(HI,xnγ) 1998Si03,1987De18,1984Si05

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Additional information 1.

Level scheme is primarily the evaluator's combination of data from 1987De18 and 1998Si03. The latter paper was initially compiled for the XUNDL database by Chenkin and Singh in 1999. 1987De18 use the ^{124}Sn(^{40}Ar,5nγ) reaction at 180 MeV. γ rays were measured in the HERA array of 21 Ge detectors. Coincidences of three- and higher-fold events were recorded; γ(θ) data were extracted and 8 bands were reported. 1998Si03 use the ^{116}Cd(^{48}Ca,5nγ) reaction at 215 MeV. γ rays were measured in the EUROGAM array of 44 Ge detectors. Seven bands were reported.

Other studies: (α,7nγ) 1975Be34, (^{12}C,xnγ) 1971LeYU and 1973Gr24, (^{14}N,p8nγ) 1983Ya03, (^{16}O,5nγ) 1975Ha17, (^{18}O,4nγ) 1984Si05, (^{34}S,3nγ) 1986Os02, (^{40}Ar,5nγ) 1971LeYU and 1974Na08, (^{48}Ca,3nγ) 1984Ri04, and (^{136}Xe,5nγ) 1980Sp03. 1999Ko20, by some of the same authors as 1984Si05, 1984Ri04, 1987Si07, and 1998Si03, report having observed additional levels beyond those reported in 1998Si03, but no explicit levels are given.

Other level schemes: 1971LeYU (12 levels); 1984Si05 (43 levels); and 1987Si07 (60 levels). 1984Ri04, 1984Si05, 1987Si07, and 1998Si03 have several authors in common.

Lifetimes were determined by 1971LeYU from ce(t) measurements between beam pulses, 1974Na08 from comparison of unshifted and Doppler-shifted intensity as a function of plunger distance, and 1986Os02 from Doppler-shift recoil-distance data. g-factor was determined by 1980Sp03 from γ(θ) as function of flight time and gas pressure.

^{159}Er Levels

In 1987De18, the bands designated here as A,B,C,D,E,F, I, and J are reported. The authors of 1998Si03 report a "partial level scheme", which includes the bands designated here as C,D,E,G,H,K, and L.

E(level)†	Jπ‡	$T_{1/2}$	Comments
0&	3/2⁻		
59.15[a] *5*	5/2⁻		
144.04& *5*	7/2⁻		
182.39 *9*	9/2⁺	0.32 μs *3*	E(level): From 1971LeYU. Jπ: From 1971LeYU, based on analogy with the ^{157}Er level scheme. $T_{1/2}$: From 1971LeYU, from ce(t) between beam pulses.
225[d]	13/2⁺		
258.1[a]	9/2⁻		
362.5[e]	11/2⁺		
429[l]	11/2⁻	0.60 μs *6*	Jπ: Shown in 1987De18 as part of the *ν*3/2[521] g.s. band, but the B(E2)(W.u.) value for the transition to the 7/2⁻ member of the g.s. band does not support this. Most reasonably assigned as the bandhead of *ν*11/2[505], as assigned in 1971LeYU. $T_{1/2}$: From 1971LeYU, from ce(t) between beam pulses.
435[d]	17/2⁺	100 ps *4*	$T_{1/2}$: Weighted average of 95 ps *5* (1974Na08) and 103 ps *+3−4* (1986Os02).
574[a]	13/2⁻		
591[e]	15/2⁺		
785[d]	21/2⁺	9.1 ps *8*	g-factor≤0.07, from 1980Sp03. $T_{1/2}$: Weighted average of 8.2 ps *9* (1974Na08) and 9.8 ps *+7−8* (1986Os02).
833&	15/2⁻		
962[e]	19/2⁺		
990[a]	17/2⁻		
1251[d]	25/2⁺	2.1 ps *+4−6*	$T_{1/2}$: From 1986Os02.
1449[e]	23/2⁺		
1479[a]	21/2⁻		
1715	(23/2⁺)		

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(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

^{159}Er Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	Comments
1807[d]	29/2+	1.5 ps *+3–6*	$T_{1/2}$: From 1986Os02.
2012[a]	25/2−		
2027[e]	27/2+		
2089[h]	25/2−		
2231[c]	19/2−		
2261[&]	27/2−		
2293[b]	21/2−		
2394[c]	23/2−		
2434[d]	33/2+		
2475[a]	29/2−		
2523[b]	25/2−		
2551[i]	29/2−		
2582[h]	29/2−		
2663[&]	31/2−		
2677[e]	31/2+		
2689[c]	27/2−		
2883[b]	29/2−		
2912[a]	33/2−		
3099[i]	33/2−		
3106[c]	31/2−		
3111[d]	37/2+		
3147[&]	35/2−		
3200[h]	33/2−		
3356[b]	33/2−		
3382[e]	(35/2+)		
3439[a]	37/2−		
3629[c]	35/2−		
3695[i]	37/2−		
3734[&]	39/2−		
3821[d]	41/2+		
3864[h]	37/2−		
3923[b]	37/2−		
4065[a]	41/2−		
4130[e]	(39/2+)		
4236[c]	39/2−		
4353[i]	41/2−		
4421[&]	43/2−		
4561[d]	45/2+		
4564[b]	41/2−		
4585[h]	41/2−		
4786[a]	45/2−		
4905[e]	(43/2+)		
4906[c]	43/2−		
5075[i]	45/2−		
5193[&]	47/2−		
5256[b]	45/2−		
5343[d]	49/2+		

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(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

^{159}Er Levels (continued)

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
5587[a]	49/2−	9359[i]	(65/2−)	14134[c]	(83/2−)	x+3584[g]	(37/2−)
5615[c]	47/2−	9632[&]	67/2−	14135[d]	(85/2+)	x+3882[f]	(39/2−)
5851[i]	49/2−	9757[c]	(67/2−)	14433[a]	(85/2−)	x+4196[g]	(41/2−)
5980[b]	49/2−	9840[d]	69/2+	14747[b]	(85/2−)	x+4541[f]	(43/2−)
6026[&]	51/2−	10047[a]	69/2−	15039?		x+4896[g]	(45/2−)
6175[d]	53/2+	10255[b]	(69/2−)	15266	(89/2+)	x+5674[g]	(49/2−)
6350[c]	51/2−	10308[i]	(69/2−)	15342[c]	(87/2−)	x+6525[g]	(53/2−)
6438[a]	53/2−	10659[&]	71/2−	15372[d]	(89/2+)	x+7431[g]	(57/2−)
6670[i]	53/2−	10768[c]	(71/2−)	15536?[a]	(89/2−)	y[@ j]	(35/2+)
6729[b]	53/2−	10837[d]	73/2+	15980?		y+216[k]	(37/2+)
6883[&]	55/2−	11091[a]	(73/2−)	16607	(93/2+)	y+442[j]	(39/2+)
7052[d]	57/2+	11300[b]	(73/2−)	16649[d]	(93/2+)	y+689[k]	(41/2+)
7117[c]	55/2−	11302[i]	(73/2−)	16680?[a]	(93/2−)	y+953[j]	(43/2+)
7295[a]	57/2−	11745[&]	(75/2−)	17888?[a]	(97/2−)	y+1248[k]	(45/2+)
7519[b]	57/2−	11843[c]	(75/2−)	x[# f]	(11/2−)	y+1565[j]	(47/2+)
7536[i]	(57/2−)	11883[d]	77/2+	x+204[g]	(13/2−)	y+1910[k]	(49/2+)
7753[&]	59/2−	12199[a]	(77/2−)	x+430[f]	(15/2−)	y+2276[j]	(51/2+)
7934[c]	59/2−	12348[i]	(77/2−)	x+673[g]	(17/2−)	y+2670[k]	(53/2+)
7958[d]	61/2+	12411[b]	(77/2−)	x+935[f]	(19/2−)	y+3082[j]	(55/2+)
8161[a]	61/2−	12891[&]	(79/2−)	x+1209[g]	(21/2−)	y+3520[k]	(57/2+)
8365[b]	61/2−	12969[c]	(79/2−)	x+1499[f]	(23/2−)	y+3976[j]	(59/2+)
8441[i]	(61/2−)	12981[d]	81/2+	x+1795[g]	(25/2−)	y+4449[k]	(61/2+)
8664[&]	63/2−	13325[a]	(81/2−)	x+2104[f]	(27/2−)	y+4942[j]	(63/2+)
8812[c]	63/2−	13553[b]	(81/2−)	x+2415[g]	(29/2−)	y+5435[k]	(65/2+)
8884[d]	65/2+	14034?		x+2729[f]	(31/2−)		
9073[a]	65/2−	14099[&]	(83/2−)	x+3026[g]	(33/2−)		
9276[b]	(65/2−)	14114	(85/2+)	x+3309[f]	(35/2−)		

