

($\text{HI}, \text{xn}\gamma$):SD [1999ErZZ](#), [1993Be37](#), [1991Fa07](#)

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	S. K. Basu, A. A. Sonzogni		NDS 114, 435 (2013)	1-Apr-2013

All studies used $^{130}\text{Te}(^{26}\text{Mg}, 6\text{n}\gamma)$ reaction, except [2002By01](#), who used $^{124}\text{Sn}(^{31}\text{P}, \text{p}4\text{n})$ reaction and found enhanced population intensities of the SD bands in comparison with the (5n) channel.

[1999ErZZ](#) (also [1998ErZY](#)): E=149 MeV. Measured γ , $\gamma\gamma$ using Gammasphere array of 84 HPGe detectors. Deduced eight new SD bands in addition to six known earlier from this group.

[1998Be06](#): E=149 MeV. Measured lifetimes of yrast and excited SD bands by Doppler-shift attenuation method and deduced intrinsic quadrupole moments.

[1994Fa13](#), [1993Be37](#), [1991Fa07](#) (also [1989Fa02](#), [1990By01](#)): E=145 MeV, 149 MeV. Measured $\gamma\gamma$, $\gamma\gamma(\theta)$, DSAM, deduced SD band.

 ^{150}Gd Levels

E(level)	$J^{\pi^{\dagger}}$
$x^{\dagger}$	$J \approx (30^+)$
815.00+ $x^{\dagger}$ 10	J+2
1021.1+ $x^{\#}$ 8	J+2
1664.10+ $x^{\dagger}$ 15	J+4
1931.3+ $x^{\#}$ 8	J+4
2156.6+ x 18	J+4
2552.00+ $x^{\dagger}$ 18	J+6
2897.4+ $x^{\#}$ 7	J+6
3012.6+ x 15	J+6
3480.90+ $x^{\dagger}$ 20	J+8
3893.0+ $x^{\#}$ 6	J+8
3960.6+ x 12	J+8
4451.79+ $x^{\dagger}$ 23	J+10
4861.7+ $x^{\#}$ 6	J+10
5465.28+ $x^{\dagger}$ 25	J+12
5860.7+ $x^{\#}$ 5	J+12
6521.8+ $x^{\dagger}$ 3	J+14
6907.6+ $x^{\#}$ 5	J+14
7621.8+ $x^{\dagger}$ 3	J+16
8005.2+ $x^{\#}$ 5	J+16
8766.4+ $x^{\dagger}$ 3	J+18
9154.0+ $x^{\#}$ 5	J+18
9956.9+ $x^{\dagger}$ 4	J+20
10354.0+ $x^{\#}$ 5	J+20
11194.8+ $x^{\dagger}$ 4	J+22
11604.9+ $x^{\#}$ 6	J+22
12481.4+ $x^{\dagger}$ 4	J+24
12906.1+ $x^{\#}$ 6	J+24
13818.0+ $x^{\dagger}$ 4	J+26
14257.7+ $x^{\#}$ 6	J+26
15205.8+ $x^{\dagger}$ 4	J+28
15658.7+ $x^{\#}$ 7	J+28
16645.9+ $x^{\dagger}$ 4	J+30

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(HL,xn γ):SD [1999ErZZ](#),[1993Be37](#),[1991Fa07](#) (continued) ^{150}Gd Levels (continued)

E(level)	J $\pi^{\dagger}$	Comments
17109.1+x [#] 7	J+30	
18139.1+x [‡] 5	J+32	
18608.2+x [#] 8	J+32	
19686.1+x [‡] 6	J+34	
20155.8+x [#] 9	J+34	
21287.8+x [‡] 7	J+36	
21751.8+x [#] 11	J+36	
23397.3+x [#] 14	J+38	
y ^{&}	K $\approx$ (27 ⁻)	
688.1+y ^{&} 3	K+2	
1287.6+y [@] 15	K+2	Percent population=0.3 (1990By01).
1423.8+y ^{&} 5	K+4	
2015.5+y [@] 15	K+4	
2208.9+y ^{&} 7	K+6	
2787.0+y [@] 15	K+6	
3043.3+y ^{&} 8	K+8	
3601.3+y [@] 15	K+8	
3928.6+y ^{&} 9	K+10	
4458.6+y [@] 14	K+10	
4865.1+y ^{&} 10	K+12	
5359.3+y [@] 13	K+12	
5853.7+y ^{&} 10	K+14	
6304.6+y [@] 13	K+14	
6894.6+y ^{&} 10	K+16	
7295.2+y [@] 13	K+16	
7989.9+y ^{&} 10	K+18	
8331.9+y [@] 13	K+18	
9139.2+y ^{&} 10	K+20	
9415.2+y [@] 13	K+20	
10343.1+y ^{&} 11	K+22	
10546.6+y [@] 12	K+22	
11602.4+y ^{&} 11	K+24	
11725.9+y [@] 12	K+24	
12916.1+y ^{&} 11	K+26	
12955.8+y [@] 12	K+26	
14229.1+y [@] 12	K+28	
14293.5+y ^{&} 11	K+28	
15557.7+y [@] 12	K+30	
15721.8+y ^{&} 11	K+30	
16936.3+y [@] 12	K+32	
17208.2+y ^{&} 12	K+32	
18366.7+y [@] 13	K+34	
18751.4+y ^{&} 12	K+34	
19848.9+y [@] 13	K+36	
20351.6+y ^{&} 14	K+36	

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(HI,xn γ):SD [1999ErZZ](#),[1993Be37](#),[1991Fa07](#) (continued) ^{150}Gd Levels (continued)

E(level)	J $\pi^{\dagger}$	Comments
21384.3+y [@] 14	K+38	
22010.0+y ^{&} 15	K+38	
22972.1+y [@] 15	K+40	
z ^a	L $\approx$ (28 ⁻)	Gamma rays of 617.1 and 664.3 keV (1993Be37) are not assigned by 1999ErZZ to low lying levels in ^{149}Gd .
712.5+z ^a 3	L+2	
1473.7+z ^a 5	L+4	
2284.2+z ^a 6	L+6	
3144.2+z ^a 6	L+8	
4054.7+z ^a 8	L+10	
5017.2+z ^a 9	L+12	
6032.1+z ^a 9	L+14	
7100.3+z ^a 9	L+16	
8222.7+z ^a 10	L+18	
9399.8+z ^a 10	L+20	
10632.1+z ^a 11	L+22	
11919.8+z ^a 11	L+24	
13263.6+z ^a 12	L+26	
14664.1+z ^a 12	L+28	
16121.2+z ^a 12	L+30	
17635.1+z ^a 13	L+32	
19204.2+z ^a 13	L+34	
u ^b	M $\approx$ (27 ⁺)	
771.5+u ^b 4	M+2	
1588.6+u ^b 5	M+4	
2451.5+u ^b 6	M+6	
3359.9+u ^b 6	M+8	
4313.1+u ^b 6	M+10	
5311.3+u ^b 7	M+12	
6353.7+u ^b 7	M+14	
7441.4+u ^b 9	M+16	
8574.4+u ^b 9	M+18	
9753.9+u ^b 9	M+20	
10980.9+u ^b 10	M+22	
12256.0+u ^b 10	M+24	
13581.2+u ^b 11	M+26	
14956.3+u ^b 11	M+28	
16382.4+u ^b 11	M+30	
17862.5+u ^b 12	M+32	
19379.2+u ^b 12	M+34	
20915.2+u ^b 13	M+36	
22505.2+u ^b 15	M+38	
v ^c	N $\approx$ (29 ⁺)	
733.20+v ^c 20	N+2	
1511.4+v ^c 3	N+4	
2341.2+v ^c 4	N+6	
3221.1+v ^c 4	N+8	
4151.2+v ^c 5	N+10	

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(HI,xn γ):SD **1999ErZZ,1993Be37,1991Fa07** (continued) ^{150}Gd Levels (continued)

