(HI,xnγ) 1992Ra17

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	N. Nica	NDS 132, 1 (2016)	4-Dec-2015

Scheme is from 1992Ra17, except as noted otherwise.
Experimental methods:

1974Gr01: ^{150}Sm(^{11}B,4nγ) with E(^{11}B)=58 MeV and ^{159}Tb(α,6nγ). γ singles, $\gamma(\theta)$, and $\gamma\gamma$ coincidences measured with Ge detectors. Report 7 levels.

1974GrZI: Progress report, see 1974Gr01 for results.

1976RiZJ: ^{159}Tb(α,6nγ) with E(α)=73 MeV and ^{160}Dy(p,4nγ) with E_p=41 MeV. Measured γ singles and $\gamma\gamma$(t) coincidences; data shown only in level scheme. Lab report. Report levels to 39/2$^-$ in 7/2[523] band.

1984Ha35: ^{146}Nd(^{15}N,4nγ) on enriched (97.5%) target with E(^{15}N)=74 MeV. $\gamma\gamma$ coincidences measured with 4 Compton suppressed Ge detectors and 14 BGO detectors. $\gamma(\theta)$ measured. Report levels to (49/2$^-$) in 7/2[523] band, relative I_γ out of each level, γ mixing ratios, and lifetimes by recoil-distance, Doppler-shift method.

1985Si04: ^{124}Sn(^{37}Cl,4nγ) with E(^{37}Cl)=160 MeV. $\gamma\gamma$ coincidences measured with 6 escape-suppressed Ge and 50 BGO detectors. Report levels from 7/2$^-$ g.s. up to (87/2$^-$) in 7/2[523] band. Authors state that $\gamma(\theta)$ data are consistent with in-band transitions all being stretched E2, but no related data are given.

1986Si01: ^{124}Sn(^{37}Cl,4nγ) with E(^{37}Cl)=160 MeV. $\gamma\gamma$ coincidences measured with 6 escape-suppressed Ge and 50 BGO detectors. Report same negative-parity levels as 1985Si04 plus positive-parity bands from 37/2$^+$ to 81/2$^+$ and from 43/2$^+$ to 83/2$^+$.

1988RaZP, 1988RaZQ, 1988RaZR: Lab reports; see 1992Ra17 for final results.

1990Ga15: ^{124}Sn(^{37}Cl,4nγ) at 150 MeV and ^{142}Ce(^{19}F,4nγ) at 85.5 MeV. Measure lifetimes of several high J levels by Doppler-shift attenuation.

1992Ra17: ^{124}Sn(^{37}Cl,4nγ) at 155 and 165 MeV. Measure $\gamma(\theta)$ with array of 20 Ge detectors and 71 BGO detectors. Report ≈ 380 γ's in 9 or 10 bands.

2012Wa39: ^{124}Sn(^{37}Cl,4nγ) at 177 MeV. Tentatively assigned to ^{157}Ho three collective bands with high dynamic moments of inertia (based on triaxial strongly deformed minima) that appear to bypass and extend beyond band terminating states 87/2$^-$ and 75/2$^-$. These three bands correspond to a similar rotational frequency range as in the ^{158}Er bands and hence a similar spin range. Only the transitions of the strongest band are given (in the gamma ray triple-gated spectrum of Fig. 5).

^{157}Ho Levels

Model calculations and discussions of high-spin levels that are of interest include 1985Ik01, 1985Mu12, 1986Ha41, 1986Ri04, 1988Ha06, 1989Ja06, 1989Yo10, 1990Ta30, 1992BaZN, 1992Ha23, 1992Hs01, and 1995Do10.
Additional information 1.

E(level)[†‡]	J$^\pi$[#]	$T_{1/2}$[@]	E(level)[†‡]	J$^\pi$[#]	$T_{1/2}$[@]
0[b]	7/2$^-$		566.62[e] *19*	11/2$^+$	
53.05[d] *2*	5/2$^+$		610.09[g] *7*	13/2$^+$	
66.96[f] *5*	7/2$^+$		654.45[i] *13*	9/2$^-$	
83.58[c] *3*	9/2$^-$		661.87[h] *14*	(11/2$^+$)	
174.67[h] *15*	(3/2$^+$)		749.28[c] *4*	17/2$^-$	6.1[&] ps *6*
188.08[b] *3*	11/2$^-$	46[&] ps *12*	786.71[d] *23*	13/2$^+$	
203.60[e] *17*	7/2$^+$		832.56[f] *8*	15/2$^+$	
228.13[g] *5*	9/2$^+$		873.40[i] *13*	13/2$^-$	
355.53[c] *4*	13/2$^-$	12.6[&] ps *21*	910.09[j] *24*	15/2$^-$	
358.11[h] *13*	(7/2$^+$)		928.00[b] *4*	19/2$^-$	6.2[&] ps *10*
374.59[d] *18*	9/2$^+$		1002.38[e] *23*	15/2$^+$	
408.17[f] *7*	11/2$^+$		1070.44[g] *8*	17/2$^+$	
503.82[b] *4*	15/2$^-$	10.3[&] ps *15*	1179.63[i] *15*	17/2$^-$	
525.5[i] *4*	5/2$^-$		1238.05[c] *5*	21/2$^-$	1.6[&] ps *4*

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(HI,xnγ) 1992Ra17 (continued)

^{157}Ho Levels (continued)