† From least-squares fit to γ energies; since most Eγ do not have uncertainties it was primarily an unweighted fit. There is a systematic difference of 1 to 2 keV between the Eγ values of 1998Si03 and 1987De18, so a level energy based on a cascade of γ′s from one article may have a bias of tens of keV relative to that of cascade of γ′s from the other paper.

‡ From 1998Si03 and 1987De18, unless otherwise noted. Based on γ(θ) to determine γ multipolarities and spin changes, expected band structures, together with the results of cranked shell-model calculations. These assignments agree with those in the ^{159}Er Adopted Levels. See 1987Si07 and 1998Si03 for detailed discussions of the multi-quasiparticle structures and band crossings for the higher-spin levels.

From 1998Si03, x > 225 keV from expected decay to the $i_{13/2+}$ band.

@ From 1998Si03, y > 3105.

& Band(A): $K^\pi=3/2^-$,ν3/2[521] band, α=−1/2 branch.

a Band(a): $K^\pi=3/2^-$,ν3/2[521] band, α=+1/2 branch.

b Band(B): $K^\pi=17/2^-$ band, α=+1/2 branch.

c Band(b): $K^\pi=17/2^-$ band, α=−1/2 branch.

d Band(C): $\nu i_{13/2}$, yrast, band; α=+1/2 branch.

e Band(c): $\nu i_{13/2}$, yrast, band; α=−1/2 branch.

f Band(D): -π band, α=−1/2 branch.

g Band(d): -π band, α=+1/2 branch.

h Band(E): -π band, α=+1/2 branch.

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(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

^{159}Er Levels (continued)

[i] Band(F): -π band, α=+1/2 branch.
[j] Band(G): +π band, α=−1/2 branch.
[k] Band(g): +π band, α=+1/2 branch.
[l] Band(H): K^π=11/2^−, ν11/2[505], bandhead.

γ(^{159}Er)

E_γ †‡	I_γ #	E_i(level)	J_i^π	E_f	J_f^π	Mult. @	Comments
38.35& 7		182.39	9/2+	144.04	7/2−	(E1)	Mult.: From 1971LeYU, but no supporting data given.
43&		225	13/2+	182.39	9/2+		
59.14& 5		59.15	5/2−	0	3/2−		
84.87[a] 7	1.1 2	144.04	7/2−	59.15	5/2−	M1,E2	
102		2394	23/2−	2293	21/2−		E_γ: from evaluator, assuming decay to 21/2− level.
114.1[b]	3.0 2	258.1	9/2−	144.04	7/2−	M1	
131		2523	25/2−	2394	23/2−		
137.0	2.6 1	362.5	11/2+	225	13/2+	(M1)	
144.05 5	0.9 2	144.04	7/2−	0	3/2−	E2	
144.7[a]	0.7 2	574	13/2−	429	11/2−	(M1)	
155.9[b]	2.0 1	591	15/2+	435	17/2+	M1	
156.4[b]	0.6 2	990	17/2−	833	15/2−	(M1)	
166		2689	27/2−	2523	25/2−		
171[a]	1.5 1	429	11/2−	258.1	9/2−	(M1)	
176.3[b]	1.5 2	962	19/2+	785	21/2+	M1	
194		2883	29/2−	2689	27/2−		
197.5[b]	0.7 2	1449	23/2+	1251	25/2+	M1	
199	5.6 2	258.1	9/2−	59.15	5/2−	E2	
204		x+204	(13/2−)	x	(11/2−)		
210	100	435	17/2+	225	13/2+	E2	
216		y+216	(37/2+)	y	(35/2+)		
219.5[b]	0.4 1	2027	27/2+	1807	29/2+	M1	
223		3106	31/2−	2883	29/2−		
225		y+442	(39/2+)	y+216	(37/2+)		
226		x+430	(15/2−)	x+204	(13/2−)		
228	3.2 2	591	15/2+	362.5	11/2+	E2	
228		2523	25/2−	2293	21/2−		
242		x+673	(17/2−)	x+430	(15/2−)		
246		y+689	(41/2+)	y+442	(39/2+)		
247&		429	11/2−	182.39	9/2+		
250		3356	33/2−	3106	31/2−		
262		x+935	(19/2−)	x+673	(17/2−)		
265		y+953	(43/2+)	y+689	(41/2+)		
274		x+1209	(21/2−)	x+935	(19/2−)		
274		3629	35/2−	3356	33/2−		
285	1.7 2	429	11/2−	144.04	7/2−	E2	
290		x+1499	(23/2−)	x+1209	(21/2−)		
294		y+1248	(45/2+)	y+953	(43/2+)		
294		2689	27/2−	2394	23/2−		
294		3923	37/2−	3629	35/2−		
297		x+1795	(25/2−)	x+1499	(23/2−)		
309		x+2104	(27/2−)	x+1795	(25/2−)		
311		x+2415	(29/2−)	x+2104	(27/2−)		
313		4236	39/2−	3923	37/2−		

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(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

γ(^{159}Er) (continued)