E(level)	J $\pi^{\dagger}$	E(level)	J $\pi^{\dagger}$	E(level)	J $\pi^{\dagger}$
5132.6+v ^c 5	N+12	14665.5+s ^e 11	J2+26	9159.7+b ^h 15	J5+18
6166.5+v ^c 6	N+14	16199.5+s ^e 12	J2+28	10414.1+b ^h 16	J5+20
7253.5+v ^c 6	N+16	17793.6+s ^e 14	J2+30	11716.8+b ^h 17	J5+22
8394.9+v ^c 6	N+18	19446.1+s ^e 17	J2+32	13068.5+b ^h 17	J5+24
9590.4+v ^c 7	N+20	t ^f	J3 $\approx$ (33 ⁺)	14468.6+b ^h 18	J5+26
10841.4+v ^c 7	N+22	827.6+t ^f 5	J3+2	15917.5+b ^h 19	J5+28
12147.9+v ^c 8	N+24	1702.9+t ^f 7	J3+4	17412.5+b ^h 21	J5+30
13510.5+v ^c 8	N+26	2627.2+t ^f 7	J3+6	c ⁱ	J6 $\approx$ (29 ⁺)
14929.5+v ^c 9	N+28	3601.5+t ^f 9	J3+8	815.1+c ⁱ 7	J6+2
16404.8+v ^c 10	N+30	4626.6+t ^f 9	J3+10	1664.1+c ⁱ 8	J6+4
17937.1+v ^c 11	N+32	5703.4+t ^f 10	J3+12	2553.1+c ⁱ 12	J6+6
19527.0+v ^c 14	N+34	6832.3+t ^f 11	J3+14	3430.8+c ⁱ 13	J6+8
21171.8+v ^c 16	N+36	8014.8+t ^f 12	J3+16	4353.5+c ⁱ 14	J6+10
w ^d	J1 $\approx$ (28 ⁺)	9250.8+t ^f 13	J3+18	5322.9+c ⁱ 15	J6+12
711.1+w ^d 5	J1+2	10540.9+t ^f 13	J3+20	6338.5+c ⁱ 16	J6+14
1469.4+w ^d 9	J1+4	11885.9+t ^f 14	J3+22	7403.9+c ⁱ 17	J6+16
2275.8+w ^d 9	J1+6	13286.0+t ^f 15	J3+24	8516.3+c ⁱ 18	J6+18
3131.3+w ^d 9	J1+8	14741.9+t ^f 16	J3+26	9682.2+c ⁱ 19	J6+20
4036.7+w ^d 10	J1+10	16253.7+t ^f 17	J3+28	10901.0+c ⁱ 20	J6+22
4993.1+w ^d 10	J1+12	17821.0+t ^f 20	J3+30	12172.4+c ⁱ 21	J6+24
6001.3+w ^d 10	J1+14	a ^g	J4 $\approx$ (32 ⁺)	13499.3+c ⁱ 22	J6+26
7062.1+w ^d 10	J1+16	804.0+a ^g 4	J4+2	14881.7+c ⁱ 23	J6+28
8176.0+w ^d 10	J1+18	1655.6+a ^g 6	J4+4	16320.1+c ⁱ 24	J6+30
9344.4+w ^d 11	J1+20	2555.8+a ^g 7	J4+6	17816.2+c ⁱ 25	J6+32
10567.0+w ^d 11	J1+22	3507.0+a ^g 8	J4+8	19373+c ⁱ 3	J6+34
11845.0+w ^d 11	J1+24	4508.5+a ^g 9	J4+10	d ^j	J7 $\approx$ (28 ⁺)
13178.7+w ^d 11	J1+26	5562.2+a ^g 9	J4+12	808.9+d ^j 5	J7+2
14568.9+w ^d 12	J1+28	6660.4+a ^g 10	J4+14	1667.4+d ^j 9	J7+4
16015.7+w ^d 12	J1+30	7822.2+a ^g 10	J4+16	2577.0+d ^j 12	J7+6
17519.6+w ^d 13	J1+32	9034.6+a ^g 11	J4+18	3433.3+d ^j 15	J7+8
19080.3+w ^d 14	J1+34	10300.5+a ^g 12	J4+20	4334.0+d ^j 15	J7+10
20698.2+w ^d 16	J1+36	11621.0+a ^g 13	J4+22	5279.6+d ^j 16	J7+12
s ^e	J2 $\approx$ (31 ⁺)	12996.6+a ^g 14	J4+24	6271.1+d ^j 17	J7+14
800.4+s ^e 4	J2+2	14427.3+a ^g 16	J4+26	7311.5+d ^j 19	J7+16
1650.3+s ^e 5	J2+4	15912.7+a ^g 19	J4+28	8404.3+d ^j 21	J7+18
2552.7+s ^e 6	J2+6	17451.6+a ^g 21	J4+30	9544.6+d ^j 22	J7+20
3507.9+s ^e 7	J2+8	b ^h	J5 $\approx$ (34 ⁺)	10736.6+d ^j 22	J7+22
4518.1+s ^e 7	J2+10	830.0+b ^h 5	J5+2	11981.5+d ^j 23	J7+24
5584.2+s ^e 7	J2+12	1706.5+b ^h 7	J5+4	13280.5+d ^j 24	J7+26
6706.4+s ^e 7	J2+14	2629.1+b ^h 9	J5+6	14635.3+d ^j 25	J7+28
7886.2+s ^e 8	J2+16	3599.1+b ^h 9	J5+8	16047+d ^j 3	J7+30
9124.2+s ^e 8	J2+18	4615.7+b ^h 10	J5+10	17515+d ^j 3	J7+32
10420.8+s ^e 9	J2+20	5680.0+b ^h 11	J5+12	19046+d ^j 3	J7+34
11776.5+s ^e 9	J2+22	6792.0+b ^h 12	J5+14	20638+d ^j 3	J7+36
13191.5+s ^e 10	J2+24	7952.0+b ^h 14	J5+16		

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(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued) ^{150}Gd Levels (continued)

- [†] The band-like series of $\Delta J=2$ levels reflects the parity of the level on which they are based.
- [‡] Band(A): Yrast SD-1 band (1991Fa07,1999ErZZ). Q(intrinsic)=17.0 +5-4 (1998Be06) from DSAM data for 17 transitions in the cascade. Other: 17 3 (1991Fa07) Percent population=1.0 (1989Fa02). Intruder configuration= $\pi 6^2 \nu 7^2$; $\pi=+, \alpha=0$ (1991Fa07).
- [#] Band(B): SD-2 band (1994Fa13,1999ErZZ). Q(intrinsic)=16.8 12 (1998Be06) from DSAM data for 15 transitions in the cascade. Intensity, relative to SD-1 band, is 47% 3 (1999ErZZ,1994Fa13). Configuration (relative to yrast SD band): $\pi 1/2[301]^{-2} \pi 3/2[651]^2$; $\pi=+, \alpha=0$, also possibly coupled to β vibration (1999ErZZ,1994Fa13). This band is identical to ^{152}Dy SD-1 band. The band undergoes backbending at low frequencies and decays into the yrast band, rather than directly to the normal deformation states, at few hundred keV excitation.
- [@] Band(C): SD-3 band (1990By01,1993Be37,1999ErZZ). Q(intrinsic)=17.4 +5-4 (1998Be06) from DSAM data for 17 transitions in the cascade. Intensity, relative to SD-1 band, is 45% 3 (1999ErZZ,1993Be37). Configuration (relative to yrast SD band): $\pi 1/2[301]^{-1} \pi 6_3^1$; $\pi=-, \alpha=1$ (1999ErZZ,1993Be37). Identical to ^{151}Tb SD band with $\pi 6^3 \times ([301]1/2)^{-1} \nu 7^2$ intruder configuration (1993Be37).
- [&] Band(D): SD-4 band (1993Be37,1999ErZZ). Q(intrinsic)=15.0 +6-4 (1998Be06) from DSAM data for 15 transitions in the cascade. Intensity, relative to SD-1 band, is 44% 3 (1999ErZZ,1993Be37). Configuration (relative to yrast SD band): $\nu 7_2^{-1} \nu 5/2[402]^1$; $\pi=-, \alpha=1$ (1999ErZZ,1993Be37). SD-4 and SD-5 bands are interpreted (1999ErZZ) as signature partners.
- ^a Band(E): SD-5 band (1993Be37,1999ErZZ). Q(intrinsic)=16.2 4 (1998Be06) from DSAM data for 17 transitions in the cascade. Intensity, relative to SD-1 band, is 42% 3 (1999ErZZ,1993Be37). Configuration (relative to yrast SD band): $\nu 7_2^{-1} \nu 5/2[402]^1$; $\pi=-, \alpha=0$ (1999ErZZ,1993Be37). SD-4 and SD-5 bands are interpreted (1999ErZZ) as signature partners. The 617.1 and 664.3 gamma rays reported earlier (1993Be37) are absent in the recent work of 1999ErZZ.
- ^b Band(F): SD-6 Band (1999ErZZ). Q(intrinsic)=15.4 +8-5 (1998Be06) from DSAM data for 14 transitions in the cascade. Intensity, relative to SD-1 band, is 30% 3 (1999ErZZ). Configuration (relative to yrast SD band): $\nu 7_2^{-1} \nu 7_3^1$; $\pi=+, \alpha=1$ (1999ErZZ).
- ^c Band(G): SD-7 Band (1999ErZZ). Intensity, relative to SD-1 band, is 19% 2 (1999ErZZ). Configuration (relative to yrast SD band): $\nu 7_2^{-1} \nu 9/2[514]^1$; $\pi=+, \alpha=1$ (1999ErZZ). SD-7 and SD-8 bands are interpreted (1999ErZZ) as signature partners.
- ^d Band(H): SD-8 Band (1999ErZZ). Intensity, relative to SD-1 band, is 19% 2 (1999ErZZ). Configuration (relative to yrast SD band): $\nu 7_2^{-1} \nu 9/2[514]^1$; $\pi=+, \alpha=0$ (1999ErZZ). SD-7 and SD-8 bands are interpreted (1999ErZZ) as signature partners.
- ^e Band(I): SD-9 Band (1999ErZZ). Intensity, relative to SD-1 band, is 18% 2 (1999ErZZ). Configuration (relative to yrast SD band): $(\nu 7_2^{-1} 6_4^{-1}) \nu 5/2[402]^2$ or $(\nu 7_2^{-1} 6_4^{-1}) \nu 9/2[514]^2$; $\pi=+, \alpha=1$ (1999ErZZ).
- ^f Band(J): SD-10 Band (1999ErZZ). Intensity, relative to SD-1 band, is 10% 2 (1999ErZZ). Configuration (relative to yrast SD band): $\pi 1/2[301]^{-1}, \nu 7_2^{-1} \pi 6_3^1, \nu 5/2[402]^1$; $\pi=+, \alpha=1$ (1999ErZZ). SD-10 and SD-11 bands are interpreted (1999ErZZ) as signature partners.
- ^g Band(K): SD-11 Band (1999ErZZ). Intensity, relative to SD-1 band, is 8% 2 (1999ErZZ). Configuration (relative to yrast SD band): $\pi 1/2[301]^{-1}, \nu 7_2^{-1} \pi 6_3^1, \nu 5/2[402]^1$; $\pi=+, \alpha=0$ (1999ErZZ). SD-10 and SD-11 bands are interpreted (1999ErZZ) as signature partners. Intensity (0.09 3) for an additional gamma ray near 1590 keV (possibly at the top of this band) is shown in the intensity plot of 1998ErZY.
- ^h Band(L): SD-12 Band (1999ErZZ). Intensity, relative to SD-1 band, is 6% 1 (1999ErZZ). Configuration (relative to yrast SD band): $\pi 1/2[301]^{-2} \pi 3/2[651]^2$; $\pi=+, \alpha=0$ (1999ErZZ). Intensities of 0.27 3 and 0.05 3 for additional gamma rays near 1550 keV and 1600 keV, respectively, (possibly at the top of this band) are shown in the intensity plot of 1998ErZY.
- ⁱ Band(M): SD-13 Band (1999ErZZ). Intensity, relative to SD-1 band, is 6% 1 (1999ErZZ). Configuration (relative to yrast SD band): $\nu 6_4^{-1} \nu 5/2[402]^1$; $\pi=+, \alpha=1$ (1999ErZZ). SD-13 and SD-14 bands are interpreted (1999ErZZ) as signature partners. Intensity (0.07 3) for an additional gamma ray near 1600 keV (possibly at the top of this band) is shown in the intensity plot of 1998ErZY.
- ^j Band(N): SD-14 Band (1999ErZZ). Intensity, relative to SD-1 band, is 6% 1 (1999ErZZ). Configuration (relative to yrast SD band): $\nu 6_4^{-1} \nu 5/2[402]^1$; $\pi=+, \alpha=0$ (1999ErZZ). SD-13 and SD-14 bands are interpreted (1999ErZZ) as signature partners.

