(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. J. Martin	NDS 114, 1497 (2013)	31-Aug-2013

2008Ro02 ^{130}Te(^{27}Al,5nγ) E=155 MeV.

1983Ba70 ^{130}Te(^{27}Al,5nγ) E=154 MeV
1995Pe16 ^{146}Nd(^{11}B,5nγ) E=66 MeV

^{152}Tb Levels

The band assignments are from 1983Ba70 for the normal bands, and from 2008Ro02 for the superdeformed bands.

E(level)[†]	Jπ[‡]	$T_{1/2}$[#]	Comments
501.74[&]	8^+	4.2 min *1*	$T_{1/2}$: from Adopted Levels.
600.3[&]	9^+	<2 ns	
806.1[a]	10^+	<2 ns	
1212.4[b]	(9^-)	<2 ns	
1230.1[@&]	11^+	<2 ns	
1237.7[b]	11^-	4.2 ns *2*	
1349.2[@a]	12^+	<2 ns	
1370.2[b]	12^-	<2 ns	
1712.1[b]	13^-	<2 ns	
1887.7[@a]	14^+	<2 ns	
1887.8[@&]	(13^+)	<2 ns	
1920.3[b]	14^-	<2 ns	
2269.3[b]	15^-	<2 ns	
2499.4[b]	16^-	<2 ns	
2660.6	$(16)^-$	<2 ns	
2688.6[@a]	16^+	<2 ns	
2852	17^-		
2889.4[b]	17^-	<2 ns	
3126.7[b]	18^-	<2 ns	
3218.3	18^+	<2 ns	
3250.5	19^-		
3596.2[b]	19^-	<2 ns	
3720	(20^-)		
4002	21		
4234	21^-		
4354	(22)		
4361	21^-		
4454	(24)		
4502	(22^-)		
4694	(23)		
5103	23^-		
5182	23^-		
5249	(24)		
5257	(24^-)		
5966	25^-		
5969	(26^-)		
5985	(26)		The decay of this level has not been observed, suggesting a lifetime long enough to destroy prompt coincidences.

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(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70 (continued)

^{152}Tb Levels (continued)

E(level)[†]	Jπ[‡]
6011	25⁻
6093	(26)
6371	27⁻
6696	(28)
6873	28⁺
6916	(29⁻)
7284	29⁻
7617	30⁺
7728	31⁻
8290	(31)
8371	32⁺
8502	(31)
8565	33⁻
8961	(33)
9147	34⁺
9389	35⁻
9792	36⁺
9804	(35)
9923	37⁻
10283	36⁺
10614	38⁺
10996	39⁻
11654	40⁺
12054	(41⁻)
12761	(42⁺)
13278	(43⁻)
13929	(44⁺)
x[c]	J
962.8+x[c] *3*	J+2
1978.0+x[c] *5*	J+4
3046.1+x[c] *6*	J+6
4166.7+x[c] *6*	J+8
5341.2+x[c] *7*	J+10
6569.0+x[c] *8*	J+12
7849.0+x[c] *8*	J+14
9179.8+x[c] *9*	J+16
10562.5+x[c] *9*	J+18
11991.6+x[c] *11*	J+20
13473.6+x[c] *15*	J+22
y[d]	J1
927.5+y[d] *5*	J1+2
1894.0+y[d] *7*	J1+4
2901.0+y[d] *9*	J1+6
3948.2+y[d] *10*	J1+8
5037.5+y[d] *10*	J1+10
6170.0+y[d] *10*	J1+12
7350.5+y[d] *11*	J1+14
8580.5+y[d] *11*	J1+16
9861.4+y[d] *12*	J1+18
11194.1+y[d] *12*	J1+20
12585.2+y[d] *13*	J1+22

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(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70 (continued)

^{152}Tb Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
14029.7+y[d] *17*	J1+24	10691.3+z[e] *9*	J2+18	9797.9+u[f] *12*	J3+20	4441.7+v[g] *7*	J4+10
15527.7+y[d] *19*	J1+26	12130.4+z[e] *14*	J2+20	11038.0+u[f] *13*	J3+22	5464.8+v[g] *8*	J4+12
17061.7+y[d] *22*	J1+28	u[f]	J3	12328.9+u[f] *13*	J3+24	6535.1+v[g] *8*	J4+14
z[e]	J2	779.5+u[f] *3*	J3+2	13670.7+u[f] *14*	J3+26	7653.5+v[g] *9*	J4+16
980.9+z[e] *3*	J2+2	1600.9+u[f] *5*	J3+4	15063.4+u[f] *15*	J3+28	8820.3+v[g] *9*	J4+18
2011.3+z[e] *5*	J2+4	2466.3+u[f] *7*	J3+6	16507.0+u[f] *15*	J3+30	10035.7+v[g] *10*	J4+20
3093.5+z[e] *6*	J2+6	3375.0+u[f] *8*	J3+8	18003.3+u[f] *18*	J3+32	11301.4+v[g] *10*	J4+22
4227.6+z[e] *6*	J2+8	4328.6+u[f] *9*	J3+10	v[g]	J4	12617.8+v[g] *11*	J4+24
5412.3+z[e] *7*	J2+10	5327.9+u[f] *10*	J3+12	801.0+v[g] *3*	J4+2	13984.3+v[g] *11*	J4+26
6655.1+z[e] *8*	J2+12	6373.1+u[f] *10*	J3+14	1644.6+v[g] *5*	J4+4	15403.8+v[g] *12*	J4+28
7949.0+z[e] *8*	J2+14	7466.2+u[f] *10*	J3+16	2532.1+v[g] *6*	J4+6	16874.5+v[g] *16*	J4+30
9294.0+z[e] *9*	J2+16	8607.3+u[f] *12*	J3+18	3464.0+v[g] *6*	J4+8		