E_γ [†‡]	I_γ [#]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]
316		y+1565	(47/2$^+$)	y+1248	(45/2$^+$)	
316	12.1 *2*	574	13/2$^-$	258.1	9/2$^-$	E2
328		4564	41/2$^-$	4236	39/2$^-$	
342		4906	43/2$^-$	4564	41/2$^-$	
344		y+1910	(49/2$^+$)	y+1565	(47/2$^+$)	
351	100.0 *5*	785	21/2$^+$	435	17/2$^+$	E2
351		5256	45/2$^-$	4906	43/2$^-$	
359		2883	29/2$^-$	2523	25/2$^-$	
359		5615	47/2$^-$	5256	45/2$^-$	
364		5980	49/2$^-$	5615	47/2$^-$	
364.7[b]	6.6 *3*	591	15/2$^+$	225	13/2$^+$	M1
365		y+2276	(51/2$^+$)	y+1910	(49/2$^+$)	
371	10.0 *3*	962	19/2$^+$	591	15/2$^+$	E2
371		6350	51/2$^-$	5980	49/2$^-$	
379		6729	53/2$^-$	6350	51/2$^-$	
386	2.2 *2*	2475	29/2$^-$	2089	25/2$^-$	E2
388		7117	55/2$^-$	6729	53/2$^-$	
393		y+2670	(53/2$^+$)	y+2276	(51/2$^+$)	
402	1.7 *2*	2663	31/2$^-$	2261	27/2$^-$	(E2)
402		7519	57/2$^-$	7117	55/2$^-$	
404	1.3 *2*	833	15/2$^-$	429	11/2$^-$	(E2)
410		y+3082	(55/2$^+$)	y+2670	(53/2$^+$)	
415		7934	59/2$^-$	7519	57/2$^-$	
416	17.2 *3*	990	17/2$^-$	574	13/2$^-$	E2
417		3106	31/2$^-$	2689	27/2$^-$	
430		x+430	(15/2$^-$)	x	(11/2$^-$)	
432		8365	61/2$^-$	7934	59/2$^-$	
437	4.3 *2*	2912	33/2$^-$	2475	29/2$^-$	E2
438		y+3520	(57/2$^+$)	y+3082	(55/2$^+$)	
442		y+442	(39/2$^+$)	y	(35/2$^+$)	
447		8812	63/2$^-$	8365	61/2$^-$	
448	2.8 *2*	2475	29/2$^-$	2027	27/2$^+$	E1
455		y+3976	(59/2$^+$)	y+3520	(57/2$^+$)	
462		2551	29/2$^-$	2089	25/2$^-$	
463	2.3 *2*	2475	29/2$^-$	2012	25/2$^-$	E2
464		9276	(65/2$^-$)	8812	63/2$^-$	
466	87.3 *6*	1251	25/2$^+$	785	21/2$^+$	E2
469		x+673	(17/2$^-$)	x+204	(13/2$^-$)	
473		y+4449	(61/2$^+$)	y+3976	(59/2$^+$)	
473		3356	33/2$^-$	2883	29/2$^-$	
474		y+689	(41/2$^+$)	y+216	(37/2$^+$)	
481		9757	(67/2$^-$)	9276	(65/2$^-$)	
485	6.0 *2*	3147	35/2$^-$	2663	31/2$^-$	E2
486	7.6 *4*	1449	23/2$^+$	962	19/2$^+$	E2
489	13.0 *2*	1479	21/2$^-$	990	17/2$^-$	E2
493		y+4942	(63/2$^+$)	y+4449	(61/2$^+$)	
499		10255	(69/2$^-$)	9757	(67/2$^-$)	
505		x+935	(19/2$^-$)	x+430	(15/2$^-$)	
512		y+953	(43/2$^+$)	y+442	(39/2$^+$)	
513		10768	(71/2$^-$)	10255	(69/2$^-$)	
523		3629	35/2$^-$	3106	31/2$^-$	
526.8[b]	4.8 *2*	962	19/2$^+$	435	17/2$^+$	M1
527	3.1 *2*	3439	37/2$^-$	2912	33/2$^-$	E2
532		11300	(73/2$^-$)	10768	(71/2$^-$)	
533	10.6 *2*	2012	25/2$^-$	1479	21/2$^-$	E2

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(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

γ(^{159}Er) (continued)

E_γ[†‡]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]
536		x+1209	(21/2$^-$)	x+673	(17/2$^-$)	
540		2551	29/2$^-$	2012	25/2$^-$	
543		11843	(75/2$^-$)	11300	(73/2$^-$)	
547		3099	33/2$^-$	2551	29/2$^-$	
558		x+3584	(37/2$^-$)	x+3026	(33/2$^-$)	
558		y+1248	(45/2$^+$)	y+689	(41/2$^+$)	
558	66.7 *5*	1807	29/2$^+$	1251	25/2$^+$	E2
558		12969	(79/2$^-$)	12411	(77/2$^-$)	
564		x+1499	(23/2$^-$)	x+935	(19/2$^-$)	
567		3923	37/2$^-$	3356	33/2$^-$	
568		12411	(77/2$^-$)	11843	(75/2$^-$)	
570		2582	29/2$^-$	2012	25/2$^-$	
573		x+3882	(39/2$^-$)	x+3309	(35/2$^-$)	
578	5.1 *2*	2027	27/2$^+$	1449	23/2$^+$	E2
580		x+3309	(35/2$^-$)	x+2729	(31/2$^-$)	
587		x+1795	(25/2$^-$)	x+1209	(21/2$^-$)	
588	4.1 *3*	3734	39/2$^-$	3147	35/2$^-$	E2
596		3695	37/2$^-$	3099	33/2$^-$	
605		x+2104	(27/2$^-$)	x+1499	(23/2$^-$)	
607		4236	39/2$^-$	3629	35/2$^-$	
611		x+3026	(33/2$^-$)	x+2415	(29/2$^-$)	
612		x+4196	(41/2$^-$)	x+3584	(37/2$^-$)	
612		y+1565	(47/2$^+$)	y+953	(43/2$^+$)	
618		3200	33/2$^-$	2582	29/2$^-$	
620		x+2415	(29/2$^-$)	x+1795	(25/2$^-$)	
625		x+2729	(31/2$^-$)	x+2104	(27/2$^-$)	
626		3734	39/2$^-$	3106	31/2$^-$	
626	2.2 *1*	4065	41/2$^-$	3439	37/2$^-$	E2
628	39.5 *5*	2434	33/2$^+$	1807	29/2$^+$	E2
640	2.0 *2*	2089	25/2$^-$	1449	23/2$^+$	E1
641		4564	41/2$^-$	3923	37/2$^-$	
650	1.8 *2*	2677	31/2$^+$	2027	27/2$^+$	E2
658		4353	41/2$^-$	3695	37/2$^-$	
659		x+4541	(43/2$^-$)	x+3882	(39/2$^-$)	
662.9[b]	2.0 *2*	1449	23/2$^+$	785	21/2$^+$	M1
663		y+1910	(49/2$^+$)	y+1248	(45/2$^+$)	
664		3864	37/2$^-$	3200	33/2$^-$	
665		3099	33/2$^-$	2434	33/2$^+$	
669		4906	43/2$^-$	4236	39/2$^-$	
677	24.0 *4*	3111	37/2$^+$	2434	33/2$^+$	E2
687	2.0 *2*	4421	43/2$^-$	3734	39/2$^-$	E2
692		5256	45/2$^-$	4564	41/2$^-$	
700		x+4896	(45/2$^-$)	x+4196	(41/2$^-$)	
705	1.0 *2*	3382	(35/2$^+$)	2677	31/2$^+$	E2
710	17.3 *5*	3821	41/2$^+$	3111	37/2$^+$	E2
710		5615	47/2$^-$	4906	43/2$^-$	
712		y+2276	(51/2$^+$)	y+1565	(47/2$^+$)	
714	1.7 *3*	3147	35/2$^-$	2434	33/2$^+$	E1
721		4585	41/2$^-$	3864	37/2$^-$	
721	1.4 *1*	4786	45/2$^-$	4065	41/2$^-$	E2
722		5075	45/2$^-$	4353	41/2$^-$	
723		5980	49/2$^-$	5256	45/2$^-$	
735		6350	51/2$^-$	5615	47/2$^-$	
740	7.7 *4*	4561	45/2$^+$	3821	41/2$^+$	E2
744		2551	29/2$^-$	1807	29/2$^+$	

Continued on next page (footnotes at end of table)

(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

γ(^{159}Er) (continued)