E(level)[†‡]	Jπ[#]	T$_{1/2}$[@]
1276.0[d] *6*	$(17/2^+)$	
1327.83[f] *9*	$19/2^+$	
1342.45[j] *18*	$19/2^-$	
1440.74[b] *5*	$23/2^-$	2.4[&] ps *6*
1489.2[e] *3*	$19/2^+$	
1569.57[i] *17*	$21/2^-$	
1593.20[g] *9*	$21/2^+$	
1695.58 *17*	$19/2^+$	
1799.40[c] *5*	$25/2^-$	1.5[&] ps *7*
1822.1[d] *8*	$(21/2^+)$	
1852.10[j] *16*	$23/2^-$	
1861.8 *3*	$(19/2^+)$	
1876.35[f] *10*	$23/2^+$	
2022.4[e] *3*	$23/2^+$	
2023.62[b] *5*	$27/2^-$	2.1[&] ps *3*
2036.78[i] *18*	$25/2^-$	
2055.78 *18*	$(21/2^+)$	
2156.93 *23*	$(23/2^+)$	
2160.10[g] *10*	$25/2^+$	
2270.28[k] *13*	$23/2^+$	
2367.59[m] *12*	$25/2^+$	
2369.54[l] *13*	$25/2^+$	
2405.41[j] *12*	$27/2^-$	
2412.72[c] *6*	$29/2^-$	1.5[&] ps *7*
2453.95[f] *10*	$27/2^+$	
2513.53[k] *14*	$27/2^+$	
2554.75[n] *10*	$27/2^+$	
2573.62[i] *21*	$29/2^-$	
2589.7[e] *5*	$(27/2^+)$	
2654.10[b] *6*	$31/2^-$	0.7[&] ps *6*
2692.80[l] *14*	$29/2^+$	
2696.72[o] *11*	$29/2^-$	
2720.95[m] *9*	$29/2^+$	
2740.30[g] *12*	$29/2^+$	
2852.86[p] *8*	$31/2^-$	
2903.48[k] *14*	$31/2^+$	
2927.92[n] *9*	$31/2^+$	
2995.77[f] *11*	$31/2^+$	
3015.59[o] *6*	$33/2^-$	<0.7[&] ps
3076.67[c] *9*	$33/2^-$	
3142.46[l] *15*	$33/2^+$	
3164.23[m] *10*	$33/2^+$	
3173.25[i] *24*	$33/2^-$	1.2[a] ps *+7−5*
3219.66[p] *7*	$35/2^-$	1.5[&] ps *7*
3242.39[g] *11*	$33/2^+$	
3350.23[b] *13*	$35/2^-$	
3406.91[k] *14*	$35/2^+$	
3408.36[n] *10*	$35/2^+$	
3457.20[o] *7*	$37/2^-$	2.6[&] ps *4*
3478.97[f] *11*	$35/2^+$	
3695.05[l] *16*	$37/2^+$	
3708.55[q] *15*	$37/2^-$	
3710.76[m] *11*	$37/2^+$	
3720.96[p] *7*	$39/2^-$	1.0[&] ps *3*
3742.00[g] *12*	$37/2^+$	
3822.9[i] *3*	$37/2^-$	0.18[a] ps *+11−10*
3994.53[n] *12*	$39/2^+$	
3994.56[o] *7*	$41/2^-$	<2.5[&] ps
4000.36[r] *15*	$39/2^-$	
4003.72[k] *17*	$39/2^+$	
4017.53[f] *12*	$39/2^+$	
4310.35[g] *12*	$41/2^+$	
4311.41[p] *8*	$43/2^-$	
4330.69[l] *17*	$41/2^+$	
4334.64[q] *17*	$41/2^-$	
4340.16[m] *15*	$41/2^+$	
4512.7[i] *3*	$41/2^-$	0.38[a] ps *10*
4616.08[f] *12*	$43/2^+$	
4632.50[o] *8*	$45/2^-$	0.19[a] ps *+12−8*
4643.87[r] *20*	$43/2^-$	
4673.68[k] *22*	$43/2^+$	
4684.19[n] *20*	$43/2^+$	
4951.29[g] *14*	$45/2^+$	
4977.46[q] *21*	$45/2^-$	
4993.46[p] *9*	$47/2^-$	0.19[a] ps *+8−9*
5029.44[m] *20*	$45/2^+$	
5031.88[l] *25*	$45/2^+$	
5234.3[i] *4*	$45/2^-$	0.19[a] ps *+10−7*
5291.00[f] *14*	$47/2^+$	
5315.27[r] *23*	$47/2^-$	
5363.20[o] *9*	$49/2^-$	0.14[a] ps *5*
5399.3[k] *3*	$47/2^+$	
5418.3[n] *3*	$47/2^+$	
5655.62[g] *16*	$49/2^+$	
5677.6[q] *3*	$49/2^-$	
5760.50[p] *10*	$51/2^-$	0.23[a] ps *+4−6*
5763.9[m] *3*	$49/2^+$	
5777.0[l] *3*	$49/2^+$	
5986.9[i] *4*	$49/2^-$	0.20[a] ps *+17−14*
6025.69[f] *18*	$51/2^+$	
6045.4[r] *3*	$51/2^-$	
6163.1[k] *3*	$51/2^+$	
6176.6[n] *3*	$51/2^+$	
6178.98[o] *11*	$53/2^-$	0.17[a] ps *6*
6417.00[g] *19*	$53/2^+$	
6451.4[q] *3*	$53/2^-$	

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(HI,xnγ) 1992Ra17 (continued)

^{157}Ho Levels (continued)