† From a least-squares fit to the Eγ data.
‡ Spin assignments are those proposed by 1995Pe16 and 1983Ba70, and are based on multipolarities determined from γ(θ), coincidence data and intensity measurements, and band structure. γ(θ) measurements were made by 1995Pe16 but are not given in the authors′ paper. data on the superdeformed bands are from 2008Ro02.
# From 1983Ba70, unless otherwise noted. The values given as upper limits should be read as less than approximately.
@ Level proposed by 1983Ba70. Not shown in the level scheme of 1995Pe16.
& Band(A): configuration:$(\pi,h_{11/2})(\nu,f_{7/2})$.
a Band(B): configuration:$(\pi,h_{11/2})(\nu,h_{9/2})$.
b Band(C): configuration:$(\pi,h_{11/2})(\nu,i_{13/2})$.
c Band(D): SD-1 (yrast) band. Population intensity in 5n-channel=1.6%.
d Band(E): SD-2 band. Population intensity in 5n-channel=1.2%. Band is similar to SD-2 band in ^{152}Dy.
e Band(F): SD-3 band. Population intensity in 5n-channel=0.6%. Band is similar to yrast SD band in ^{150}Tb.
f Band(G): SD-4 band. Population intensity in 5n-channel=0.6%. Band is similar to yrast SD band in ^{151}Tb. SD-4 and SD-5 bands are probable signature partners. These bands are also reported by 1994KhZZ.
g Band(H): SD-5 band. Population intensity in 5n-channel=0.5%. Band is similar to yrast SD band in ^{151}Tb. SD-4 and SD-5 bands are probable signature partners. These bands are also reported by 1994KhZZ.

γ(^{152}Tb)

Eγ†	Iγ‡	Ei(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	I(γ+ce)	Comments
25		1237.7	11^-	1212.4	(9^-)			140 *40*	$I_{(\gamma+ce)}$: >105 from and intensity balance at the 1238 level, and <179 from an intensity balance at the 1212 level.
32		3250.5	19^-	3218.3	18^+				
98.55	204	600.3	9^+	501.74	8^+	D(+Q)	−0.05 *10*		Mult.: A_2=−0.21 *3*, A_4=−0.06 *5*. An intensity balance at the 600 level requires mult(98γ) to be mainly M1.
123.78	22	3250.5	19^-	3126.7	18^-	D			Eγ: Unplaced by 1983Ba70, but probably the same transition as the 593γ of 1995Pe16. Mult.: A_2=−0.18 *20*, A_4=−0.16 *21*.
132.44	56	1370.2	12^-	1237.7	11^-	D(+Q)	+0.05 *3*		Mult.: A_2=−0.15 *4*, A_4=−0.08 *8*.
191		2852	17^-	2660.6	$(16)^-$				
205.74	396	806.1	10^+	600.3	9^+	D(+Q)	+0.01 *5*		Mult.: A_2=−0.16 *2*, A_4=−0.06 *6*. Intensity balance arguments require mult(207γ) to be mainly M1.

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(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70 (continued)

γ(^{152}Tb) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[#]	Comments
208.11	68	1920.3	14^-	1712.1	13^-	D(+Q)	+0.01 *5*	Mult.: A_2=−0.20 *5*, A_4=−0.03 *7*.
220		6916	(29^-)	6696	(28)			
229.93	66	2499.4	16^-	2269.3	15^-	D(+Q)	+0.06 *6*	Mult.: A_2=−0.12 *8*, A_4=−0.13 *11*.
237.1	30	3126.7	18^-	2889.4	17^-			
240		4694	(23)	4454	(24)			
282		4002	21	3720	(20^-)			
304.33	51	806.1	10^+	501.74	8^+	E2		Mult.: A_2=+0.19 *10*, A_4=−0.05 *16*.
328.8	23	3218.3	18^+	2889.4	17^-	D		Mult.: A_2=−0.40 *19*, A_4=+0.45 *19*.
330		10614	38^+	10283	36^+			
333		7617	30^+	7284	29^-			
352		2852	17^-	2499.4	16^-			
352		4354	(22)	4002	21			
[x]352.9	72							E_γ: Unplaced by 1983Ba70, but possibly the same transition as the 352γ of 1995Pe16 placed from the 2852 and 4354 levels.
361		6371	27^-	6011	25^-			
391.5[@]	26	2660.6	$(16)^-$	2269.3	15^-			Mult.: A_2=+0.08 *18*, A_4=+0.12 *26*.
399		3250.5	19^-	2852	17^-			
405		6371	27^-	5966	25^-			
431.66	408	1237.7	11^-	806.1	10^+	D+Q	+0.15 *5*	Mult.: A_2=−0.03 *2*, A_4=−0.02 *3*.
444		7728	31^-	7284	29^-			
452		4454	(24)	4002	21			
469		3720	(20^-)	3250.5	19^-			
474.37	393	1712.1	13^-	1237.7	11^-	E2		Mult.: A_2=+0.29 *2*, A_4=−0.01 *3*.
502		6873	28^+	6371	27^-			
534		9923	37^-	9389	35^-			
538.5[@]	81	1887.7	14^+	1349.2	12^+	E2		Mult.: A_2=+0.40 *12*; A_4=−0.08 *22*.
543.1[@]	176	1349.2	12^+	806.1	10^+	E2		Mult.: A_2=+0.35 *8*, A_4=−0.02 *14*.
550.1	95	1920.3	14^-	1370.2	12^-	E2		Mult.: A_2=+0.31 *6*, A_4=−0.03 *10*.
555		5249	(24)	4694	(23)			
557.3	273	2269.3	15^-	1712.1	13^-	E2		Mult.: A_2=+0.28 *5*, A_4=−0.04 *9*.
579.3	114	2499.4	16^-	1920.3	14^-	E2		Mult.: A_2=+0.31 *7*, A_4=−0.03 *12*.
[x]592.6	59							E_γ: Unplaced by 1983Ba70 but possibly the same transition as the 593γ of 1995Pe16 placed from the 3720 level. Mult.: A_2=−0.01, A_4=+0.07 *9*.
593		3720	(20^-)	3126.7	18^-			E_γ: 1983Ba70 report an unplaced transition with Eγ=592.6; however, the 469γ from the 3720 level is not seen by these authors.
603		6696	(28)	6093	(26)			
612.1	52	1212.4	(9^-)	600.3	9^+	D+Q		Mult.: A_2=+0.16 *13*, A_4=−0.04 *19*.
620.0	109	2889.4	17^-	2269.3	15^-	E2		Mult.: A_2=+0.35 *12*, A_4=+0.01 *17*.
627.4	69	3126.7	18^-	2499.4	16^-	E2		Mult.: A_2=+0.27 *13*, A_4=+0.13 *18*.
629.8[@]	79	1230.1	11^+	600.3	9^+	E2		Mult.: A_2=+0.34 *12*, A_4=+0.00 *17*.
645		9792	36^+	9147	34^+			
657.7[@]	39	1887.8	(13^+)	1230.1	11^+			
671		8961	(33)	8290	(31)			
691		10614	38^+	9923	37^-			
706.7	26	3596.2	19^-	2889.4	17^-	E2		Mult.: A_2=+0.42 *18*.
710.7	127	1212.4	(9^-)	501.74	8^+	D		Mult.: A_2=−0.08 *11*, A_2=−0.02 *16*.
711		6696	(28)	5985	(26)			
712		5969	(26^-)	5257	(24^-)			
[x]718.6	38					E2		E_γ: Placed by 1983Ba70 as deexciting a 3845 *20*- level to the 3127 *18*- level. 1995Pe16 place the 20^-