E_γ[†‡]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[@]
748	0.6 *1*	4130	(39/2$^+$)	3382	(35/2$^+$)	E2
749		6729	53/2$^-$	5980	49/2$^-$	
760		y+2670	(53/2$^+$)	y+1910	(49/2$^+$)	
767		7117	55/2$^-$	6350	51/2$^-$	
772	1.5 *3*	5193	47/2$^-$	4421	43/2$^-$	E2
775		4905	(43/2$^+$)	4130	(39/2$^+$)	E2
776		5851	49/2$^-$	5075	45/2$^-$	
776.4[b]	1.3 *2*	2027	27/2$^+$	1251	25/2$^+$	M1
778		x+5674	(49/2$^-$)	x+4896	(45/2$^-$)	
782	3.7 *2*	5343	49/2$^+$	4561	45/2$^+$	E2
790		7519	57/2$^-$	6729	53/2$^-$	
801	0.5 *1*	5587	49/2$^-$	4786	45/2$^-$	E2
807		y+3082	(55/2$^+$)	y+2276	(51/2$^+$)	
809		2523	25/2$^-$	1715	(23/2$^+$)	
816		7934	59/2$^-$	7117	55/2$^-$	
819		6670	53/2$^-$	5851	49/2$^-$	
832	0.8 *2*	6175	53/2$^+$	5343	49/2$^+$	E2
833	0.7 *2*	6026	51/2$^-$	5193	47/2$^-$	E2
846		8365	61/2$^-$	7519	57/2$^-$	
851		x+6525	(53/2$^-$)	x+5674	(49/2$^-$)	
851		y+3520	(57/2$^+$)	y+2670	(53/2$^+$)	
851		6438	53/2$^-$	5587	49/2$^-$	E2
856	7.5 *5*	2663	31/2$^-$	1807	29/2$^+$	E1
857		6883	55/2$^-$	6026	51/2$^-$	
857		7295	57/2$^-$	6438	53/2$^-$	E2
866		7536	(57/2$^-$)	6670	53/2$^-$	
866		8161	61/2$^-$	7295	57/2$^-$	E2
870		7753	59/2$^-$	6883	55/2$^-$	
877	0.3 *2*	7052	57/2$^+$	6175	53/2$^+$	E2
878		8812	63/2$^-$	7934	59/2$^-$	
893		y+3976	(59/2$^+$)	y+3082	(55/2$^+$)	
905		8441	(61/2$^-$)	7536	(57/2$^-$)	
906		x+7431	(57/2$^-$)	x+6525	(53/2$^-$)	
906		7958	61/2$^+$	7052	57/2$^+$	E2
911		8664	63/2$^-$	7753	59/2$^-$	
911		9276	(65/2$^-$)	8365	61/2$^-$	
912		9073	65/2$^-$	8161	61/2$^-$	E2
918		9359	(65/2$^-$)	8441	(61/2$^-$)	
926		8884	65/2$^+$	7958	61/2$^+$	E2
930		1715	(23/2$^+$)	785	21/2$^+$	
931		y+4449	(61/2$^+$)	y+3520	(57/2$^+$)	
941[c]		15980?		15039?		
945		9757	(67/2$^-$)	8812	63/2$^-$	
949		10308	(69/2$^-$)	9359	(65/2$^-$)	
956		9840	69/2$^+$	8884	65/2$^+$	E2
966		y+4942	(63/2$^+$)	y+3976	(59/2$^+$)	
968		9632	67/2$^-$	8664	63/2$^-$	
974		10047	69/2$^-$	9073	65/2$^-$	(E2)
979		10255	(69/2$^-$)	9276	(65/2$^-$)	
985		y+5435	(65/2$^+$)	y+4449	(61/2$^+$)	
994		11302	(73/2$^-$)	10308	(69/2$^-$)	
997		10837	73/2$^+$	9840	69/2$^+$	E2
1005[c]		15039?		14034?		
1010	2.1 *3*	2261	27/2$^-$	1251	25/2$^+$	(E1)
1012		10768	(71/2$^-$)	9757	(67/2$^-$)	

Continued on next page (footnotes at end of table)

(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

γ(^{159}Er) (continued)

E_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]	E_γ [†‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [@]
1027	10659	71/2$^-$	9632	67/2$^-$		1142	13553	(81/2$^-$)	12411	(77/2$^-$)	
1044	11091	(73/2$^-$)	10047	69/2$^-$	(E2)	1144[c]	16680?	(93/2$^-$)	15536?	(89/2$^-$)	
1044	11300	(73/2$^-$)	10255	(69/2$^-$)		1146	12891	(79/2$^-$)	11745	(75/2$^-$)	
1046	11883	77/2$^+$	10837	73/2$^+$	E2	1152	15266	(89/2$^+$)	14114	(85/2$^+$)	
1046	12348	(77/2$^-$)	11302	(73/2$^-$)		1154	14135	(85/2$^+$)	12981	81/2$^+$	E2
1053[c]	14034?		12981	81/2$^+$		1165	14134	(83/2$^-$)	12969	(79/2$^-$)	
1072	2523	25/2$^-$	1449	23/2$^+$		1194	14747	(85/2$^-$)	13553	(81/2$^-$)	
1074	11843	(75/2$^-$)	10768	(71/2$^-$)		1208	14099	(83/2$^-$)	12891	(79/2$^-$)	
1086	11745	(75/2$^-$)	10659	71/2$^-$		1208[c]	17888?	(97/2$^-$)	16680?	(93/2$^-$)	
1098	12981	81/2$^+$	11883	77/2$^+$	E2	1209	15342	(87/2$^-$)	14134	(83/2$^-$)	
1102[c]	15536?	(89/2$^-$)	14433	(85/2$^-$)		1233	15372	(89/2$^+$)	14135	(85/2$^+$)	E2
1108	12199	(77/2$^-$)	11091	(73/2$^-$)	(E2)	1272	2523	25/2$^-$	1251	25/2$^+$	
1108	14433	(85/2$^-$)	13325	(81/2$^-$)		1277	16649	(93/2$^+$)	15372	(89/2$^+$)	
1112	12411	(77/2$^-$)	11300	(73/2$^-$)		1341	16607	(93/2$^+$)	15266	(89/2$^+$)	
1126	12969	(79/2$^-$)	11843	(75/2$^-$)		1445	2231	19/2$^-$	785	21/2$^+$	
1126	13325	(81/2$^-$)	12199	(77/2$^-$)		1796	2231	19/2$^-$	435	17/2$^+$	

† From 1998Si03 where available or from 1987De18, unless otherwise noted. 1998Si03 and 1987De18 give Eγ only to nearest 1 keV. Others (1973Gr24,1975Be34,1984Si05,1987Si07) give shorter lists of values to 0.1 keV. 1984Si05, 1973Gr24, and 1975Be34 give uncertainties; others do not.

‡ There is a systematic difference of 1 to 2 keV between the Eγ values of 1998Si03 and 1987De18.

From 1984Si05. Others: 1973Gr24 and 1987Si07.

@ From 1987Si07 and based on γ(θ) data (1984Si05, by some of the same authors, give a similar list). The Q assignments deduced from γ(θ) are taken to be E2 since M2 transitions are not expected. The D assignments are interpreted as M1 or E1 from the proposed decay scheme. Others: see 1973Gr24 and 1975Be34 for γ(θ) coefficients for 8 γ′s.

& From ^{159}Er Adopted γ radiation.

a From ^{159}Er Adopted γ radiation.