E(level)[†‡]	Jπ[#]	$T_{1/2}$[@]
6530.5[m] 3	53/2+	
6557.3[l] 4	53/2+	
6603.36[p] 12	55/2−	0.12[a] ps 3
6782.4[i] 6	53/2−	0.13[a] ps +16−7
6814.67[f] 20	55/2+	
6844.4[r] 3	55/2−	
6961.0[k] 4	55/2+	
6970.8[n] 4	55/2+	
7073.25[o] 15	57/2−	0.12[a] ps +10−5
7231.35[g] 22	57/2+	
7302.8[q] 4	57/2−	
7336.2[m] 4	57/2+	
7377.7[l] 5	57/2+	
7511.79[p] 15	59/2−	0.08[a] ps +5−4
7621.5[i] 9	(57/2−)	
7654.79[f] 25	59/2+	
7715.2[r] 4	59/2−	
7808.3[k] 7	59/2+	
7810.6[n] 7	59/2+	
8044.25[o] 18	61/2−	
8097.5[g] 3	61/2+	
8193.6[m] 4	61/2+	
8232.9[q] 5	61/2−	
8252.5[l] 6	61/2+	
8470.42[p] 17	63/2−	
8510.5[i] 11	(61/2−)	
8546.2[f] 3	63/2+	
8658.8[r] 7	63/2−	
8708.2[n] 12	63/2+	
8713.6[k] 13	(63/2+)	
9015.6[g] 3	65/2+	
9080.1[o] 3	65/2−	
9108.6[m] 5	65/2+	
9192.5[l] 8	65/2+	
9228.0[q] 6	65/2−	
9447.86[p] 21	67/2−	
9449.4[i] 16	(65/2−)	
9489.9[f] 4	67/2+	
9670.7[n] 15	(67/2+)	
9688.4[k] 16	(67/2+)	
9984.7[g] 5	69/2+	
10078.8[m] 7	69/2+	
10149.9[o] 3	69/2−	
10203.4[l] 11	(69/2+)	
10264.9[q] 14	(69/2−)	
10396.66[p] 25	71/2−	
10439.8[i] 19	(69/2−)	
10487.2[f] 4	71/2+	
10683.3[n] 18	(71/2+)	
10734.9?[k] 20	(71/2+)	
11002.0[g] 6	73/2+	
11088.3[m] 8	73/2+	
11189.4 3	75/2−	
11280.6[l] 17	(73/2+)	
11412.5[p] 5	75/2−	
11482.5[i] 27	(73/2−)	
11537.0[f] 5	75/2+	
12055.6[g] 11	77/2+	
12306.6[p] 5	79/2−	
12566.4 13	(79/2−)	
12636.2[f] 8	(79/2+)	
13108.4[g] 22	(81/2+)	
13369.6 6	83/2−	
14507.8 9	87/2−	
15875.7 13	(91/2−)	
x[s]		
1079+x[s]		
2209+x[s]		
3392+x[s]		
4630+x[s]		
5925+x[s]		
7281+x[s]		
8696+x[s]		
10173+x[s]		
11703+x[s]		
13288+x[s]		
14918+x?[s]		

† From 1992Ra17 and based on least-squares analysis of scheme, except for the triaxial collective band of high dynamic moment of inertia (from 2012Wa39).

‡ Additional information 2.

\# From 1992Ra17 and based on analysis of data for whole scheme including γ multipolarities from γ(θ) data and the band structure. Others: 1974Gr01 and 1985Si04.

@ From 1984Ha35 or 1990Ga15 as indicated. Other: 1976RiZJ report that the 83 and 187 γ′s follow, in part, a level with a lifetime of 11 ns. This has not been confirmed. See ^{157}Ho Adopted Levels data for half-lives from other studies. Methods are

Continued on next page (footnotes at end of table)

(HI,xnγ) 1992Ra17 (continued)

^{157}Ho Levels (continued)

recoil-distance Doppler shift (1984Ha35) and Doppler-shift attenuation (1990Ga15).

[&] From 1984Ha35.
[a] From 1990Ga15.
[b] Band(A): Signature=−1/2 sequence. At low spins, the levels can be associated with the 7/2[523] Nilsson orbital.
[c] Band(B): Signature=+1/2 sequence. At low spins, the levels can be associated with the 7/2[523] Nilsson orbital.
[d] Band(C): Signature=+1/2 sequence. At low spins, the levels can be associated with the 5/2[402] Nilsson orbital.
[e] Band(D): Signature=−1/2 sequence. At low spins, the levels can be associated with the 5/2[402] Nilsson orbital.
[f] Band(E): Signature=−1/2 sequence. At low spins, the levels can be associated with the 7/2[404] Nilsson orbital.
[g] Band(F): Signature=+1/2 sequence. At low spins, the levels can be associated with the 7/2[404] Nilsson orbital.
[h] Band(G): Signature=−1/2 sequence. At low spins, the levels can be associated with the 3/2[411] or 1/2[411] Nilsson orbital.
[i] Band(H): Signature=+1/2 sequence. At low spins, the levels can be associated with the 1/2[541] Nilsson orbital.
[j] Band(I): Signature=−1/2 sequence. At low spins, the levels can be associated with the 5/2[532] Nilsson orbital.
[k] Band(J): Signature=−1/2 sequence of band A, positive-parity.
[l] Band(K): Signature=+1/2 sequence of band A, positive-parity.
[m] Band(L): Signature=+1/2 sequence of band B, positive-parity.
[n] Band(M): Signature=−1/2 sequence of band B, positive-parity.
[o] Band(N): Signature=+1/2 sequence of band C, negative-parity.
[p] Band(O): Signature=−1/2 sequence of band C, negative-parity.
[q] Band(P): Signature=+1/2 sequence of band D, negative-parity.
[r] Band(Q): Signature=−1/2 sequence of band D, negative-parity.
[s] Band(R): Triaxial collective band of high dynamic moments of inertia tentatively assigned to ^{157}Ho (2012Wa39). Because of its tentative assignment it was not included in the Adopted Levels, Gamma dataset.