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued) $\gamma(^{150}\text{Gd})$

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
688.1 3	0.35 5	688.1+y	K+2	y	K $\approx$ (27 ⁻)	
711.2 5		711.1+w	J1+2	w	J1 $\approx$ (28 ⁺)	
712.5 3	0.76 2	712.5+z	L+2	z	L $\approx$ (28 ⁻)	
727.9 2	0.41 2	2015.5+y	K+4	1287.6+y	K+2	
733.2 2		733.20+v	N+2	v	N $\approx$ (29 ⁺)	
735.8 4	0.48 4	1423.8+y	K+4	688.1+y	K+2	
758.5 7		1469.4+w	J1+4	711.1+w	J1+2	
761.2 3	0.89 3	1473.7+z	L+4	712.5+z	L+2	
771.5 2	0.81 2	2787.0+y	K+6	2015.5+y	K+4	
771.6 4		771.5+u	M+2	u	M $\approx$ (27 ⁺)	
778.2 2		1511.4+v	N+4	733.20+v	N+2	
785.2 5	0.71 5	2208.9+y	K+6	1423.8+y	K+4	
800.6 4	0.38 2	800.4+s	J2+2	s	J2 $\approx$ (31 ⁺)	
804.1 4		804.0+a	J4+2	a	J4 $\approx$ (32 ⁺)	
806.4 2	0.78 1	2275.8+w	J1+6	1469.4+w	J1+4	
808.9 5	0.76 2	808.9+d	J7+2	d	J7 $\approx$ (28 ⁺)	
810.5 3	0.94 3	2284.2+z	L+6	1473.7+z	L+4	
814.3 2	0.94 2	3601.3+y	K+8	2787.0+y	K+6	
815.0 1	0.66 2	815.00+x	J+2	x	J $\approx$ (30 ⁺)	
815.1 7		815.1+c	J6+2	c	J6 $\approx$ (29 ⁺)	
817.1 3	0.78 3	1588.6+u	M+4	771.5+u	M+2	
827.8 5	0.59 2	827.6+t	J3+2	t	J3 $\approx$ (33 ⁺)	
829.9 2	0.93 2	2341.2+v	N+6	1511.4+v	N+4	
830.1 5	0.86 1	830.0+b	J5+2	b	J5 $\approx$ (34 ⁺)	
834.4 3	0.92 4	3043.3+y	K+8	2208.9+y	K+6	
849.1 1	0.88 1	1664.10+x	J+4	815.00+x	J+2	
849.1 4		1664.1+c	J6+4	815.1+c	J6+2	
850.0 3	0.83 2	1650.3+s	J2+4	800.4+s	J2+2	
851.7 4	0.87 1	1655.6+a	J4+4	804.0+a	J4+2	
855.6 2	0.86 1	3131.3+w	J1+8	2275.8+w	J1+6	
856		3012.6+x	J+6	2156.6+x	J+4	
856.5 8	0.75 2	3433.3+d	J7+8	2577.0+d	J7+6	I_γ : Probably combined for 856.6+858.6.
857.3 5	0.97 2	4458.6+y	K+10	3601.3+y	K+8	
858.6 7		1667.4+d	J7+4	808.9+d	J7+2	
860.0 3	0.97 2	3144.2+z	L+8	2284.2+z	L+6	
862.9 2	0.88 3	2451.5+u	M+6	1588.6+u	M+4	
875.4 4	0.70 2	1702.9+t	J3+4	827.6+t	J3+2	
876.6 4	0.91 1	1706.5+b	J5+4	830.0+b	J5+2	
877.7 6	0.79 2	3430.8+c	J6+8	2553.1+c	J6+6	
879.8 2	0.99 2	3221.1+v	N+8	2341.2+v	N+6	
885.3 3	0.92 2	3928.6+y	K+10	3043.3+y	K+8	
887.9 1	1.00 1	2552.00+x	J+6	1664.10+x	J+4	
889.1 8		2553.1+c	J6+6	1664.1+c	J6+4	
900.2 3	0.91 1	2555.8+a	J4+6	1655.6+a	J4+4	
900.7 2	1.00 2	5359.3+y	K+12	4458.6+y	K+10	
900.7 5	0.89 2	4334.0+d	J7+10	3433.3+d	J7+8	I_γ : Probably combined for 900.7+909.8.
901		4861.7+x	J+10	3960.6+x	J+8	
902.4 2	0.90 2	2552.7+s	J2+6	1650.3+s	J2+4	
905.4 2	0.92 1	4036.7+w	J1+10	3131.3+w	J1+8	
908.4 2	0.89 3	3359.9+u	M+8	2451.5+u	M+6	
909.8 8		2577.0+d	J7+6	1667.4+d	J7+4	
910.2 2	0.39 2	1931.3+x	J+4	1021.1+x	J+2	
910.6 4	1.03 2	4054.7+z	L+10	3144.2+z	L+8	
922.6 5	0.95 1	2629.1+b	J5+6	1706.5+b	J5+4	
922.7 5	0.97 2	4353.5+c	J6+10	3430.8+c	J6+8	
924.4 3	0.91 2	2627.2+t	J3+6	1702.9+t	J3+4	

Continued on next page (footnotes at end of table)

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued) $\gamma(^{150}\text{Gd})$ (continued)

E_γ †	I_γ †	$E_i(\text{level})$	J_i^π	E_f	J_f^π
928.9 1	1.00 1	3480.90+x	J+8	2552.00+x	J+6
930.2 2	1.01 2	4151.2+v	N+10	3221.1+v	N+8
936.6 4	0.93 2	4865.1+y	K+12	3928.6+y	K+10
945.3 2	0.99 2	6304.6+y	K+14	5359.3+y	K+12
945.7 5	0.95 2	5279.6+d	J7+12	4334.0+d	J7+10
948		3960.6+x	J+8	3012.6+x	J+6
951.3 4	0.95 1	3507.0+a	J4+8	2555.8+a	J4+6
953.2 2	0.99 3	4313.1+u	M+10	3359.9+u	M+8
955.3 3	0.97 2	3507.9+s	J2+8	2552.7+s	J2+6
956.4 2	1.00 1	4993.1+w	J1+12	4036.7+w	J1+10
962.5 4	1.02 2	5017.2+z	L+12	4054.7+z	L+10
966.1 3	0.53 3	2897.4+x	J+6	1931.3+x	J+4
968.6 3	0.60 3	4861.7+x	J+10	3893.0+x	J+8
969.4 5	0.99 1	5322.9+c	J6+12	4353.5+c	J6+10
970.0 3	0.97 1	3599.1+b	J5+8	2629.1+b	J5+6
970.9 1	1.00 1	4451.79+x	J+10	3480.90+x	J+8
974.4 4	0.96 2	3601.5+t	J3+8	2627.2+t	J3+6
981.4 2	1.03 1	5132.6+v	N+12	4151.2+v	N+10
988.6 2	0.93 2	5853.7+y	K+14	4865.1+y	K+12
990.6 2	0.99 2	7295.2+y	K+16	6304.6+y	K+14
991.6 5	1.02 2	6271.1+d	J7+14	5279.6+d	J7+12
995.6 3	0.55 3	3893.0+x	J+8	2897.4+x	J+6
998.3 2	0.93 3	5311.3+u	M+12	4313.1+u	M+10
999.0 2	0.86 3	5860.7+x	J+12	4861.7+x	J+10
1001.5 3	0.98 1	4508.5+a	J4+10	3507.0+a	J4+8
1008.2 2	1.04 1	6001.3+w	J1+14	4993.1+w	J1+12
1010.2 2	1.03 1	4518.1+s	J2+10	3507.9+s	J2+8
1013.5 1	0.99 1	5465.28+x	J+12	4451.79+x	J+10
1014.9 3	1.03 2	6032.1+z	L+14	5017.2+z	L+12
1015.6 5	0.99 1	6338.5+c	J6+14	5322.9+c	J6+12
1016.6 4	0.97 1	4615.7+b	J5+10	3599.1+b	J5+8
1025.1 3	1.00 2	4626.6+t	J3+10	3601.5+t	J3+8
1033.9 2	1.04 1	6166.5+v	N+14	5132.6+v	N+12
1036.7 2	0.99 2	8331.9+y	K+18	7295.2+y	K+16
1040.3 8	1.00 1	7311.5+d	J7+16	6271.1+d	J7+14
1040.9 2	0.95 2	6894.6+y	K+16	5853.7+y	K+14
1042.4 3	0.93 3	6353.7+u	M+14	5311.3+u	M+12
1046.8 2	0.89 3	6907.6+x	J+14	5860.7+x	J+12
1053.8 4	0.99 1	5562.2+a	J4+12	4508.5+a	J4+10
1056.5 1	1.00 1	6521.8+x	J+14	5465.28+x	J+12
1060.8 2	1.01 1	7062.1+w	J1+16	6001.3+w	J1+14
1064.3 4	0.99 1	5680.0+b	J5+12	4615.7+b	J5+10
1065.4 6	0.99 1	7403.9+c	J6+16	6338.5+c	J6+14
1066.2 2	1.00 1	5584.2+s	J2+12	4518.1+s	J2+10
1068.2 2	1.03 2	7100.3+z	L+16	6032.1+z	L+14
1076.9 4	0.99 2	5703.4+t	J3+12	4626.6+t	J3+10
1083.3 2	1.00 2	9415.2+y	K+20	8331.9+y	K+18
1087.0 2	1.03 1	7253.5+v	N+16	6166.5+v	N+14
1087.7 4	1.06 3	7441.4+u	M+16	6353.7+u	M+14
1093.0 9	1.00 1	8404.3+d	J7+18	7311.5+d	J7+16
1095.3 2	0.97 2	7989.9+y	K+18	6894.6+y	K+16
1097.6 2	0.96 2	8005.2+x	J+16	6907.6+x	J+14
1098.1 3	0.99 1	6660.4+a	J4+14	5562.2+a	J4+12
1100.1 1	0.97 1	7621.8+x	J+16	6521.8+x	J+14
1112.0 5	1.00 1	6792.0+b	J5+14	5680.0+b	J5+12
1112.5 6	1.00 1	8516.3+c	J6+18	7403.9+c	J6+16
1113.9 2	1.01 1	8176.0+w	J1+18	7062.1+w	J1+16

