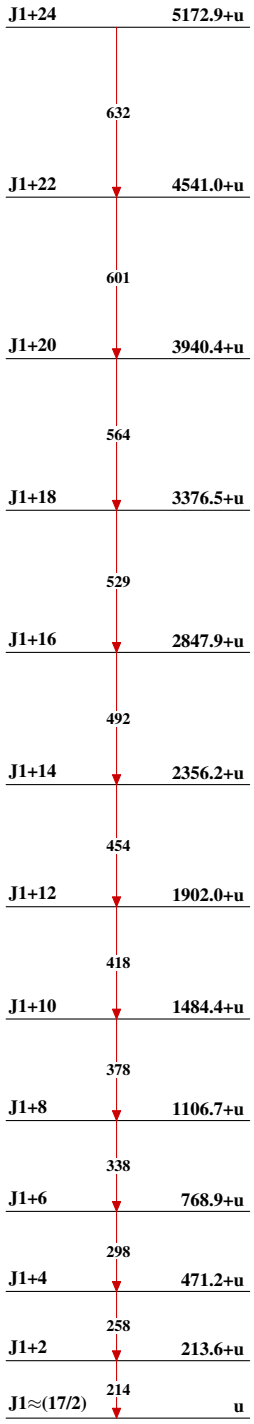
(HI,xnγ):SD 2005Jo10,1998Va18,1995Fa11



$^{195}_{82}Pb_{113}$

(HI,xnγ):SD 2005Jo10,1998Va18,1995Fa11 (continued)

Band(C): SD-4 band (1995Fa11)



$^{195}_{82}Pb_{113}$