$\gamma(^{157}Ho)$

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	Comments
53.05 *2*		53.05	5/2$^+$	0	7/2$^-$			E_γ: from ^{157}Er ε decay.
66.96 *7*	12.3[&] *15*	66.96	7/2$^+$	0	7/2$^-$	E1		
83.58 *3*	71[&] *4*	83.58	9/2$^-$	0	7/2$^-$	M1+E2	+0.16 *4*	
99.26 *6*	5.5 *5*	2369.54	25/2$^+$	2270.28	23/2$^+$	M1		
104.49 *3*	99 *5*	188.08	11/2$^-$	83.58	9/2$^-$	M1+E2	+0.15 *5*	
107.0 *5*	0.46 *12*	3457.20	37/2$^-$	3350.23	35/2$^-$	M1		
121.57 *11*	1.03[&] *13*	174.67	(3/2$^+$)	53.05	5/2$^+$	(M1)		
128.9 *5*	0.13 *4*	654.45	9/2$^-$	525.5	5/2$^-$	E2		
129.98 *16*	0.69 *12*	358.11	(7/2$^+$)	228.13	9/2$^+$	(M1)		
143.0 *4*	0.64 *12*	3219.66	35/2$^-$	3076.67	33/2$^-$	M1		
143.99 *5*	7.4 *4*	2513.53	27/2$^+$	2369.54	25/2$^+$	M1		
144.55 *13*	2.8 *4*	228.13	9/2$^+$	83.58	9/2$^-$	E1		
148.29 *3*	97 *4*	503.82	15/2$^-$	355.53	13/2$^-$	M1+E2	+0.17 *4*	δ: 0.22 *2* (1984Ha35), +0.16 *3* (1992Ra17).
150.50 *8*	3.9[&] *4*	203.60	7/2$^+$	53.05	5/2$^+$	M1		
154.51 *20*	0.54 *8*	358.11	(7/2$^+$)	203.60	7/2$^+$	(M1)		
156.15 *11*	2.54 *21*	2852.86	31/2$^-$	2696.72	29/2$^-$	M1		
161.17 *6*	9.0 *8*	228.13	9/2$^+$	66.96	7/2$^+$	M1		
162.72 *7*	4.48 *24*	3015.59	33/2$^-$	2852.86	31/2$^-$	M1		
166.20 *10*	3.3 *3*	2720.95	29/2$^+$	2554.75	27/2$^+$	M1		
167.45 *3*	139 *5*	355.53	13/2$^-$	188.08	11/2$^-$	M1+E2	+0.24 *4*	δ: 0.27 *2* (1984Ha35), +0.21 *3* (1992Ra17).
170.99 *9*	2.9 *3*	374.59	9/2$^+$	203.60	7/2$^+$	M1		
178.72 *3*	54.2 *17*	928.00	19/2$^-$	749.28	17/2$^-$	M1+E2	+0.19 *4*	
179.27 *8*	4.6 *3*	2692.80	29/2$^+$	2513.53	27/2$^+$	M1		
180.04 *9*	4.4 *3*	408.17	11/2$^+$	228.13	9/2$^+$	M1		
183.44 *9*	1.34 *18*	358.11	(7/2$^+$)	174.67	(3/2$^+$)	E2		

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(HI,xnγ) 1992Ra17 (continued)