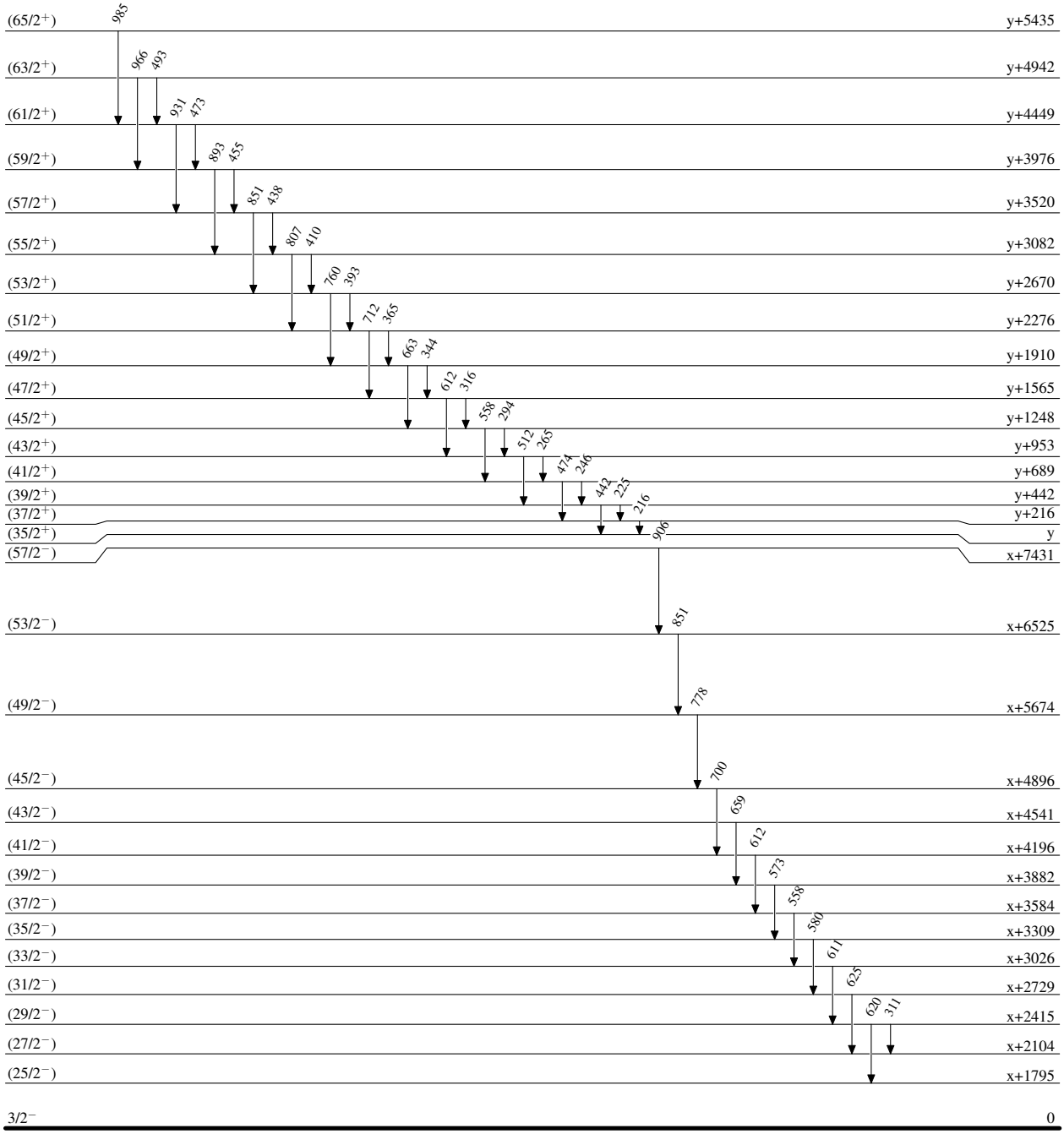
b Energy and placement are from 1987Si07 (see also 1984Si05).

c Placement of transition in the level scheme is uncertain.

(HI,xnγ) 1998Si03,1987De18,1984Si05

Level Scheme

Intensities: Relative I_γ



$^{159}_{68}Er_{91}$

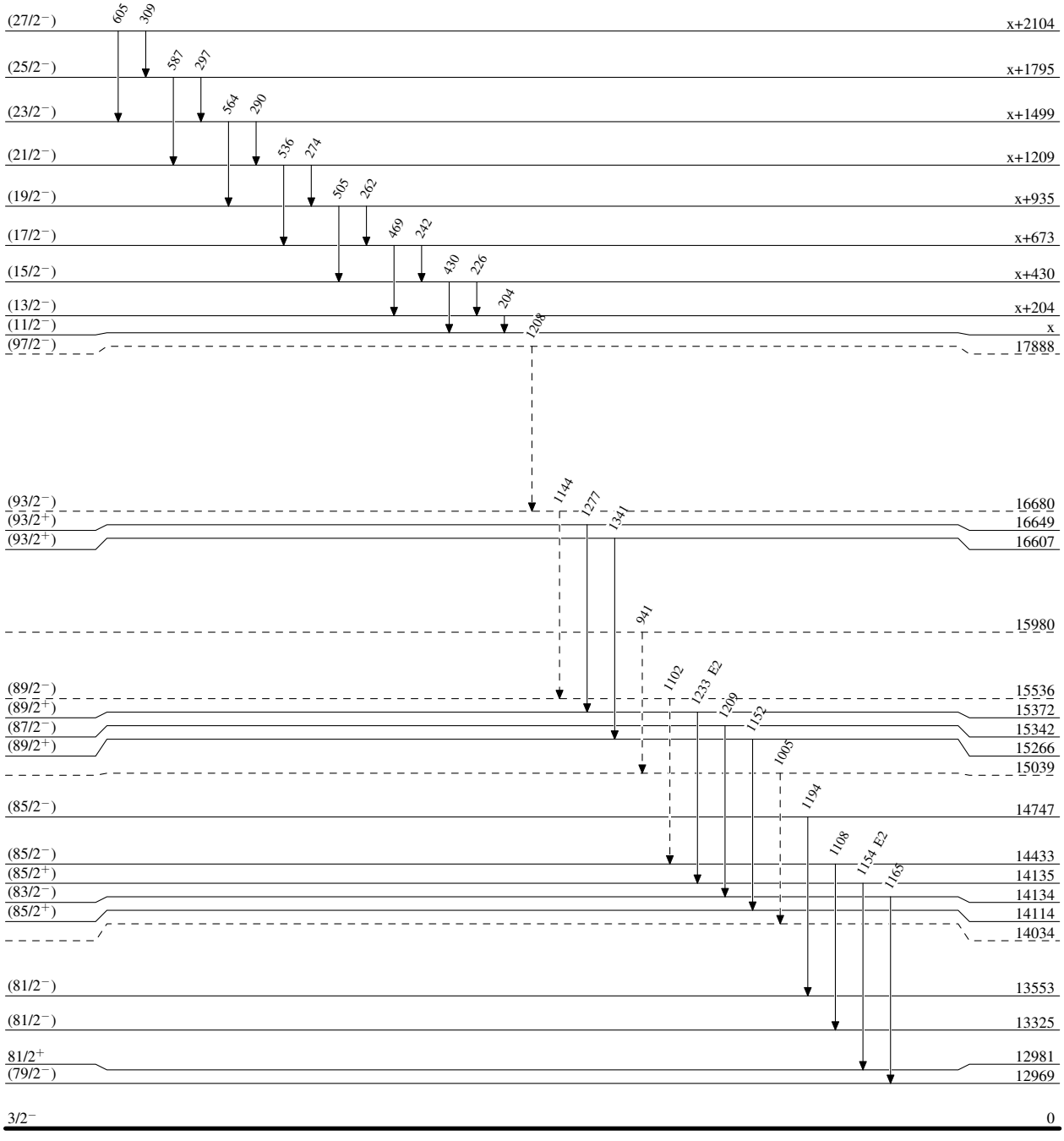
(HI,xnγ) 1998Si03,1987De18,1984Si05

Legend

Level Scheme (continued)

Intensities: Relative I_γ

γ Decay (Uncertain)