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(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70 (continued)

γ(^{152}Tb) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
							level at 3719 deexcited by a 593γ. Mult.: A_2=+0.30 *15*, A_4=+0.02 *22*.
740.1	22	2660.6	(16)$^-$	1920.3	14$^-$	E2	Mult.: A_2=+0.37 *19*, A_4=−0.31 *30*.
742		5103	23$^-$	4361	21$^-$		
744		7617	30$^+$	6873	28$^+$		
[x]754.0	17					E2	E_γ: Placed by 1983Ba70 as deexciting a 4350 *21*- level to the 3596 *19*- level. 1995Pe16 place the 21$^-$ level at 4361 deexcited by a 765γ. Mult.: A_2=+0.30 *8*, A_4=−0.02 *14*.
754		8371	32$^+$	7617	30$^+$		
755		5257	(24$^-$)	4502	(22$^-$)		
765		4361	21$^-$	3596.2	19$^-$		
776		9147	34$^+$	8371	32$^+$		
779.5 *3*		779.5+u	J3+2	u	J3		
782		4502	(22$^-$)	3720	(20$^-$)		
785		5966	25$^-$	5182	23$^-$		
800.9[@]	33	2688.6	16$^+$	1887.7	14$^+$	E2	Mult.: A_2=+0.24 *18*, A_4=−0.07 *28*.
801.0 *3*		801.0+v	J4+2	v	J4		
804		5257	(24$^-$)	4454	(24)		
813		7728	31$^-$	6916	(29$^-$)		
821		5182	23$^-$	4361	21$^-$		
821.4 *3*		1600.9+u	J3+4	779.5+u	J3+2		
822		10614	38$^+$	9792	36$^+$		
824		9389	35$^-$	8565	33$^-$		
829		6011	25$^-$	5182	23$^-$		
837		8565	33$^-$	7728	31$^-$		
843		9804	(35)	8961	(33)		
843.6 *3*		1644.6+v	J4+4	801.0+v	J4+2		
844		6093	(26)	5249	(24)		
863		5966	25$^-$	5103	23$^-$		
865.4 *5*		2466.3+u	J3+6	1600.9+u	J3+4		
869		5103	23$^-$	4234	21$^-$		
887.5 *3*		2532.1+v	J4+6	1644.6+v	J4+4		
895		5249	(24)	4354	(22)		
904		6873	28$^+$	5969	(26$^-$)		
908		6011	25$^-$	5103	23$^-$		
908.7 *3*		3375.0+u	J3+8	2466.3+u	J3+6		
913		7284	29$^-$	6371	27$^-$		
927.5 *5*		927.5+y	J1+2	y	J1		
931.9 *3*		3464.0+v	J4+8	2532.1+v	J4+6		
953.6 *4*		4328.6+u	J3+10	3375.0+u	J3+8		
962.8 *3*		962.8+x	J+2	x	J		
966.5 *5*		1894.0+y	J1+4	927.5+y	J1+2		
977.7 *3*		4441.7+v	J4+10	3464.0+v	J4+8		
980.9 *3*		980.9+z	J2+2	z	J2		
983		4234	21$^-$	3250.5	19$^-$		
999.3 *4*		5327.9+u	J3+12	4328.6+u	J3+10		
1006		8290	(31)	7284	29$^-$		
1007.0 *5*		2901.0+y	J1+6	1894.0+y	J1+4		
1015.2 *3*		1978.0+x	J+4	962.8+x	J+2		
1023.1 *3*		5464.8+v	J4+12	4441.7+v	J4+10		
1030.4 *3*		2011.3+z	J2+4	980.9+z	J2+2		
1040		11654	40$^+$	10614	38$^+$		
1045.2 *3*		6373.1+u	J3+14	5327.9+u	J3+12		
1047.2 *3*		3948.2+y	J1+8	2901.0+y	J1+6		
1058		12054	(41$^-$)	10996	39$^-$		

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(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70 (continued)

γ(^{152}Tb) (continued)