Continued on next page (footnotes at end of table)

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued) $\gamma(^{150}\text{Gd})$ (continued)

E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
1122.2 2	0.99 1	6706.4+s	J2+14	5584.2+s	J2+12	
1122.4 3	1.01 2	8222.7+z	L+18	7100.3+z	L+16	
1128.9 4	1.02 2	6832.3+t	J3+14	5703.4+t	J3+12	
1131.4 3	1.01 2	10546.6+y	K+22	9415.2+y	K+20	
1133.1 2	1.04 3	8574.4+u	M+18	7441.4+u	M+16	
1140.3 5	0.99 1	9544.6+d	J7+20	8404.3+d	J7+18	
1141.4 2	1.02 1	8394.9+v	N+18	7253.5+v	N+16	
1144.6 1	0.99 1	8766.4+x	J+18	7621.8+x	J+16	
1148.7 2	0.98 2	9154.0+x	J+18	8005.2+x	J+16	
1149.3 2	1.00 2	9139.2+y	K+20	7989.9+y	K+18	
1160.0 7	0.97 1	7952.0+b	J5+16	6792.0+b	J5+14	
1161.8 3	1.00 1	7822.2+a	J4+16	6660.4+a	J4+14	
1165.9 7	1.02 1	9682.2+c	J6+20	8516.3+c	J6+18	
1168.4 2	1.03 1	9344.4+w	J1+20	8176.0+w	J1+18	
1177.1 3	1.03 2	9399.8+z	L+20	8222.7+z	L+18	
1179.3 2	1.00 2	11725.9+y	K+24	10546.6+y	K+22	
1179.4 2	1.04 3	9753.9+u	M+20	8574.4+u	M+18	
1179.8 2	0.99 1	7886.2+s	J2+16	6706.4+s	J2+14	
1182.5 5	1.04 2	8014.8+t	J3+16	6832.3+t	J3+14	
1190.5 1	0.95 1	9956.9+x	J+20	8766.4+x	J+18	
1192.0 5	0.98 1	10736.6+d	J7+22	9544.6+d	J7+20	
1195.6 3	0.98 1	9590.4+v	N+20	8394.9+v	N+18	
1199.9 2	1.00 1	10354.0+x	J+20	9154.0+x	J+18	
1203.9 2	1.00 2	10343.1+y	K+22	9139.2+y	K+20	
1207.7 6	1.01 1	9159.7+b	J5+18	7952.0+b	J5+16	
1212.4 3	1.00 1	9034.6+a	J4+18	7822.2+a	J4+16	
1218.8 6	0.99 2	10901.0+c	J6+22	9682.2+c	J6+20	
1222.6 2	1.00 1	10567.0+w	J1+22	9344.4+w	J1+20	
1227.1 4	1.03 3	10980.9+u	M+22	9753.9+u	M+20	
1229.8 2	0.94 2	12955.8+y	K+26	11725.9+y	K+24	
1232.2 3	1.02 2	10632.1+z	L+22	9399.8+z	L+20	
1236.1 4	0.98 2	9250.8+t	J3+18	8014.8+t	J3+16	
1237.9 1	0.96 2	11194.8+x	J+22	9956.9+x	J+20	
1238.0 3	0.99 1	9124.2+s	J2+18	7886.2+s	J2+16	
1244.9 6	0.97 1	11981.5+d	J7+24	10736.6+d	J7+22	
1250.9 2	1.02 3	11604.9+x	J+22	10354.0+x	J+20	
1250.9 2	0.95 1	10841.4+v	N+22	9590.4+v	N+20	
1254.4 5	1.01 1	10414.1+b	J5+20	9159.7+b	J5+18	
1259.3 2	0.93 2	11602.4+y	K+24	10343.1+y	K+22	
1265.9 5	1.00 1	10300.5+a	J4+20	9034.6+a	J4+18	
1271.4 6	0.94 2	12172.4+c	J6+24	10901.0+c	J6+22	
1273.4 2	0.81 2	14229.1+y	K+28	12955.8+y	K+26	
1275.1 2	1.00 4	12256.0+u	M+24	10980.9+u	M+22	
1278.0 2	0.94 1	11845.0+w	J1+24	10567.0+w	J1+22	
1286.6 1	0.89 2	12481.4+x	J+24	11194.8+x	J+22	
1287.7 3	0.97 3	11919.8+z	L+24	10632.1+z	L+22	
1290.1 4	0.97 2	10540.9+t	J3+20	9250.8+t	J3+18	
1296.6 3	0.99 2	10420.8+s	J2+20	9124.2+s	J2+18	
1299.1 6	0.80 1	13280.5+d	J7+26	11981.5+d	J7+24	
1301.2 2	0.96 3	12906.1+x	J+24	11604.9+x	J+22	
1302.7 5	1.01 1	11716.8+b	J5+22	10414.1+b	J5+20	
1306.5 2	0.95 1	12147.9+v	N+24	10841.4+v	N+22	
1313.7 2	0.81 2	12916.1+y	K+26	11602.4+y	K+24	
1314		14229.1+y	K+28	12916.1+y	K+26	$I_\gamma: I_\gamma(1314)/I_\gamma(1273)=0.22$ 4 (1998ErZY).
1320.6 5	1.01 1	11621.0+a	J4+22	10300.5+a	J4+20	
1325.2 3	0.91 4	13581.2+u	M+26	12256.0+u	M+24	
1326.9 5	0.80 2	13499.3+c	J6+26	12172.4+c	J6+24	

Continued on next page (footnotes at end of table)

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued) $\gamma(^{150}\text{Gd})$ (continued)

E_γ [†]	I_γ [†]	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
1328.6 2	0.73 2	15557.7+y	K+30	14229.1+y	K+28	I_γ : $I_\gamma(1338)/I_\gamma(1377)=0.095$ 6 (1998ErZY).
1333.7 2	0.75 1	13178.7+w	J1+26	11845.0+w	J1+24	
1336.6 1	0.81 2	13818.0+x	J+26	12481.4+x	J+24	
1338		14293.5+y	K+28	12955.8+y	K+26	
1343.8 3	0.90 2	13263.6+z	L+26	11919.8+z	L+24	
1345.0 4	0.97 2	11885.9+t	J3+22	10540.9+t	J3+20	
1351.6 2	0.85 3	14257.7+x	J+26	12906.1+x	J+24	
1351.7 5	1.01 1	13068.5+b	J5+24	11716.8+b	J5+22	
1354	≈ 0.03	12955.8+y	K+26	11602.4+y	K+24	
1354.8 8	0.63 1	14635.3+d	J7+28	13280.5+d	J7+26	
1355.7 3	0.84 1	11776.5+s	J2+22	10420.8+s	J2+20	
1362.7 3	0.91 1	13510.5+v	N+26	12147.9+v	N+24	
1375.1 3	0.71 4	14956.3+u	M+28	13581.2+u	M+26	
1375.6 5	0.92 2	12996.6+a	J4+24	11621.0+a	J4+22	
1377.3 2	0.69 2	14293.5+y	K+28	12916.1+y	K+26	
1378.6 2	0.58 2	16936.3+y	K+32	15557.7+y	K+30	
1380	≈ 0.05	4861.7+x	J+10	3480.90+x	J+8	
1382.4 7	0.73 2	14881.7+c	J6+28	13499.3+c	J6+26	
1387.8 1	0.65 2	15205.8+x	J+28	13818.0+x	J+26	
1390.2 3	0.58 1	14568.9+w	J1+28	13178.7+w	J1+26	
1400.1 5	0.84 2	13286.0+t	J3+24	11885.9+t	J3+22	
1400.1 5	0.99 2	14468.6+b	J5+26	13068.5+b	J5+24	
1400.5 3	0.76 2	14664.1+z	L+28	13263.6+z	L+26	
1401.0 2	0.71 2	15658.7+x	J+28	14257.7+x	J+26	
1408	≈ 0.05	5860.7+x	J+12	4451.79+x	J+10	
1411.4 6	0.51 2	16047+d	J7+30	14635.3+d	J7+28	
1415.0 3	0.68 2	13191.5+s	J2+24	11776.5+s	J2+22	
1419.0 3	0.77 2	14929.5+v	N+28	13510.5+v	N+26	
1426.1 3	0.53 3	16382.4+u	M+30	14956.3+u	M+28	
1428.3 2	0.55 2	15721.8+y	K+30	14293.5+y	K+28	
1430.3 2	0.46 2	18366.7+y	K+34	16936.3+y	K+32	
1430.7 8	0.84 2	14427.3+a	J4+26	12996.6+a	J4+24	
1438.4 6	0.59 2	16320.1+c	J6+30	14881.7+c	J6+28	
1440.1 1	0.48 2	16645.9+x	J+30	15205.8+x	J+28	
1442	≈ 0.05	6907.6+x	J+14	5465.28+x	J+12	
1446.8 3	0.41 2	16015.7+w	J1+30	14568.9+w	J1+28	
1448.9 5	0.82 2	15917.5+b	J5+28	14468.6+b	J5+26	
1450.4 2	0.54 2	17109.1+x	J+30	15658.7+x	J+28	
1455.9 6	0.67 2	14741.9+t	J3+26	13286.0+t	J3+24	
1457.1 3	0.59 2	16121.2+z	L+30	14664.1+z	L+28	
1468.6 8	0.43 3	17515+d	J7+32	16047+d	J7+30	
1474.0 4	0.53 2	14665.5+s	J2+26	13191.5+s	J2+24	
1475.3 4	0.51 2	16404.8+v	N+30	14929.5+v	N+28	
1480.1 3	0.32 3	17862.5+u	M+32	16382.4+u	M+30	
1482.2 3	0.26 2	19848.9+y	K+36	18366.7+y	K+34	
1484	≈ 0.05	8005.2+x	J+16	6521.8+x	J+14	
1485.4 9	0.48 2	15912.7+a	J4+28	14427.3+a	J4+26	
1486.4 3	0.40 2	17208.2+y	K+32	15721.8+y	K+30	
1493.1 2	0.28 2	18139.1+x	J+32	16645.9+x	J+30	
1494		15721.8+y	K+30	14229.1+y	K+28	
1495.0 9	0.50 2	17412.5+b	J5+30	15917.5+b	J5+28	
1496.1 8	0.42 2	17816.2+c	J6+32	16320.1+c	J6+30	
1499.1 3	0.39 2	18608.2+x	J+32	17109.1+x	J+30	
1503.9 4	0.24 2	17519.6+w	J1+32	16015.7+w	J1+30	
1511.8 7	0.50 3	16253.7+t	J3+28	14741.9+t	J3+26	
1513.9 3	0.38 1	17635.1+z	L+32	16121.2+z	L+30	
1516.7 4		19379.2+u	M+34	17862.5+u	M+32	