γ(^{157}Ho) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	Comments
187.16 8	4.4 3	2554.75	27/2+	2367.59	25/2+	M1		
187.62[a] 25	1.26 25	2927.92	31/2+	2740.30	29/2+	M1		
188.08 5	15.0 7	188.08	11/2−	0	7/2−	E2		
192.03 10	2.22 21	566.62	11/2+	374.59	9/2+	M1		
201.92 11	3.25 22	610.09	13/2+	408.17	11/2+	M1		
202.69 4	32.4 11	1440.74	23/2−	1238.05	21/2−	M1+E2	+0.15 3	δ: 0.17 3 (1984Ha35), +0.13 5 (1992Ra17).
204.7 3	35.4 12	3219.66	35/2−	3015.59	33/2−	M1+E2	+0.05 6	δ: 0.07 7 (1984Ha35), +0.04 5 (1992Ra17).
206.97 5	12.5 5	2927.92	31/2+	2720.95	29/2+	M1		
210.68 9	4.17 22	2903.48	31/2+	2692.80	29/2+	M1		
210.7 4	0.94 14	2367.59	25/2+	2156.93	(23/2+)	(M1)		
211.52 9	2.75 18	873.40	13/2−	661.87	(11/2+)	(E1)		
214.50 13	1.42 13	2270.28	23/2+	2055.78	(21/2+)	(M1)		
215.66 16	1.33 13	1002.38	15/2+	786.71	13/2+	M1		
218.94 6	4.10 20	873.40	13/2−	654.45	9/2−	E2		
220.10 20	1.11 14	786.71	13/2+	566.62	11/2+	M1		
222.46 13	2.46 19	832.56	15/2+	610.09	13/2+	M1		
223.8 4	1.28 24	3076.67	33/2−	2852.86	31/2−	M1		
224.22 4	20.1 7	2023.62	27/2−	1799.40	25/2−	M1+E2	+0.10 4	
228.13 10	4.7 5	228.13	9/2+	0	7/2−	E1		
236.31 7	8.5 4	3164.23	33/2+	2927.92	31/2+	M1		
236.58 20	2.72 25	3478.97	35/2+	3242.39	33/2+	M1		
237.54 3	54.2 17	3457.20	37/2−	3219.66	35/2−	M1+E2	+0.08 6	
237.9 5	0.88 20	1070.44	17/2+	832.56	15/2+	M1		
238.99 20	1.67 15	3142.46	33/2+	2903.48	31/2+	M1		
241.38 4	14.0 5	2654.10	31/2−	2412.72	29/2−	M1+E2	+0.11 3	δ: 0.13 3 (1984Ha35), +0.09 3 (1992Ra17).
243.24 14	3.14 20	2513.53	27/2+	2270.28	23/2+	E2		
244.13 7	7.7 4	3408.36	35/2+	3164.23	33/2+	M1		
245.46 3	81 3	749.28	17/2−	503.82	15/2−	M1+E2	+0.24 4	
246.62 12	3.47 23	3242.39	33/2+	2995.77	31/2+	M1		
246.7 3	1.17 14	10396.66	71/2−	10149.9	69/2−	M1		
255.47 21	1.63 13	2995.77	31/2+	2740.30	29/2+	M1		
257.39 17	1.97 15	1327.83	19/2+	1070.44	17/2+	M1		
263.02 15	2.54 20	3742.00	37/2+	3478.97	35/2+	M1		
263.76 3	41.1 13	3720.96	39/2−	3457.20	37/2−	M1+E2	+0.09 3	
264.5 4	1.01 16	3406.91	35/2+	3142.46	33/2+	M1		
265.37 22	2.28 21	1593.20	21/2+	1327.83	19/2+	M1		
267.00 16	2.06 15	2720.95	29/2+	2453.95	27/2+	M1		
271.94 4	49.3 17	355.53	13/2−	83.58	9/2−	E2		
273.5 3	2.5 3	3350.23	35/2−	3076.67	33/2−	M1		
273.60 4	36.6 12	3994.56	41/2−	3720.96	39/2−	M1+E2	+0.08 6	
275.54 13	3.05 18	4017.53	39/2+	3742.00	37/2+	M1		
283.15 25	1.69 19	1876.35	23/2+	1593.20	21/2+	M1		
283.77 14	3.40 22	3994.53	39/2+	3710.76	37/2+	M1		
283.8 3	1.91 23	2160.10	25/2+	1876.35	23/2+	M1		
286.4 4	0.95 14	2740.30	29/2+	2453.95	27/2+	M1		
288.1 6	0.51 10	3695.05	37/2+	3406.91	35/2+	M1		
291.30 13	3.6 3	2696.72	29/2−	2405.41	27/2−	M1		
291.82 15	2.63 22	4000.36	39/2−	3708.55	37/2−	M1		
292.81 16	2.67 22	4310.35	41/2+	4017.53	39/2+	M1		
293.85 20	2.13 19	2453.95	27/2+	2160.10	25/2+	M1		
296.34 7	3.5 3	654.45	9/2−	358.11	(7/2+)	(E1)		
302.40 10	4.52 23	3710.76	37/2+	3408.36	35/2+	M1		
303.76 11	2.9 4	661.87	(11/2+)	358.11	(7/2+)	E2		

Continued on next page (footnotes at end of table)

(HI,xnγ) 1992Ra17 (continued)