E_γ †	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	E_i(level)	J_i^π	E_f	J_f^π
1068.1 *3*	3046.1+x	J+6	1978.0+x	J+4	1265.7 *3*	11301.4+v	J4+22	10035.7+v	J4+20
1070.3 *3*	6535.1+v	J4+14	5464.8+v	J4+12	1280.0 *3*	7849.0+x	J+14	6569.0+x	J+12
1073	10996	39^-	9923	37^-	1280.9 *3*	9861.4+y	J1+18	8580.5+y	J1+16
1082.2 *3*	3093.5+z	J2+6	2011.3+z	J2+4	1290.9 *3*	12328.9+u	J3+24	11038.0+u	J3+22
1089.3 *3*	5037.5+y	J1+10	3948.2+y	J1+8	1293.9 *3*	7949.0+z	J2+14	6655.1+z	J2+12
1093.1 *3*	7466.2+u	J3+16	6373.1+u	J3+14	1316.4 *3*	12617.8+v	J4+24	11301.4+v	J4+22
1107	12761	(42^+)	11654	40^+	1330.8 *3*	9179.8+x	J+16	7849.0+x	J+14
1118.4 *3*	7653.5+v	J4+16	6535.1+v	J4+14	1332.7 *3*	11194.1+y	J1+20	9861.4+y	J1+18
1120.6 *3*	4166.7+x	J+8	3046.1+x	J+6	1341.7 *4*	13670.7+u	J3+26	12328.9+u	J3+24
1132.5 *3*	6170.0+y	J1+12	5037.5+y	J1+10	1345.0 *3*	9294.0+z	J2+16	7949.0+z	J2+14
1134.1 *3*	4227.6+z	J2+8	3093.5+z	J2+6	1366.4 *3*	13984.3+v	J4+26	12617.8+v	J4+24
1136	10283	36^+	9147	34^+	1382.7 *3*	10562.5+x	J+18	9179.8+x	J+16
1141.1 *5*	8607.3+u	J3+18	7466.2+u	J3+16	1391.0 *5*	12585.2+y	J1+22	11194.1+y	J1+20
1166.8 *3*	8820.3+v	J4+18	7653.5+v	J4+16	1392.7 *4*	15063.4+u	J3+28	13670.7+u	J3+26
1168	13929	(44^+)	12761	(42^+)	1397.3 *3*	10691.3+z	J2+18	9294.0+z	J2+16
1174.5 *3*	5341.2+x	J+10	4166.7+x	J+8	1419.5 *4*	15403.8+v	J4+28	13984.3+v	J4+26
1180.5 *3*	7350.5+y	J1+14	6170.0+y	J1+12	1429.0 *6*	11991.6+x	J+20	10562.5+x	J+18
1184.7 *3*	5412.3+z	J2+10	4227.6+z	J2+8	1439.0 *10*	12130.4+z	J2+20	10691.3+z	J2+18
1190.6 *4*	9797.9+u	J3+20	8607.3+u	J3+18	1443.6 *5*	16507.0+u	J3+30	15063.4+u	J3+28
1215.4 *3*	10035.7+v	J4+20	8820.3+v	J4+18	1444.5 *10*	14029.7+y	J1+24	12585.2+y	J1+22
1218	8502	(31)	7284	29^-	1470.7 *10*	16874.5+v	J4+30	15403.8+v	J4+28
1224	13278	(43^-)	12054	(41^-)	1482.0 *10*	13473.6+x	J+22	11991.6+x	J+20
1227.8 *3*	6569.0+x	J+12	5341.2+x	J+10	1496.3 *10*	18003.3+u	J3+32	16507.0+u	J3+30
1230.0 *3*	8580.5+y	J1+16	7350.5+y	J1+14	1498.0 *10*	15527.7+y	J1+26	14029.7+y	J1+24
1240.1 *4*	11038.0+u	J3+22	9797.9+u	J3+20	1534.0 *10*	17061.7+y	J1+28	15527.7+y	J1+26
1242.8 *3*	6655.1+z	J2+12	5412.3+z	J2+10					

† Data for the superdeformed bands, built on E=u, v, x, y, and z are from 2008Ro02. For the normal bands, the values quoted to tenths of keV or better are from 1983Ba70, and those quoted to the nearest keV are from 1995Pe16. Values of 1995Pe16 are taken from the authors′ level scheme. No tabulated data are given.

‡ From 1983Ba70.

From 1983Ba70. Stretched Q are assumed to be E2.

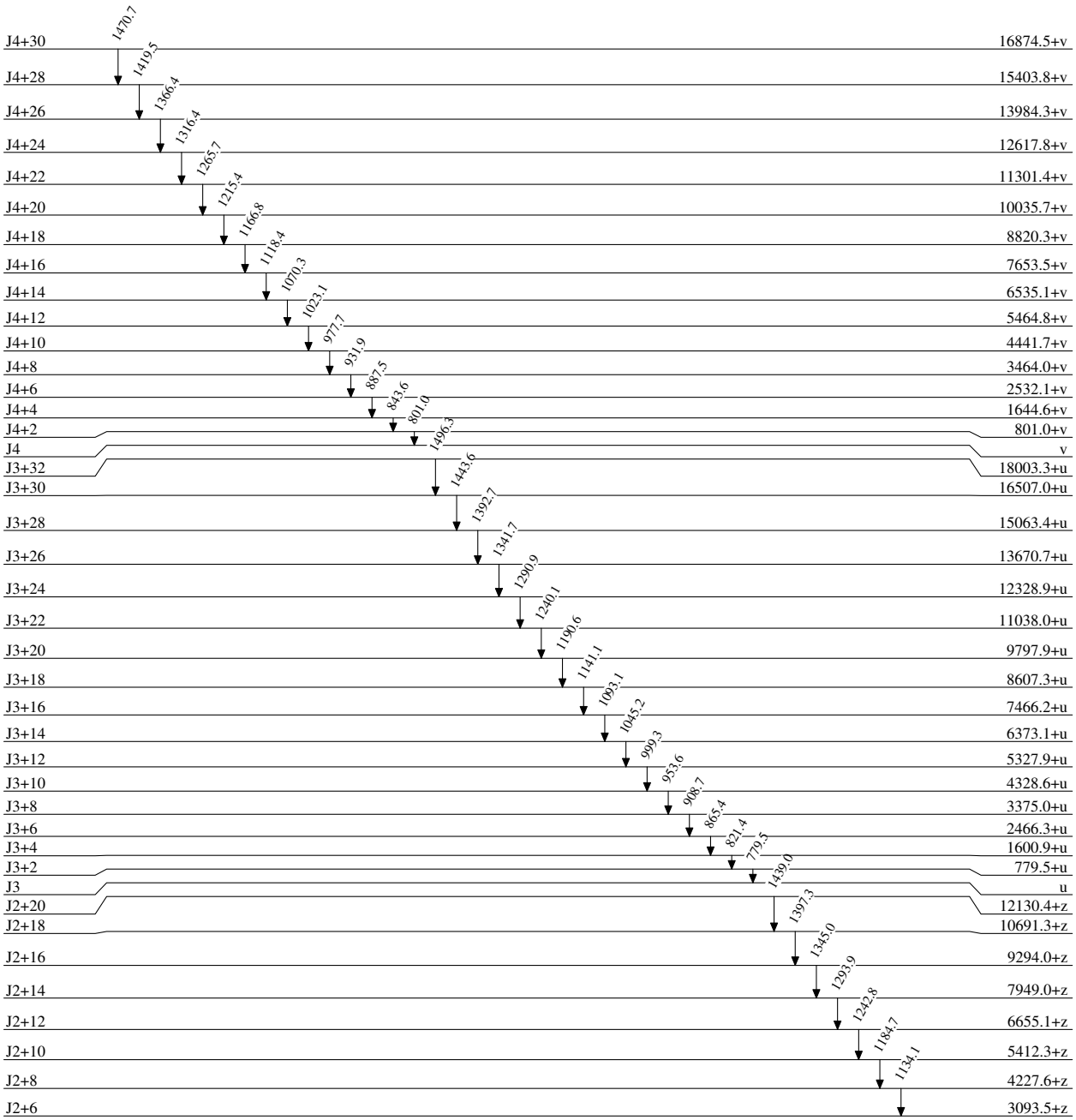
@ not reported by 1995Pe16.