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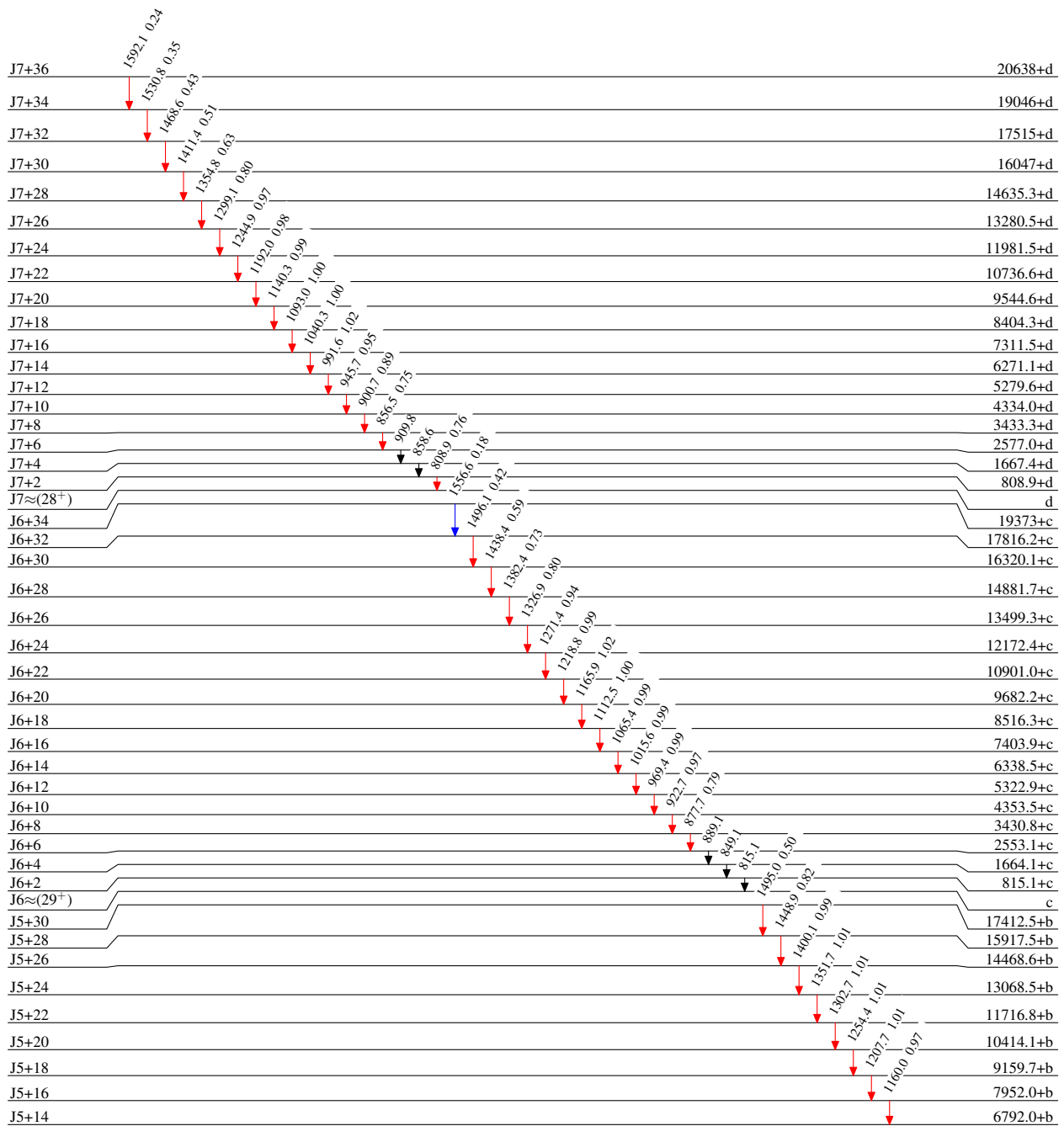
(HI,xn γ):SD [1999ErZZ](#),[1993Be37](#),[1991Fa07](#) (continued) $\gamma(^{150}\text{Gd})$ (continued)

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	J_i^π	E_f	J_f^π	Comments
1530.8 8	0.35 4	19046+d	J7+34	17515+d	J7+32	E $_\gamma$: From 1998ErZY .
1532	≈ 0.05	9154.0+x	J+18	7621.8+x	J+16	
1532.3 6	0.34 2	17937.1+v	N+32	16404.8+v	N+30	
1534.0 5	0.37 3	16199.5+s	J2+28	14665.5+s	J2+26	
1535.4 4	0.097 10	21384.3+y	K+38	19848.9+y	K+36	
1536.0 4		20915.2+u	M+36	19379.2+u	M+34	
1538.9 9	0.33 3	17451.6+a	J4+30	15912.7+a	J4+28	
1543.2 4	0.19 1	18751.4+y	K+34	17208.2+y	K+32	
1547.0 3	0.13 2	19686.1+x	J+34	18139.1+x	J+32	
1547.6 4	0.14 1	20155.8+x	J+34	18608.2+x	J+32	
1556.6 9	0.18 3	19373+c	J6+34	17816.2+c	J6+32	
1560.7 6	0.15 2	19080.3+w	J1+34	17519.6+w	J1+32	
1567.3 9	0.18 4	17821.0+t	J3+30	16253.7+t	J3+28	
1569.1 3	0.23 1	19204.2+z	L+34	17635.1+z	L+32	
1587.8 7	0.035 10	22972.1+y	K+40	21384.3+y	K+38	
1588	≈ 0.05	10354.0+x	J+20	8766.4+x	J+18	
1589.9 8		22505.2+u	M+38	20915.2+u	M+36	
1589.9 7	0.14 3	19527.0+v	N+34	17937.1+v	N+32	
1592.1 9	0.24 4	20638+d	J7+36	19046+d	J7+34	
1594.1 7	0.17 3	17793.6+s	J2+30	16199.5+s	J2+28	
1595.9 7	0.044 10	21751.8+x	J+36	20155.8+x	J+34	
1600.1 6	0.08 1	20351.6+y	K+36	18751.4+y	K+34	
1601.7 4	0.05 2	21287.8+x	J+36	19686.1+x	J+34	
1617.9 8	0.08 3	20698.2+w	J1+36	19080.3+w	J1+34	
1644.7 9		21171.8+v	N+36	19527.0+v	N+34	
1645.5 9		23397.3+x	J+38	21751.8+x	J+36	
1649	≈ 0.05	11604.9+x	J+22	9956.9+x	J+20	
1652.5 9	0.05 3	19446.1+s	J2+32	17793.6+s	J2+30	
1658.4 6	0.044 10	22010.0+y	K+38	20351.6+y	K+36	

† Energies are from [1999ErZZ](#). The γ -ray intensities are relative intensities within each SD band, read from the intensity plots provided by [1998ErZY](#). Intensities for SD-1 band are also available from [1989Fa02](#) and for SD-2 band from [1990By01](#).