γ(^{157}Ho) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	Comments
303.9 6	0.75 16	3710.76	37/2+	3406.91	35/2+	M1		
305.0[ac] 4	0.46 12	358.11	(7/2+)	53.05	5/2+	(M1)		
305.74 13	3.29 19	4616.08	43/2+	4310.35	41/2+	M1		
306.23 7	9.2 4	1179.63	17/2−	873.40	13/2−	E2		
306.8 3	0.77 8	873.40	13/2−	566.62	11/2+	E1		
308.7[ac] 7	0.60 14	4003.72	39/2+	3695.05	37/2+	M1		
309.23 22	2.19 23	4643.87	43/2−	4334.64	41/2−	M1		
310.05 4	47.9 15	1238.05	21/2−	928.00	19/2−	M1+E2	+0.24 5	δ: 0.28 2 (1984Ha35), +0.20 6 (1992Ra17).
315.74 4	98 3	503.82	15/2−	188.08	11/2−	E2		
315.8[a] 4	2.0 5	4310.35	41/2+	3994.53	39/2+	M1		
316.85 4	31.9 10	4311.41	43/2−	3994.56	41/2−	M1		
318.9 3	2.16 19	3015.59	33/2−	2696.72	29/2−	E2		
321.09 4	21.0 7	4632.50	45/2−	4311.41	43/2−	M1+E2	+0.11 6	
321.5 7	1.08 22	374.59	9/2+	53.05	5/2+	E2		
322.6[a] 6	0.95 25	4340.16	41/2+	4017.53	39/2+	M1		
323.26 7	8.4 4	2692.80	29/2+	2369.54	25/2+	E2		
324.58 21	3.7 4	408.17	11/2+	83.58	9/2−	E1		
327.0[ac] 6	0.72 18	4330.69	41/2+	4003.72	39/2+	M1		
333.59 13	3.7 3	4977.46	45/2−	4643.87	43/2−	M1		
334.27 20	3.0 4	4334.64	41/2−	4000.36	39/2−	M1		
335.21 15	2.99 20	4951.29	45/2+	4616.08	43/2+	M1		
337.81 16	2.77 18	5315.27	47/2−	4977.46	45/2−	M1		
339.71 13	4.02 23	5291.00	47/2+	4951.29	45/2+	M1		
341.21 10	7.9 6	408.17	11/2+	66.96	7/2+	E2		
343.0[a] 8	0.46 12	4673.68	43/2+	4330.69	41/2+	M1		
344.02 23	2.00 23	4684.19	43/2+	4340.16	41/2+	M1		
345.3[a] 6	0.7 7	5029.44	45/2+	4684.19	43/2+	M1		
345.6 3	2.8 6	5763.9	49/2+	5418.3	47/2+	M1		
345.64 18	4.0 6	4340.16	41/2+	3994.53	39/2+	M1		
350.8[ac] 6	0.24 20	525.5	5/2−	174.67	(3/2+)	(E1)		
353.4 3	1.76 21	2720.95	29/2+	2367.59	25/2+	E2		
353.9 5	1.26 16	6530.5	53/2+	6176.6	51/2+	M1		
358.1 5	0.39 12	358.11	(7/2+)	0	7/2−	(E1)		
358.32 21	3.4 3	3708.55	37/2−	3350.23	35/2−	M1		
358.66 4	36.1 12	1799.40	25/2−	1440.74	23/2−	M1+E2	+0.18 4	δ: 0.20 4 (1984Ha35), +0.17 3 (1992Ra17).
360.96 8	14.6 6	4993.46	47/2−	4632.50	45/2−	M1		
361.48 5	35.7 12	3015.59	33/2−	2654.10	31/2−	M1+E2	+0.12 2	
362.3 4	1.27 24	5677.6	49/2−	5315.27	47/2−	M1		
363.0 3	1.55 21	566.62	11/2+	203.60	7/2+	E2		
364.61 25	2.31 21	5655.62	49/2+	5291.00	47/2+	M1		
365.3 4	1.19 16	7336.2	57/2+	6970.8	55/2+	M1		
366.79 9	10.0 4	3219.66	35/2−	2852.86	31/2−	E2		
367.7 3	1.99 21	9447.86	67/2−	9080.1	65/2−	M1		
367.9 3	2.22 25	6045.4	51/2−	5677.6	49/2−	M1		
369.73 6	12.8 5	5363.20	49/2−	4993.46	47/2−	M1+E2	−0.09 13	
370.1 4	1.31 20	6025.69	51/2+	5655.62	49/2+	M1		
373.17 7	10.1 4	2927.92	31/2+	2554.75	27/2+	E2		
380.0 12	0.72 20	3076.67	33/2−	2696.72	29/2−	E2		
380.52 18	4.0 3	3457.20	37/2−	3076.67	33/2−	E2		
381.8 6	0.89 22	2405.41	27/2−	2023.62	27/2−	M1		
381.96 7	12.1 6	610.09	13/2+	228.13	9/2+	E2		
388.9 6	1.8 3	5418.3	47/2+	5029.44	45/2+	M1		
389.10 5	26.5 9	2412.72	29/2−	2023.62	27/2−	M1		
389.94 7	10.0 4	1569.57	21/2−	1179.63	17/2−	E2		
389.95 7	13.8 6	2903.48	31/2+	2513.53	27/2+	E2		

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(HI,xnγ) 1992Ra17 (continued)