x γ ray not placed in level scheme.

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70

Level Scheme

Intensities: Relative I_γ

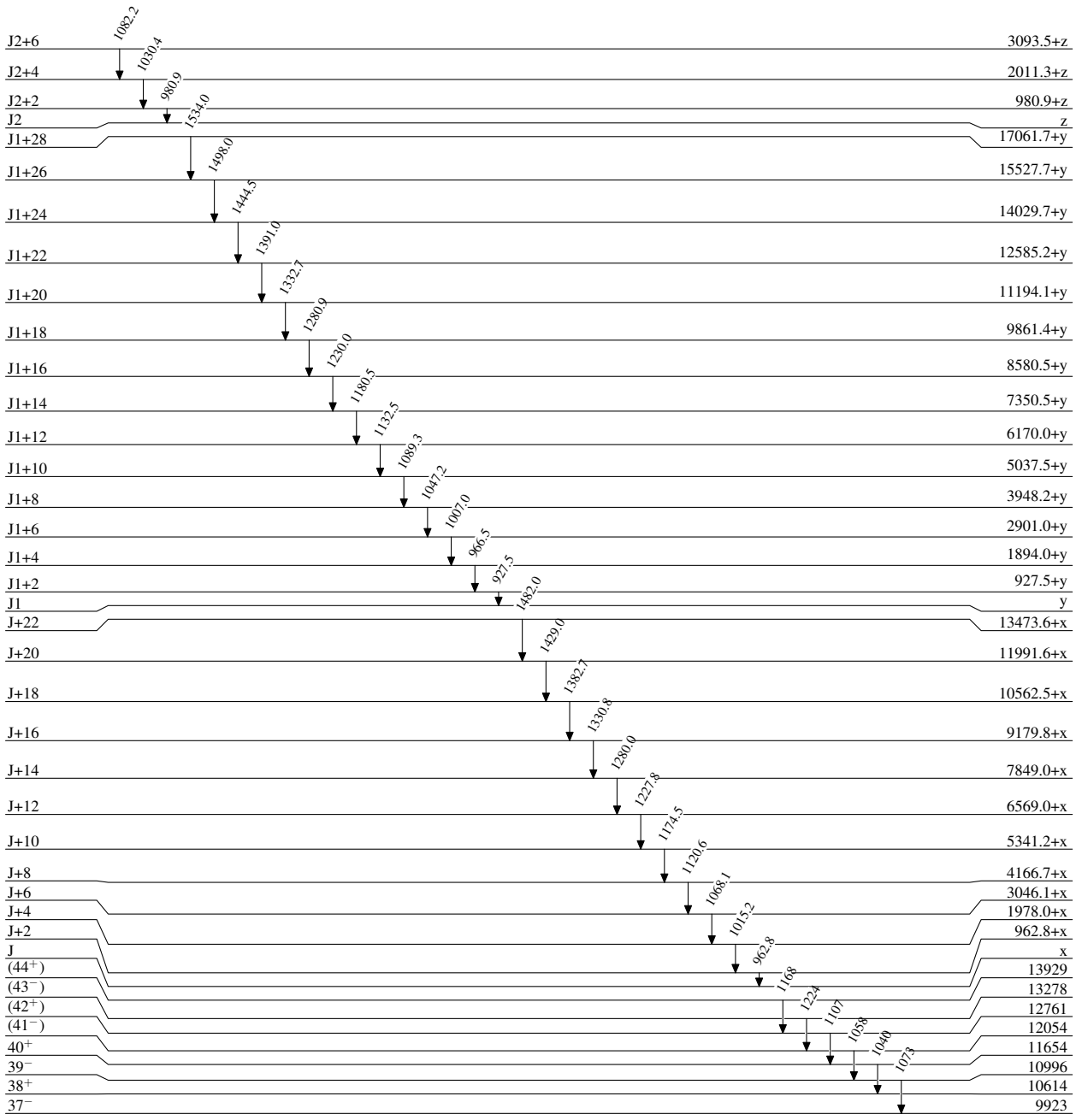


$^{152}_{65}Tb_{87}$

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70

Level Scheme (continued)