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07**Level Scheme**Intensities: Relative I_γ **Legend**

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



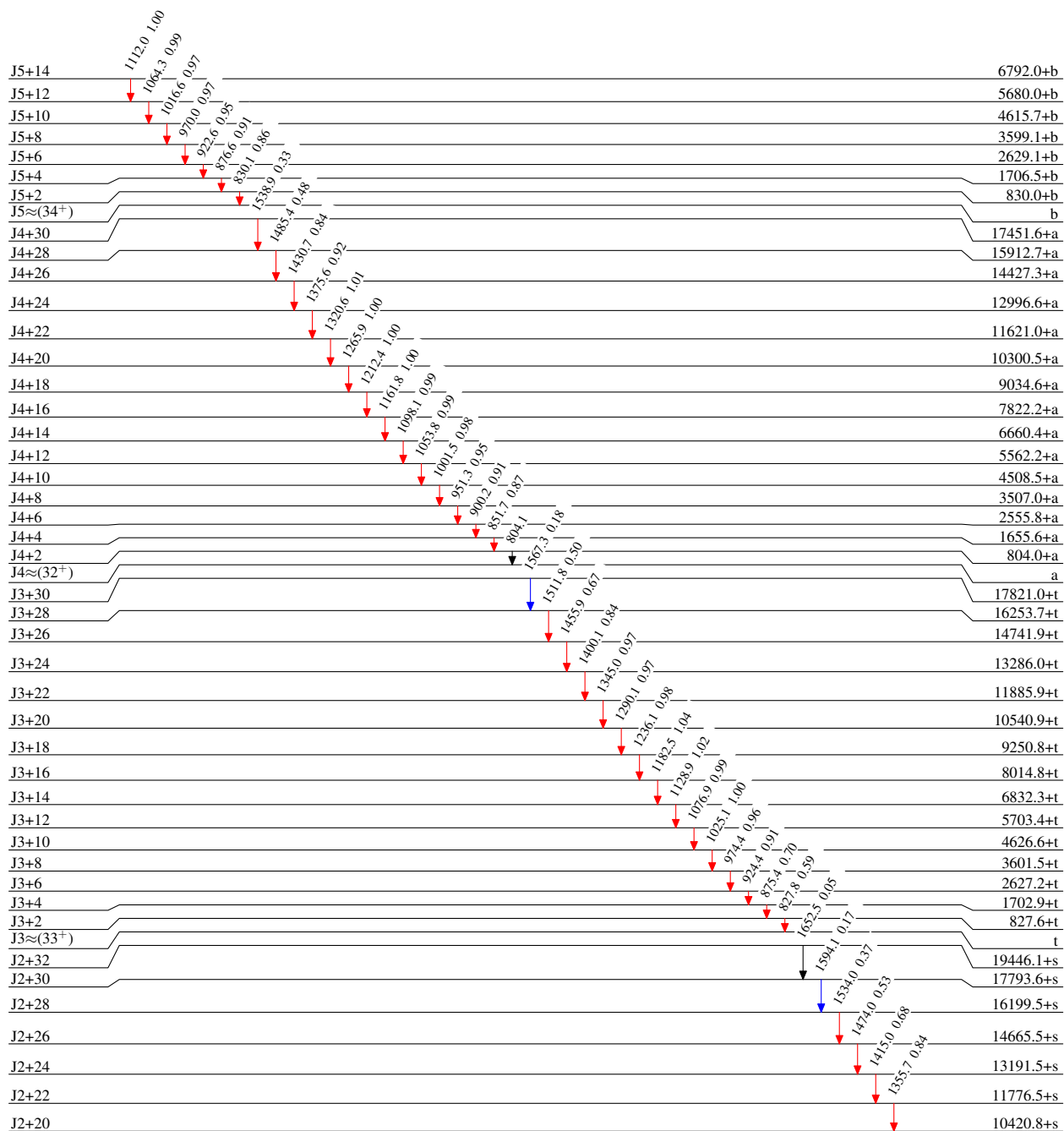
(H1,xn γ):SD 1999ErZZ,1993Be37,1991Fa07

Level Scheme (continued)

Intensities: Relative I_γ

Legend

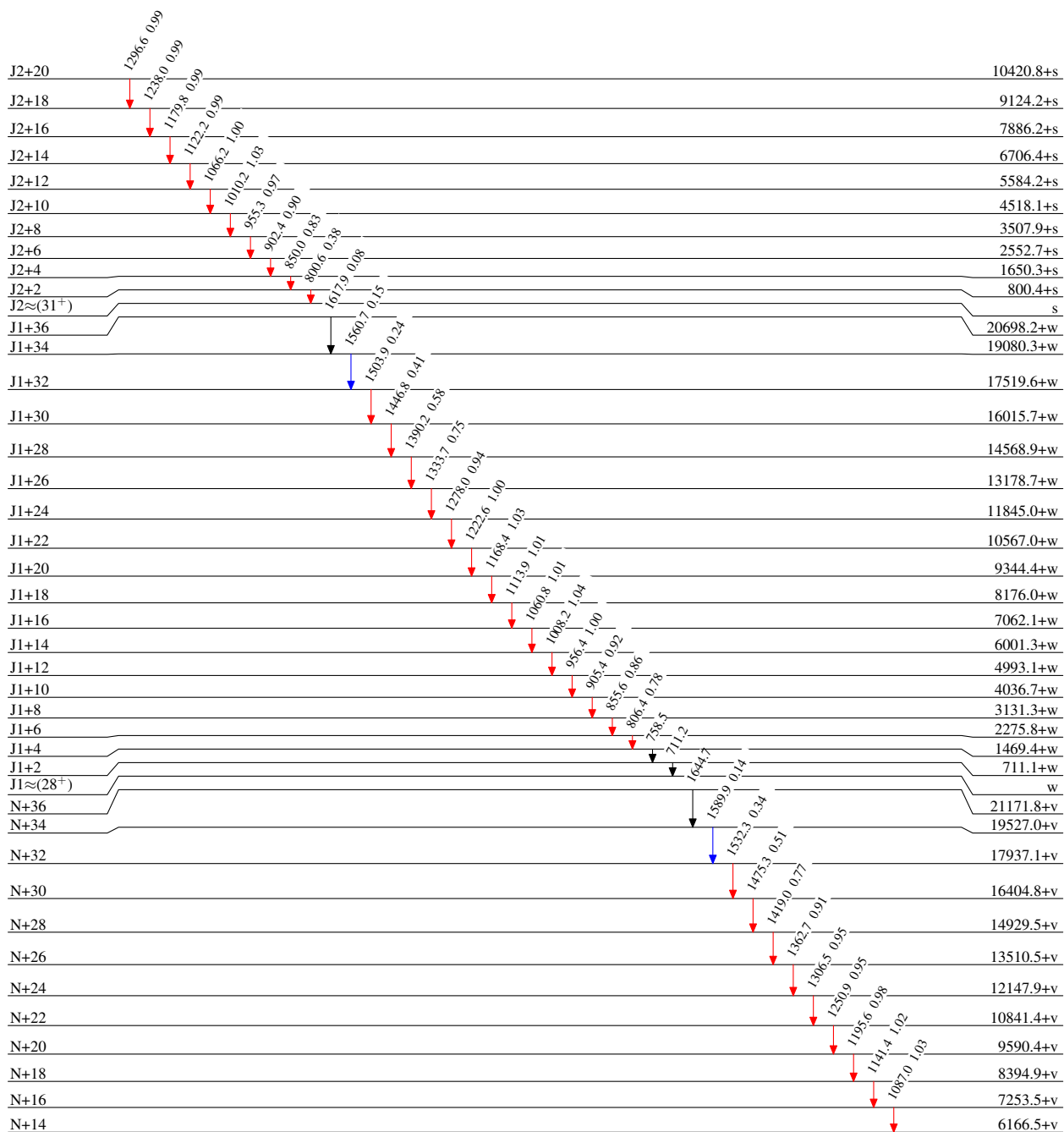
- $\rightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\rightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\rightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$

 $^{150}_{64}\text{Gd}_{86}$

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07**Level Scheme (continued)**Intensities: Relative I_γ