γ(^{157}Ho) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [#]	δ [@]
391.3 *4*	2.10 *23*	6417.00	53/2+	6025.69	51/2+	M1	
393.0 *5*	2.0 *3*	6844.4	55/2−	6451.4	53/2−	M1	
393.75 *4*	80.1 *25*	749.28	17/2−	355.53	13/2−	E2	
397.31 *7*	11.1 *4*	5760.50	51/2−	5363.20	49/2−	M1+E2	+0.15 *8*
397.7 *5*	1.10 *20*	6814.67	55/2+	6417.00	53/2+	M1	
397.8 *4*	1.61 *19*	2554.75	27/2+	2156.93	(23/2+)	(E2)	
406.0 *3*	1.80 *21*	6451.4	53/2−	6045.4	51/2−	M1	
406.3 *4*	2.1 *5*	910.09	15/2−	503.82	15/2−	M1	
408.47 *24*	1.36 *15*	2270.28	23/2+	1861.8	(19/2+)	(E2)	
411.4 *3*	2.5 *3*	1852.10	23/2−	1440.74	23/2−	M1	
412.1 *3*	1.53 *21*	786.71	13/2+	374.59	9/2+	E2	
412.5 *4*	1.59 *23*	7715.2	59/2−	7302.8	57/2−	M1	
412.8 *3*	2.29 *23*	6176.6	51/2+	5763.9	49/2+	M1	
414.4 *3*	3.0 *4*	1342.45	19/2−	928.00	19/2−	M1	
416.7 *4*	1.50 *19*	7231.35	57/2+	6814.67	55/2+	M1	
418.48 *8*	7.2 *3*	6178.98	53/2−	5760.50	51/2−	M1+E2	+0.12 *12*
422.02 *22*	4.5 *4*	610.09	13/2+	188.08	11/2−	E1	
422.57 *21*	5.2 *4*	3076.67	33/2−	2654.10	31/2−	M1	
423.5 *5*	1.6 *3*	7654.79	59/2+	7231.35	57/2+	M1	
424.18 *4*	156 *5*	928.00	19/2−	503.82	15/2−	E2	
424.38 *19*	7.8 *5*	6603.36	55/2−	6178.98	53/2−	M1	
424.39 *10*	11.2 *7*	832.56	15/2+	408.17	11/2+	E2	
426.18 *15*	4.3 *3*	8470.42	63/2−	8044.25	61/2−	M1	
432.4 *3*	2.8 *4*	1342.45	19/2−	910.09	15/2−	E2	
435.76 *20*	2.58 *23*	1002.38	15/2+	566.62	11/2+	E2	
438.54 *13*	4.69 *24*	7511.79	59/2−	7073.25	57/2−	M1	
440.1 *3*	2.9 *3*	2852.86	31/2−	2412.72	29/2−	M1	
440.4 *5*	1.65 *25*	6970.8	55/2+	6530.5	53/2+	M1	
441.61 *4*	33.9 *11*	3457.20	37/2−	3015.59	33/2−	E2	
442.7 *8*	1.2 *3*	8097.5	61/2+	7654.79	59/2+	M1	
443.27 *9*	14.2 *6*	3164.23	33/2+	2720.95	29/2+	E2	
447.45 *14*	5.9 *4*	2852.86	31/2−	2405.41	27/2−	E2	
448.7[c] *8*	0.76 *20*	8546.2	63/2+	8097.5	61/2+	M1	
449.66 *7*	11.6 *5*	3142.46	33/2+	2692.80	29/2+	E2	
458.3[ac] *13*	0.46 *18*	7302.8	57/2−	6844.4	55/2−	M1	
460.35 *6*	15.4 *7*	1070.44	17/2+	610.09	13/2+	E2	
463.4[a] *3*	2.8 *5*	3478.97	35/2+	3015.59	33/2−	E1	
467.21 *7*	8.2 *3*	2036.78	25/2−	1569.57	21/2−	E2	
469.4[c] *14*	0.54 *20*	9015.6	65/2+	8546.2	63/2+	M1	
469.89 *20*	2.93 *22*	7073.25	57/2−	6603.36	55/2−	M1+E2	+0.18 *10*
470.9 *3*	1.55 *17*	2270.28	23/2+	1799.40	25/2−	E1	
474.4 *6*	1.27 *16*	9489.9	67/2+	9015.6	65/2+	M1	
477.03 *20*	4.2 *3*	832.56	15/2+	355.53	13/2−	E1	
479.0[c] *6*	2.2 *3*	3406.91	35/2+	2927.92	31/2+	E2	
480.44 *7*	14.4 *6*	3408.36	35/2+	2927.92	31/2+	E2	
483.20 *9*	10.0 *4*	3478.97	35/2+	2995.77	31/2+	E2	
486.81 *20*	3.3 *3*	1489.2	19/2+	1002.38	15/2+	E2	
488.77 *4*	72.8 *23*	1238.05	21/2−	749.28	17/2−	E2	
489.3 *6*	1.1 *3*	1276.0	(17/2+)	786.71	13/2+	(E2)	
495.27 *7*	15.8 *7*	1327.83	19/2+	832.56	15/2+	E2	
497.4 *6*	1.6 *3*	3350.23	35/2−	2852.86	31/2−	E2	
499.60 *11*	9.5 *5*	3742.00	37/2+	3242.39	33/2+	E2	
501.30 *5*	38.4 *13*	3720.96	39/2−	3219.66	35/2−	E2	
502.09 *12*	9.9 *6*	3242.39	33/2+	2740.30	29/2+	E2	
503.43 *9*	12.3 *6*	3406.91	35/2+	2903.48	31/2+	E2	

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(HI,xnγ) 1992Ra17 (continued)