Intensities: Relative I_γ

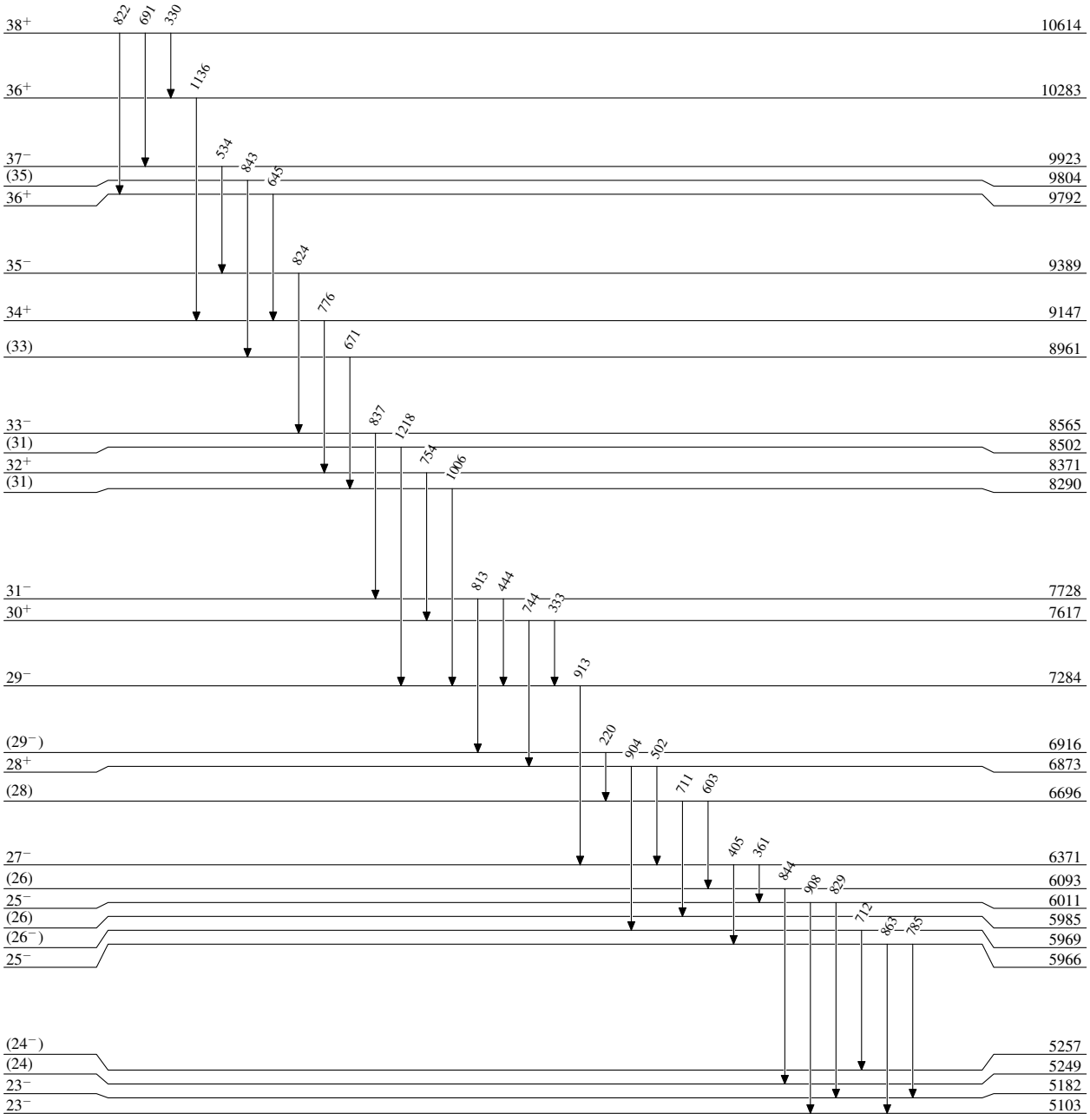


$^{152}_{65}Tb_{87}$

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70

Level Scheme (continued)