$^{159}_{68}Er_{91}$

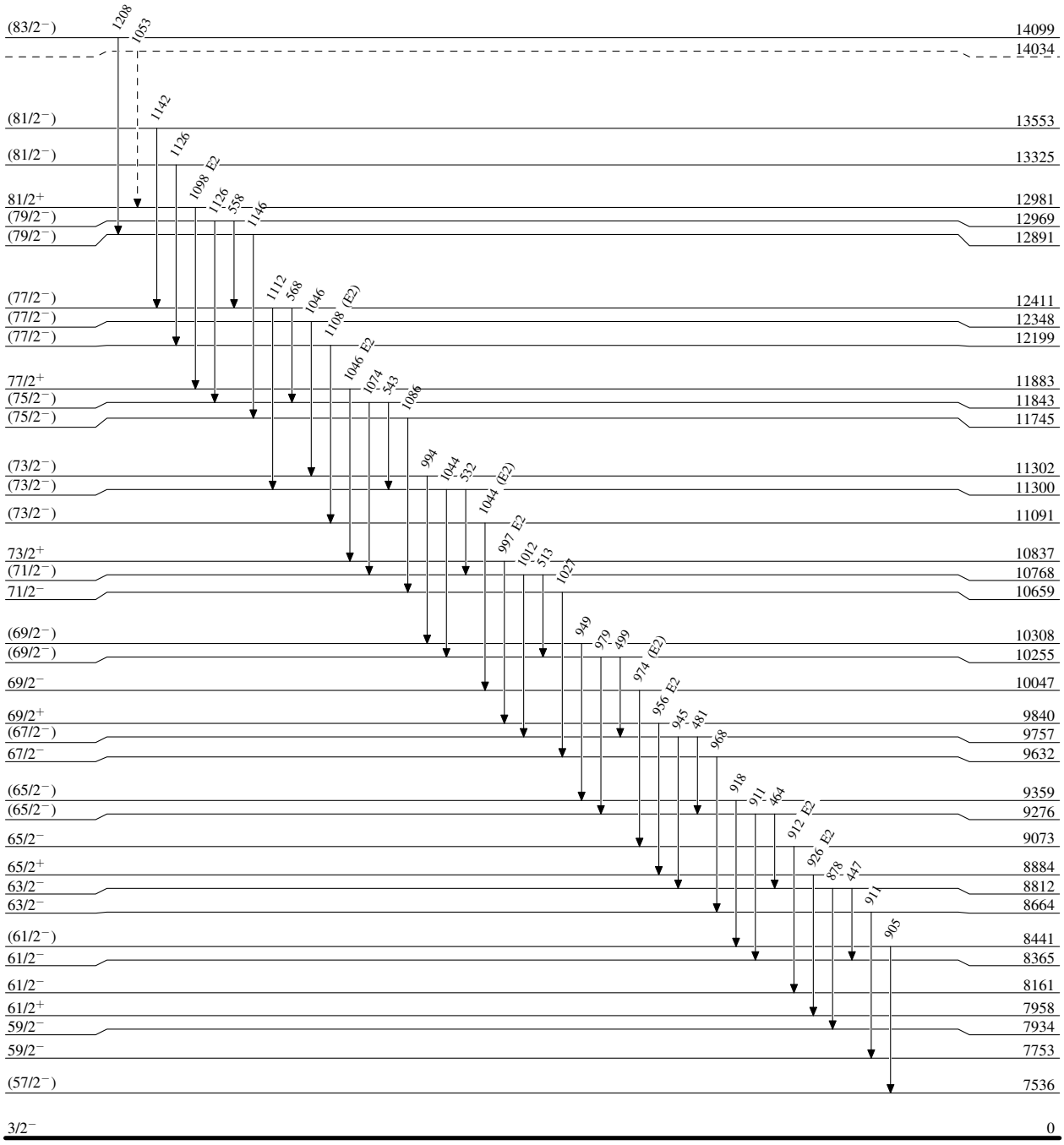
(HI,xnγ) 1998Si03,1987De18,1984Si05

Legend

Level Scheme (continued)

Intensities: Relative I_γ

γ Decay (Uncertain)



$^{159}_{68}Er_{91}$

(HI,xnγ) 1998Si03,1987De18,1984Si05

Level Scheme (continued)

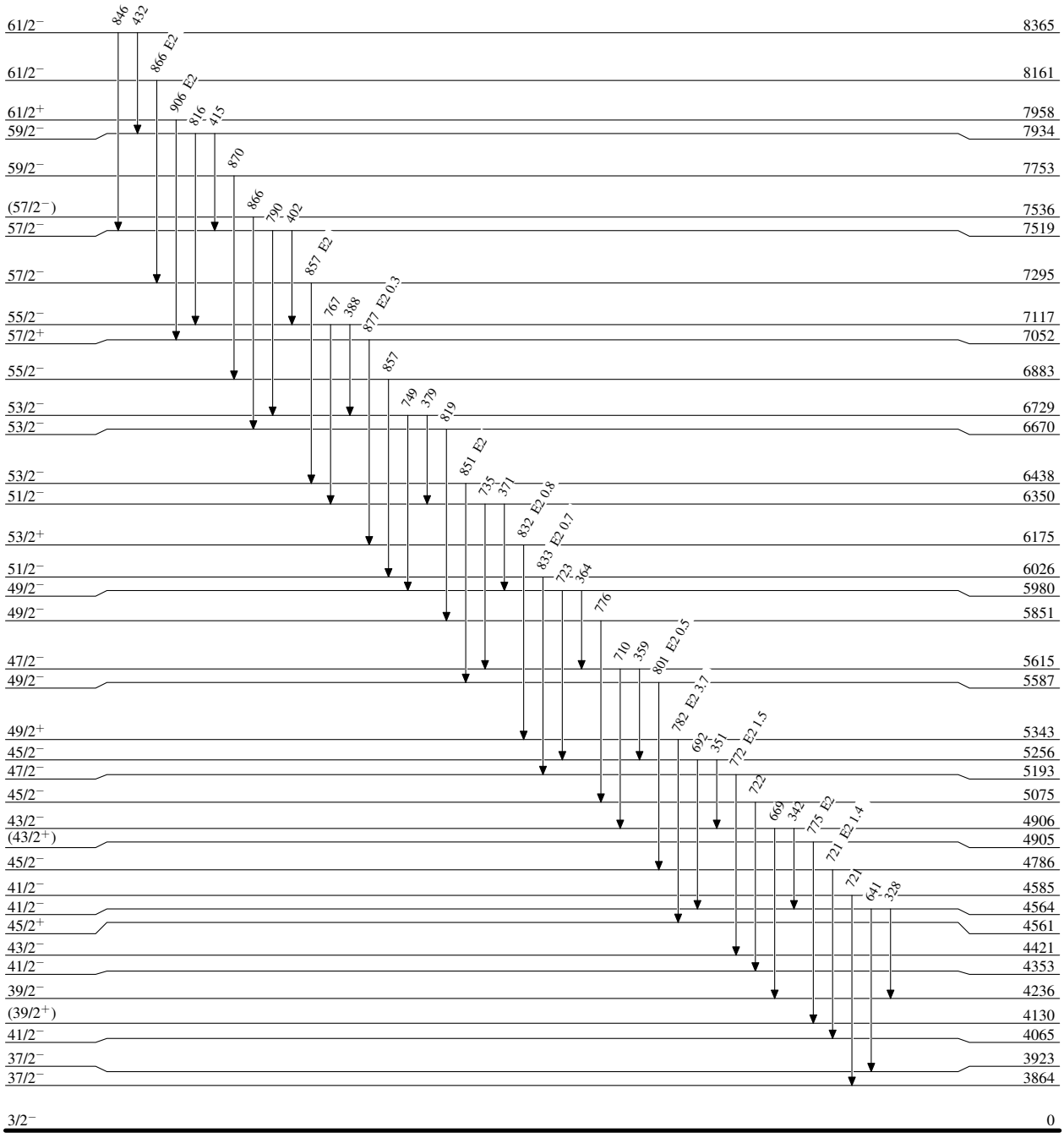
Intensities: Relative I_γ

Legend

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

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

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



$^{159}_{68}Er_{91}$

(HI,xnγ) 1998Si03,1987De18,1984Si05

Level Scheme (continued)