Legend

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



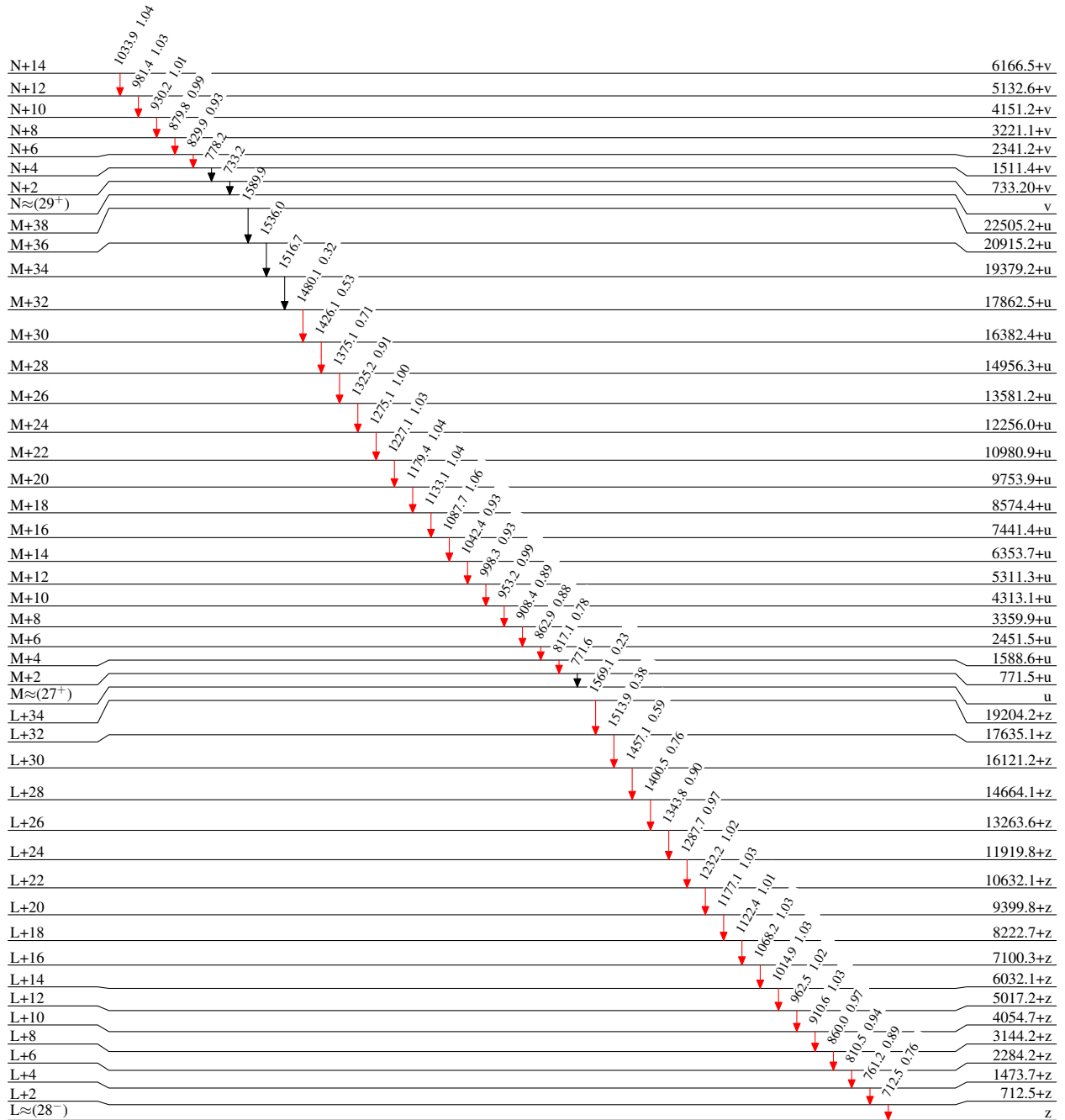
(H1,xn γ):SD 1999ErZZ,1993Be37,1991Fa07

Level Scheme (continued)

Intensities: Relative I_γ

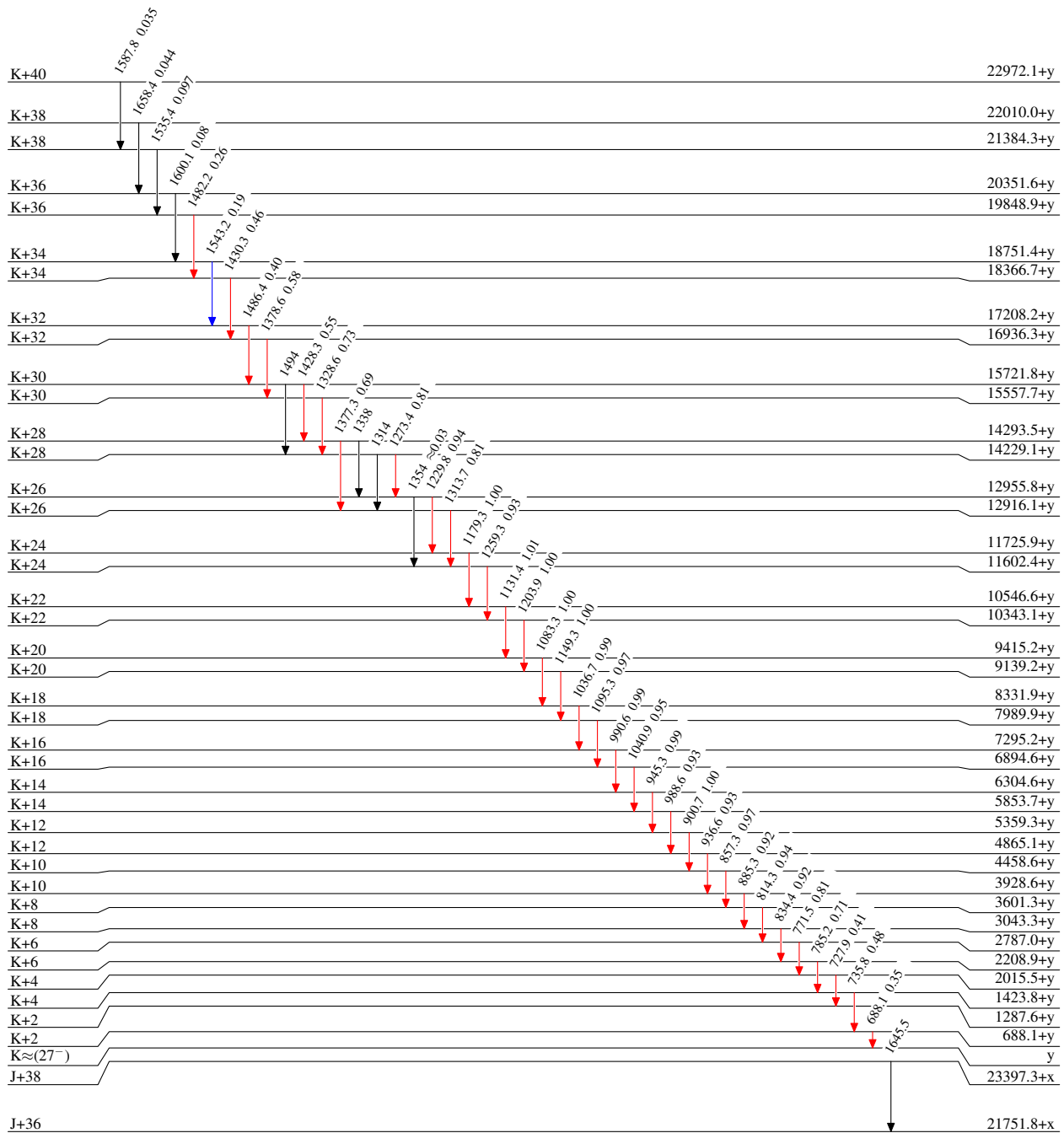
Legend

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



(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07**Level Scheme (continued)**Intensities: Relative I_γ **Legend**

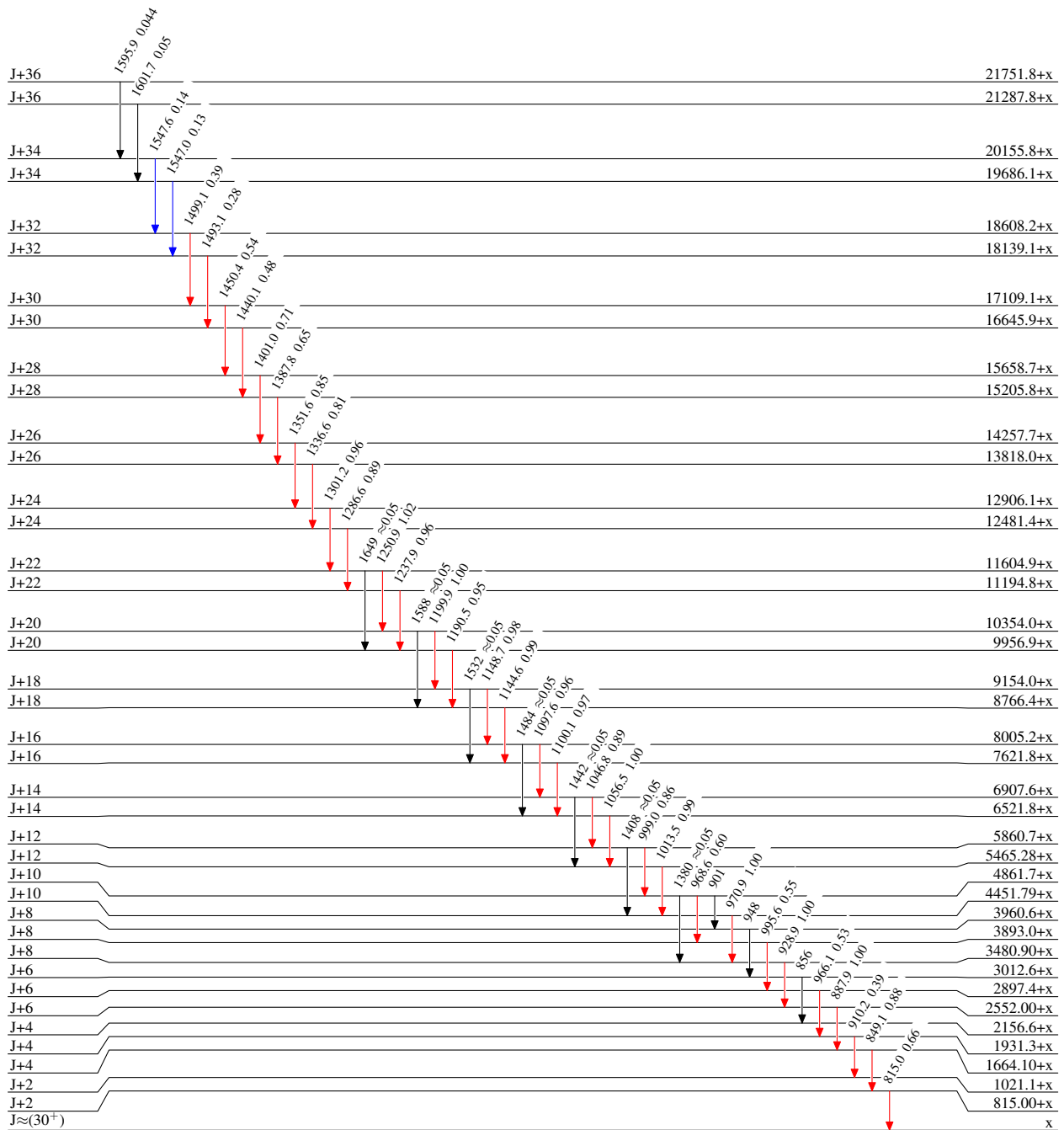
- $\longrightarrow$ $I_\gamma < 2\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma < 10\% \times I_\gamma^{\max}$
 $\longrightarrow$ $I_\gamma > 10\% \times I_\gamma^{\max}$



(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07**Level Scheme (continued)**Intensities: Relative I_γ

Legend

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



(Hf,xn γ):SD 1999ErZZ,1993Be37,1991Fa07Band(E): SD-5 band (1993Be37,
1999ErZZ)