Intensities: Relative I_γ

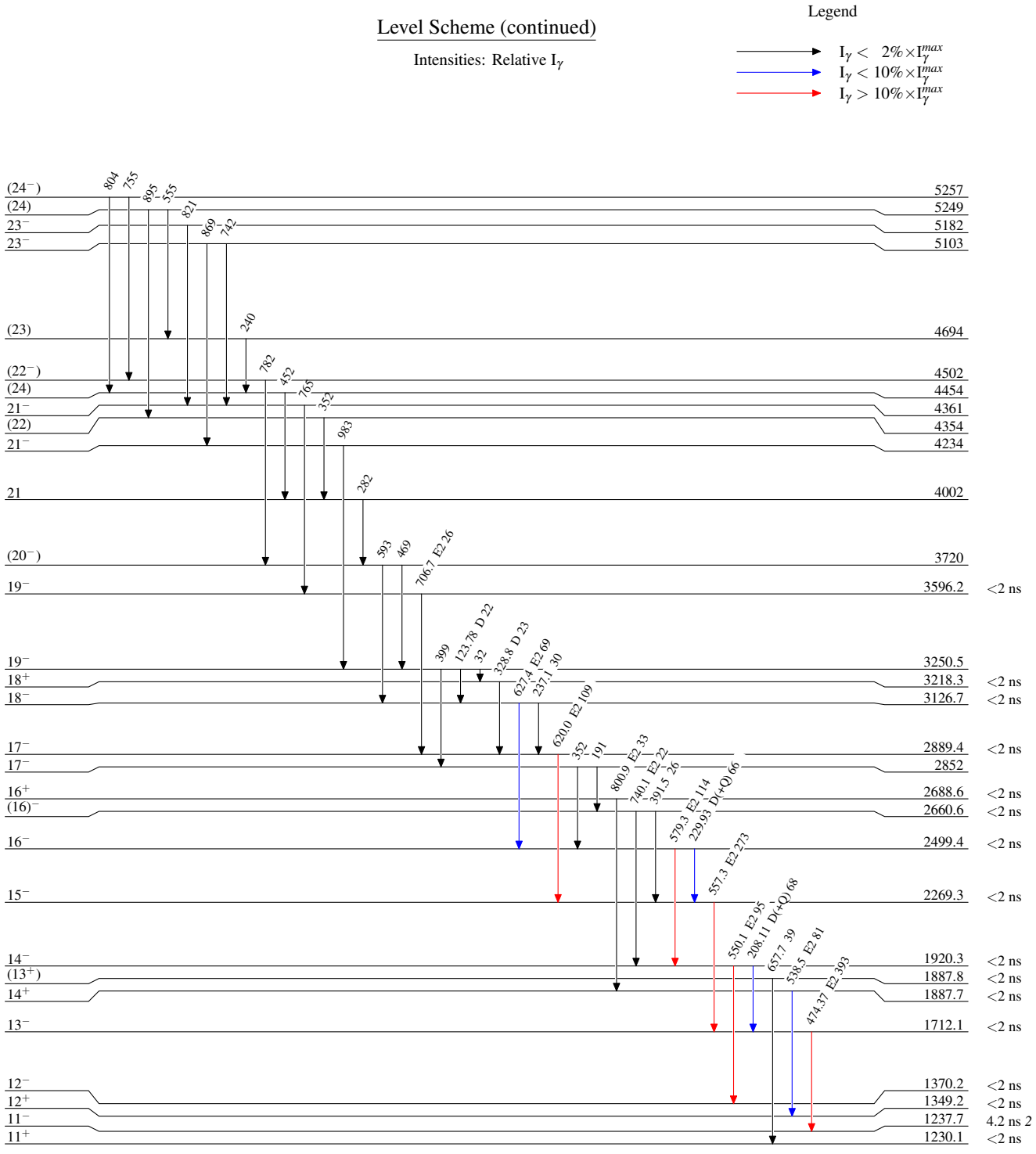


$^{152}_{65}Tb_{87}$

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70

Level Scheme (continued)

Intensities: Relative I_γ

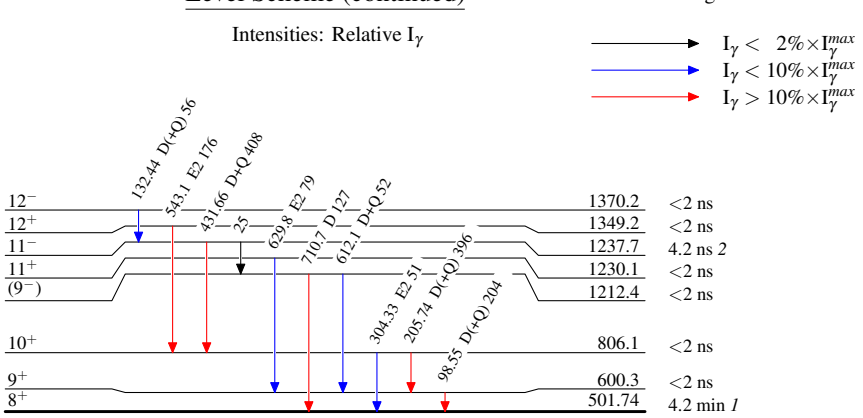


$^{152}_{65}Tb_{87}$

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70

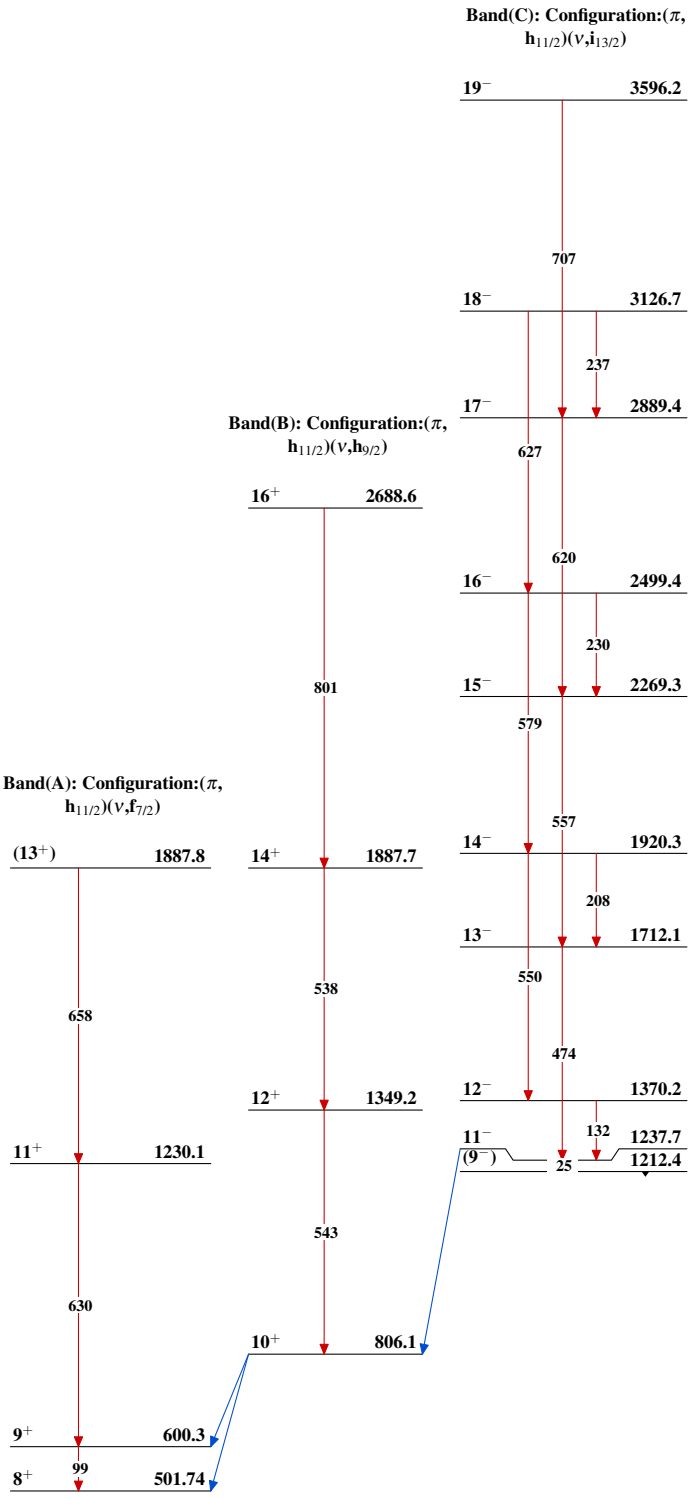
Level Scheme (continued)