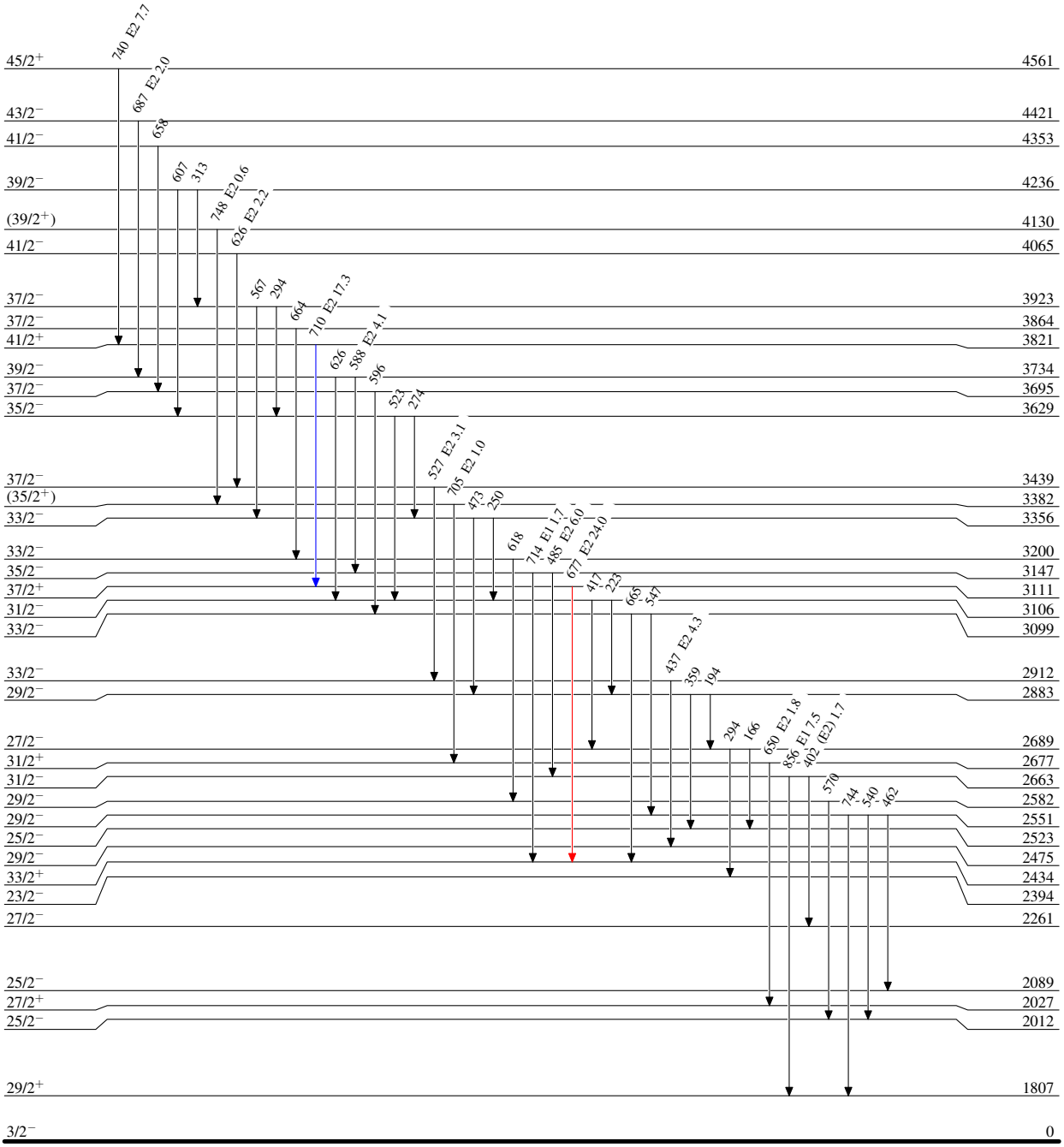
Intensities: Relative I_γ

Legend

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

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

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



1.5 ps +3−6

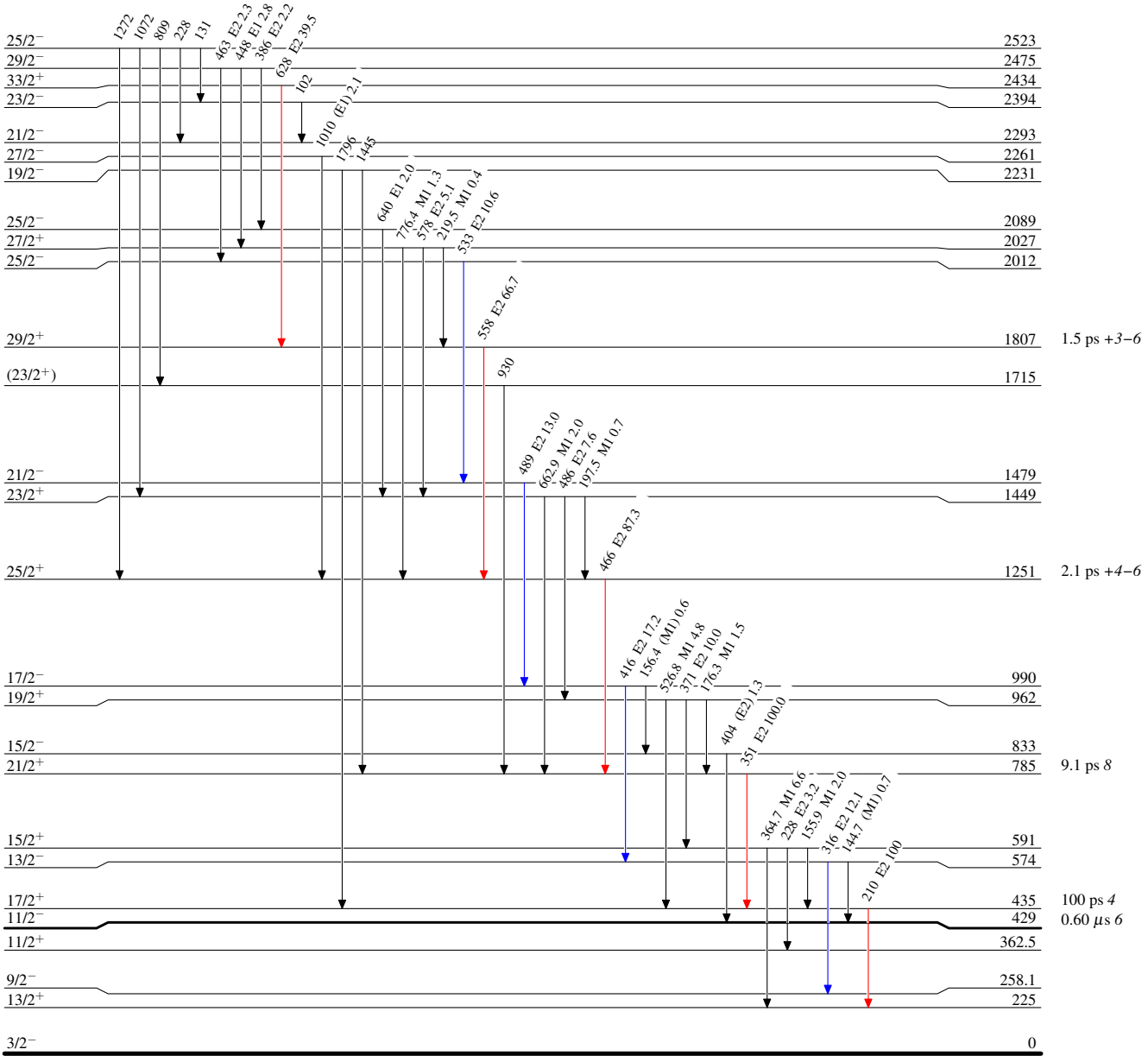
$^{159}_{68}Er_{91}$

(HI,xnγ) 1998Si03,1987De18,1984Si05

Level Scheme (continued)

Intensities: Relative I_γ

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



$^{159}_{68}Er_{91}$

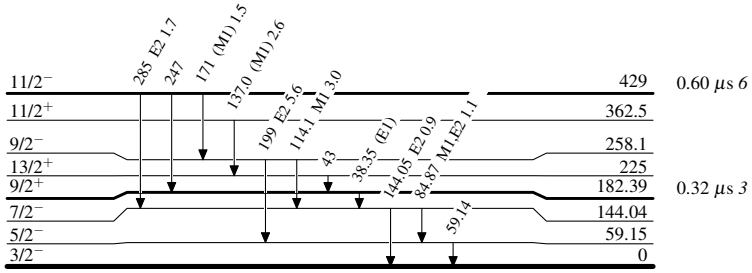
(HI,xnγ) 1998Si03,1987De18,1984Si05

Level Scheme (continued)