L+34		19204.2+z
L+32	1569	17635.1+z
L+30	1514	16121.2+z
L+28		14664.1+z
L+26	1457	13263.6+z
L+24	1400	11919.8+z
L+22	1344	10632.1+z
L+20	1288	9399.8+z
L+18	1232	8222.7+z
L+16	1177	7100.3+z
L+14	1122	6032.1+z
L+12	1068	5017.2+z
L+10	1015	4054.7+z
L+8	962	3144.2+z
L+6	911	2284.2+z
L+4	860	1473.7+z
L+2	810	712.5+z
L $\approx$ (28 $\rightarrow$)	712	z

Band(C): SD-3 band
(1990By01,1993Be37,
1999ErZZ)Band(D): SD-4 band (1993Be37,
1999ErZZ)

K+40	22972.1+y
K+38	21384.3+y
K+36	19848.9+y
K+34	18366.7+y
K+32	16936.3+y
K+30	15557.7+y
K+28	14229.1+y
K+26	12955.8+y
K+24	11725.9+y
K+22	10546.6+y
K+20	9415.2+y
K+18	8331.9+y
K+16	7295.2+y
K+14	6304.6+y
K+12	5359.3+y
K+10	4458.6+y
K+8	3601.3+y
K+6	2787.0+y
K+4	2015.5+y
K+2	1287.6+y

K+38	22010.0+y
K+36	1658 20351.6+y
K+34	1600 18751.4+y
K+32	1543 17208.2+y
K+30	1486 15721.8+y
K+28	1428 14293.5+y
K+26	1377 12916.1+y
K+24	1314 11602.4+y
K+22	1259 10343.1+y
K+20	1204 9139.2+y
K+18	1149 7989.9+y
K+16	1095 6894.6+y
K+14	1041 5853.7+y
K+12	989 4865.1+y
K+10	937 3928.6+y
K+8	885 3043.3+y
K+6	834 2208.9+y
K+4	785 1423.8+y
K+2	688 688.1+y
K $\approx$ (27 $\rightarrow$)	688 y

Band(B): SD-2 band
(1994Fa13,1999ErZZ)Band(A): Yrast SD-1 band (1991Fa07,
1999ErZZ)

J+36	21287.8+x
J+34	1602 19686.1+x
J+32	1547 18139.1+x
J+30	1493 16645.9+x
J+28	1440 15205.8+x
J+26	1388 13818.0+x
J+24	1337 12481.4+x
J+22	1287 11194.8+x
J+20	1238 9956.9+x
J+18	1190 8766.4+x
J+16	1145 7621.8+x
J+14	1100 6521.8+x
J+12	1056 5465.28+x
J+10	1014 4451.79+x
J+8	971 3480.90+x
J+6	929 2552.00+x
J+4	888 1664.10+x
J+2	849 815.00+x
J $\approx$ (30 $\rightarrow$)	815 x

J+38	23397.3+x
J+36	1646 21751.8+x
J+34	1596 20155.8+x
J+32	1548 18608.2+x
J+30	1499 17109.1+x
J+28	1450 15658.7+x
J+26	1401 14257.7+x
J+24	1352 12906.1+x
J+22	1301 11604.9+x
J+20	1251 10354.0+x
J+18	1200 9154.0+x
J+16	1149 8005.2+x
J+14	1098 6907.6+x
J+12	1047 5860.7+x
J+10	999 4861.7+x
J+8	969 3893.0+x
J+6	936 2897.4+x
J+4	910 1931.3+x
J+2	910 1021.1+x

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued)**Band(H): SD-8 Band (1999ErZZ)**

J1+36		20698.2+w
J1+34	1618	19080.3+w
J1+32	1561	17519.6+w
J1+30	1504	16015.7+w
J1+28	1447	14568.9+w
J1+26	1390	13178.7+w
J1+24	1334	11845.0+w
J1+22	1278	10567.0+w
J1+20	1223	9344.4+w
J1+18	1168	8176.0+w
J1+16	1114	7062.1+w
J1+14	1061	6001.3+w
J1+12	1008	4993.1+w
J1+10	956	4036.7+w
J1+8	905	3131.3+w
J1+6	856	2275.8+w
J1+4	806	1469.4+w
J1+2	711	711.1+w
J1 $\approx$ (28 ⁺)		w

Band(G): SD-7 Band (1999ErZZ)

N+36		21171.8+v
N+34	1645	19527.0+v
N+32	1590	17937.1+v
N+30	1532	16404.8+v
N+28	1475	14929.5+v
N+26	1419	13510.5+v
N+24	1363	12147.9+v
N+22	1306	10841.4+v
N+20	1251	9590.4+v
N+18	1196	8394.9+v
N+16	1141	7253.5+v
N+14	1087	6166.5+v
N+12	1034	5132.6+v
N+10	981	4151.2+v
N+8	930	3221.1+v
N+6	880	2341.2+v
N+4	830	1511.4+v
N+2	778	733.20+v
N $\approx$ (29 ⁺)	733	v

Band(F): SD-6 Band (1999ErZZ)

M+38		22505.2+u
M+36	1590	20915.2+u
M+34	1536	19379.2+u
M+32	1517	17862.5+u
M+30	1480	16382.4+u
M+28	1426	14956.3+u
M+26	1375	13581.2+u
M+24	1325	12256.0+u
M+22	1275	10980.9+u
M+20	1227	9753.9+u
M+18	1179	8574.4+u
M+16	1133	7441.4+u
M+14	1088	6353.7+u
M+12	1042	5311.3+u
M+10	998	4313.1+u
M+8	953	3359.9+u
M+6	908	2451.5+u
M+4	863	1588.6+u
M+2	817	771.5+u
M $\approx$ (27 ⁺)	772	u

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued)**Band(L): SD-12 Band (1999ErZZ)**

J5+30		17412.5+b
J5+28	1495	15917.5+b
J5+26	1449	14468.6+b
J5+24	1400	13068.5+b
J5+22	1352	11716.8+b
J5+20	1303	10414.1+b
J5+18	1254	9159.7+b
J5+16	1208	7952.0+b
J5+14	1160	6792.0+b
J5+12	1112	5680.0+b
J5+10	1064	4615.7+b
J5+8	1017	3599.1+b
J5+6	970	2629.1+b
J5+4	923	1706.5+b
J5+2	830	830.0+b
J5 $\approx$ (34 ⁺)		b

Band(K): SD-11 Band (1999ErZZ)

J4+30		17451.6+a
J4+28		15912.7+a
J4+26	1539	14427.3+a
J4+24	1485	12996.6+a
J4+22	1431	11621.0+a
J4+20	1376	10300.5+a
J4+18	1321	9034.6+a
J4+16	1266	7822.2+a
J4+14	1212	6660.4+a
J4+12	1162	5562.2+a
J4+10	1098	4508.5+a
J4+8	1054	3507.0+a
J4+6	1002	2555.8+a
J4+4	951	1655.6+a
J4+2	900	804.0+a
J4 $\approx$ (32 ⁺)	804	a

Band(J): SD-10 Band (1999ErZZ)

J3+30		17821.0+t
J3+28		16253.7+t
J3+26	1567	14741.9+t
J3+24	1512	13286.0+t
J3+22	1456	11885.9+t
J3+20	1400	10540.9+t
J3+18	1345	9250.8+t
J3+16	1290	8014.8+t
J3+14	1236	6832.3+t
J3+12	1182	5703.4+t
J3+10	1129	4626.6+t
J3+8	1077	3601.5+t
J3+6	1025	2627.2+t
J3+4	974	1702.9+t
J3+2	924	827.6+t
J3 $\approx$ (33 ⁺)	828	t

Band(I): SD-9 Band (1999ErZZ)

J2+32		19446.1+s
J2+30	1652	17793.6+s
J2+28	1594	16199.5+s
J2+26	1534	14665.5+s
J2+24	1474	13191.5+s
J2+22	1415	11776.5+s
J2+20	1356	10420.8+s
J2+18	1297	9124.2+s
J2+16	1238	7886.2+s
J2+14	1180	6706.4+s
J2+12	1122	5584.2+s
J2+10	1066	4518.1+s
J2+8	1010	3507.9+s
J2+6	955	2552.7+s
J2+4	902	1650.3+s
J2+2	801	800.4+s
J2 $\approx$ (31 ⁺)		s

(HI,xn γ):SD 1999ErZZ,1993Be37,1991Fa07 (continued)

Band(N): SD-14 Band (1999ErZZ)		
J7+36		20638+d
J7+34	1592	19046+d
J7+32	1531	17515+d
J7+30	1469	16047+d
J7+28	1411	14635.3+d
J7+26	1355	13280.5+d
J7+24	1299	11981.5+d
J7+22	1245	10736.6+d
J7+20	1192	9544.6+d
J7+18	1140	8404.3+d
J7+16	1093	7311.5+d
J7+14	1040	6271.1+d
J7+12	992	5279.6+d
J7+10	946	4334.0+d
J7+8	901	3433.3+d
J7+6	856	2577.0+d
J7+4	910	1667.4+d
J7+2	859	808.9+d
J7 $\approx$ (28 ⁺)	809	d
Band(M): SD-13 Band (1999ErZZ)		
J6+34		19373+c
J6+32	1557	17816.2+c
J6+30	1496	16320.1+c
J6+28	1438	14881.7+c
J6+26	1382	13499.3+c
J6+24	1327	12172.4+c
J6+22	1271	10901.0+c
J6+20	1219	9682.2+c
J6+18	1166	8516.3+c
J6+16	1112	7403.9+c
J6+14	1065	6338.5+c
J6+12	1016	5322.9+c
J6+10	969	4353.5+c
J6+8	923	3430.8+c
J6+6	878	2553.1+c
J6+4	889	1664.1+c
J6+2	849	815.1+c
J6 $\approx$ (29 ⁺)	815	c