Intensities: Relative I_γ



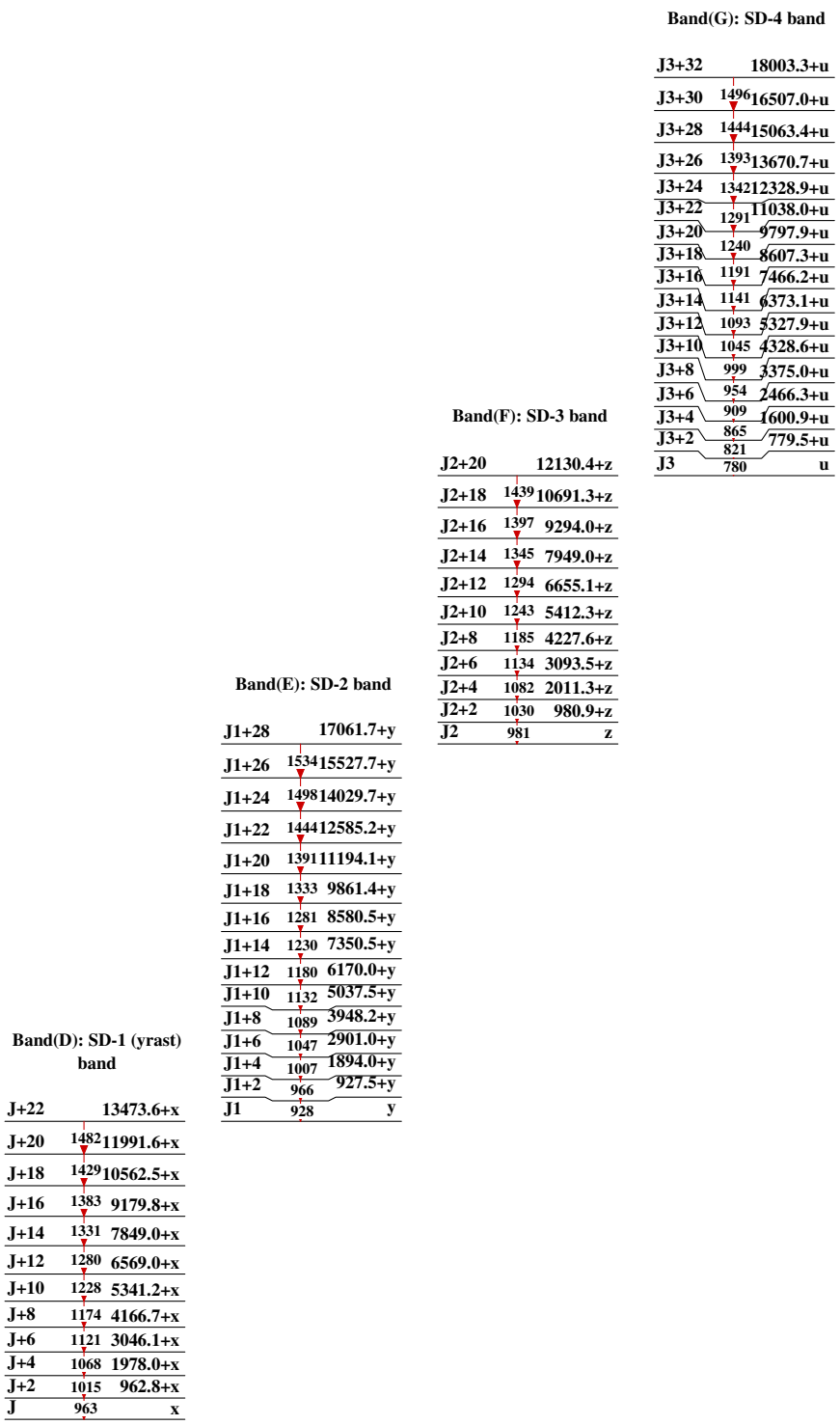
$^{152}_{65}Tb_{87}$

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70



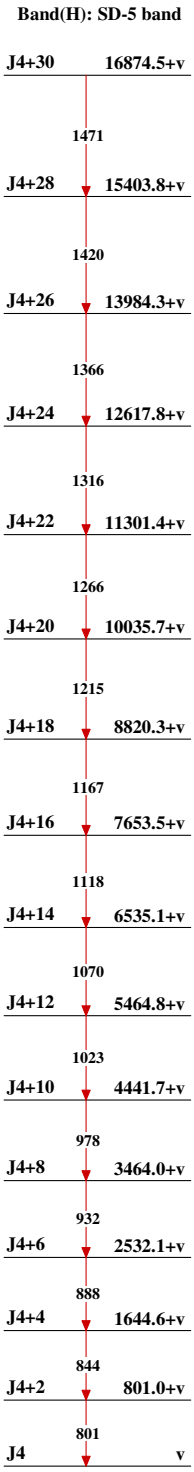
$^{152}_{65}Tb_{87}$

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70 (continued)



$^{152}_{65}Tb_{87}$

(HI,xnγ) 2008Ro02,1995Pe16,1983Ba70 (continued)



$^{152}_{65}Tb_{87}$