Intensities: Relative I_γ

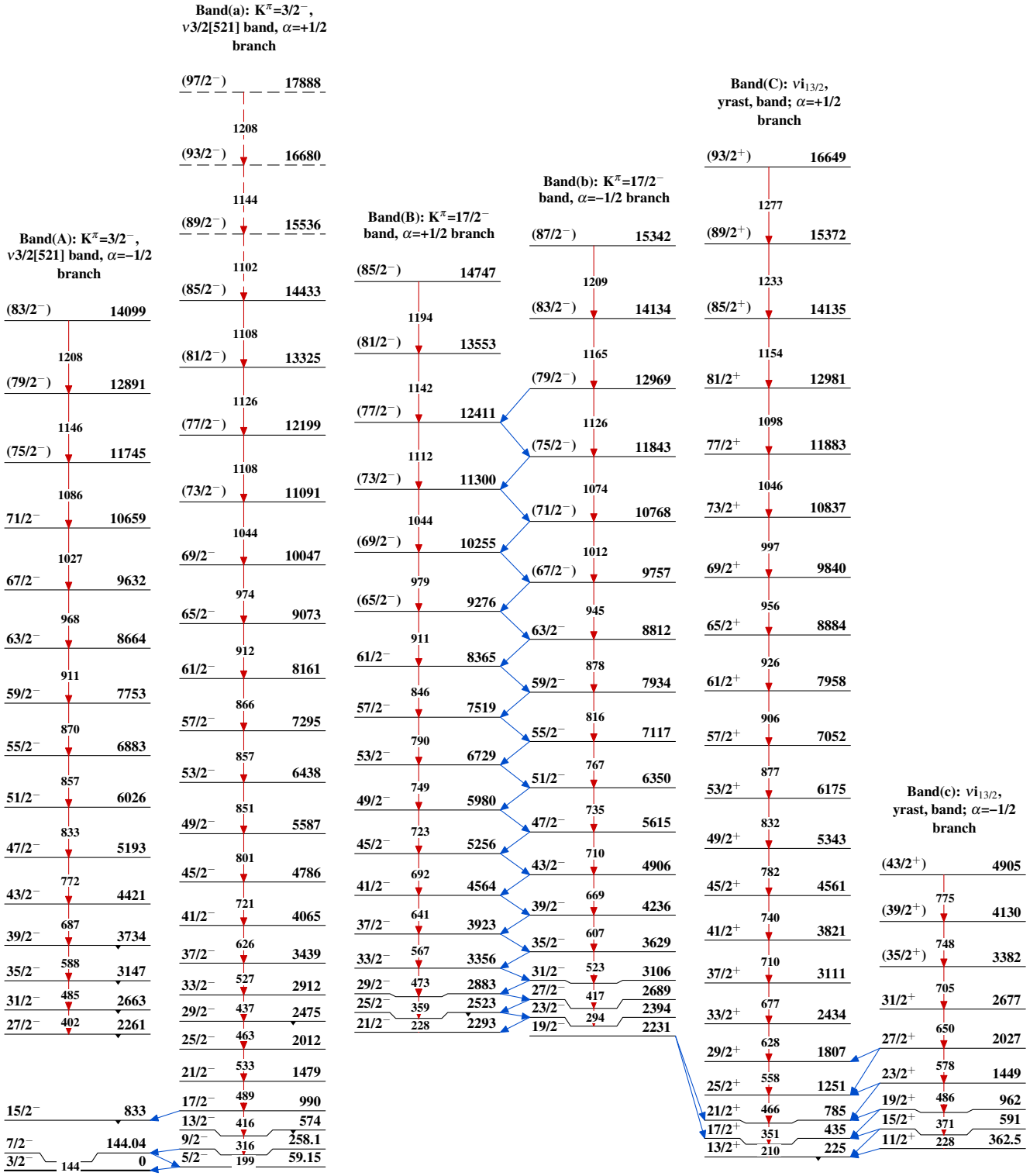
Legend

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



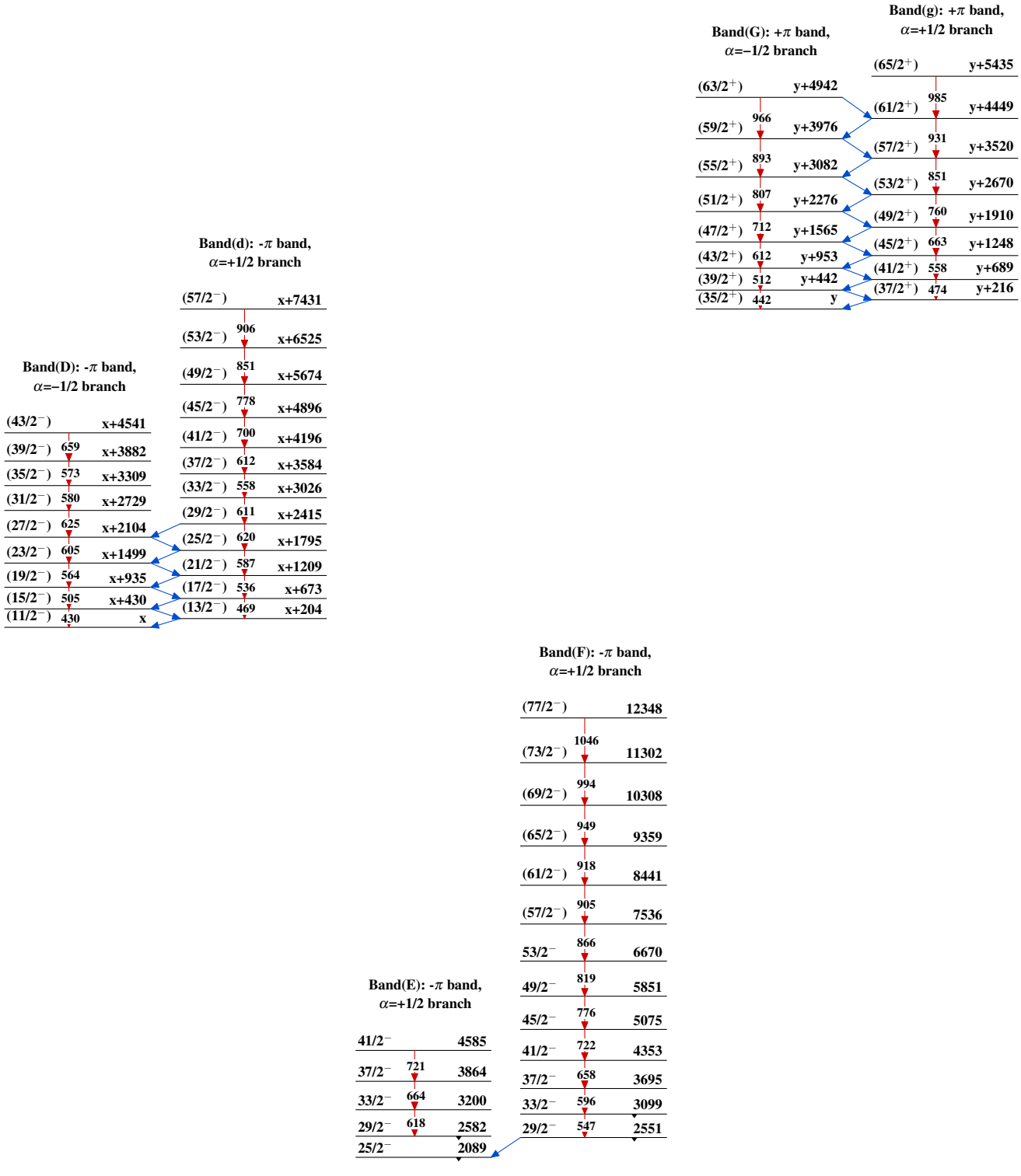
$^{159}_{68}Er_{91}$

(HI,xnγ) 1998Si03,1987De18,1984Si05



$^{159}_{68}Er_{91}$

(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)



$^{159}_{68}Er_{91}$

(HI,xnγ) 1998Si03,1987De18,1984Si05 (continued)

Band(H): $K^{\pi}=11/2^{-}$, ν11/2[505], bandhead

$11/2^{-}$ **429**

$^{159}_{68}Er_{91}$