γ(^{157}Ho) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]
504.88 *25*	3.3 *3*	3408.36	35/2+	2903.48	31/2+	E2
509.66 *19*	8.0 *6*	1852.10	23/2−	1342.45	19/2−	E2
512.74 *3*	159 *5*	1440.74	23/2−	928.00	19/2−	E2
515.5 *3*	3.2 *3*	3994.53	39/2+	3478.97	35/2+	E2
517.7[ac] *10*	0.52 *22*	8232.9	61/2−	7715.2	59/2−	M1
517.87 *20*	1.72 *17*	873.40	13/2−	355.53	13/2−	M1
522.3[a] *5*	1.9 *5*	3742.00	37/2+	3219.66	35/2−	E1
522.76 *7*	17.3 *8*	1593.20	21/2+	1070.44	17/2+	E2
532.4 *5*	1.61 *13*	2554.75	27/2+	2022.4	23/2+	E2
532.5[a] *7*	1.24 *25*	8044.25	61/2−	7511.79	59/2−	M1
533.2 *3*	2.5 *3*	2022.4	23/2+	1489.2	19/2+	E2
536.84 *11*	6.8 *3*	2573.62	29/2−	2036.78	25/2−	E2
537.37 *4*	47.3 *15*	3994.56	41/2−	3457.20	37/2−	E2
538.56 *16*	6.9 *4*	4017.53	39/2+	3478.97	35/2+	E2
541.82 *9*	11.4 *6*	2995.77	31/2+	2453.95	27/2+	E2
546.1 *5*	1.40 *24*	1822.1	(21/2+)	1276.0	(17/2+)	(E2)
546.53 *12*	9.1 *4*	3710.76	37/2+	3164.23	33/2+	E2
548.52 *8*	15.6 *7*	1876.35	23/2+	1327.83	19/2+	E2
552.59 *9*	11.5 *5*	3695.05	37/2+	3142.46	33/2+	E2
553.31 *20*	6.5 *5*	2405.41	27/2−	1852.10	23/2−	E2
554.6[ac] *8*	1.6 *5*	910.09	15/2−	355.53	13/2−	M1
560.85 *13*	10.4 *6*	2720.95	29/2+	2160.10	25/2+	E2
561.34 *4*	70.4 *22*	1799.40	25/2−	1238.05	21/2−	E2
565.56 *4*	53.2 *17*	3219.66	35/2−	2654.10	31/2−	E2
566.6 *5*	4.3 *4*	1070.44	17/2+	503.82	15/2−	E1
566.90 *11*	22.3 *10*	2160.10	25/2+	1593.20	21/2+	E2
567.3 *4*	2.2 *3*	2589.7	(27/2+)	2022.4	23/2+	(E2)
568.35 *11*	12.4 *6*	4310.35	41/2+	3742.00	37/2+	E2
574.71 *13*	4.6 *4*	2270.28	23/2+	1695.58	19/2+	E2
577.60 *11*	15.7 *8*	2453.95	27/2+	1876.35	23/2+	E2
578.5 *5*	3.0 *3*	1327.83	19/2+	749.28	17/2−	E1
580.20 *14*	10.2 *7*	2740.30	29/2+	2160.10	25/2+	E2
582.88 *4*	132 *4*	2023.62	27/2−	1440.74	23/2−	E2
586.17 *15*	10.1 *5*	3994.53	39/2+	3408.36	35/2+	E2
587.6 *3*	3.9 *3*	3994.53	39/2+	3406.91	35/2+	E2
588.3 *5*	3.0 *4*	3242.39	33/2+	2654.10	31/2−	E1
590.45 *5*	34.4 *11*	4311.41	43/2−	3720.96	39/2−	E2
593.2 *7*	2.4 *5*	1342.45	19/2−	749.28	17/2−	M1
595.4 *3*	3.8 *3*	4003.72	39/2+	3408.36	35/2+	E2
596.81 *14*	9.7 *5*	4003.72	39/2+	3406.91	35/2+	E2
598.55 *12*	11.8 *6*	4616.08	43/2+	4017.53	39/2+	E2
599.63 *12*	6.6 *3*	3173.25	33/2−	2573.62	29/2−	E2
602.87 *5*	44.7 *15*	3015.59	33/2−	2412.72	29/2−	E2
606.0[ac] *4*	4.1 *8*	2405.41	27/2−	1799.40	25/2−	M1
609.18 *19*	4.0 *4*	4017.53	39/2+	3408.36	35/2+	E2
610.6 *6*	2.7 *3*	4017.53	39/2+	3406.91	35/2+	E2
613.32 *5*	60.0 *20*	2412.72	29/2−	1799.40	25/2−	E2
614.0[ac] *12*	1.6 *6*	1852.10	23/2−	1238.05	21/2−	M1
621.56 *18*	6.7 *4*	4616.08	43/2+	3994.53	39/2+	E2
626.09 *13*	11.5 *5*	4334.64	41/2−	3708.55	37/2−	E2
629.40 *18*	8.1 *5*	4340.16	41/2+	3710.76	37/2+	E2
630.48 *4*	103 *3*	2654.10	31/2−	2023.62	27/2−	E2
631.87 *19*	8.7 *7*	3708.55	37/2−	3076.67	33/2−	E2
635.64 *11*	12.0 *5*	4330.69	41/2+	3695.05	37/2+	E2
637.94 *5*	42.9 *14*	4632.50	45/2−	3994.56	41/2−	E2

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(HI,xnγ) 1992Ra17 (continued)

γ(^{157}Ho) (continued)

Eγ[†]	Iγ[‡]	Ei(level)	J_i^π	Ef	J_f^π	Mult.[#]
638.3 6	3.3 4	1876.35	23/2+	1238.05	21/2−	E1
639.9 3	5.7 4	4951.29	45/2+	4311.41	43/2−	E1
640.95 15	10.4 5	4951.29	45/2+	4310.35	41/2+	E2
642.8 3	6.5 6	4977.46	45/2−	4334.64	41/2−	E2
643.51 22	7.8 6	4643.87	43/2−	4000.36	39/2−	E2
649.69 14	5.0 3	3822.9	37/2−	3173.25	33/2−	E2
650.14 14	8.4 5	4000.36	39/2−	3350.23	35/2−	E2
654.5 4	3.2 3	2453.95	27/2+	1799.40	25/2−	E1
658.5 3	2.96 24	5291.00	47/2+	4632.50	45/2−	E1
663.96 10	18.3 8	3076.67	33/2−	2412.72	29/2−	E2
665.2 3	6.3 5	1593.20	21/2+	928.00	19/2−	E1
666.7 6	2.6 4	4684.19	43/2+	4017.53	39/2+	E2
669.96 14	10.0 5	4673.68	43/2+	4003.72	39/2+	E2
671.4 3	4.0 4	5315.27	47/2−	4643.87	43/2−	E2
674.92 10	15.2 6	5291.00	47/2+	4616.08	43/2+	E2
682.05 6	26.7 9	4993.46	47/2−	4311.41	43/2−	E2
689.3 3	7.1 7	5029.44	45/2+	4340.16	41/2+	E2
689.7 3	7.8 8	4684.19	43/2+	3994.53	39/2+	E2
689.74 17	4.7 3	4512.7	41/2−	3822.9	37/2−	E2
691.7 4	4.1 4	5031.88	45/2+	4340.16	41/2+	E2
693.0[ac] 9	1.6 4	3708.55	37/2−	3015.59	33/2−	E2
696.13 15	14.1 8	3350.23	35/2−	2654.10	31/2−	E2
697.33 19	8.1 5	2720.95	29/2+	2023.62	27/2−	E1
698.74 24	5.3 4	5029.44	45/2+	4330.69	41/2+	E2
700.13 25	5.2 4	5677.6	49/2−	4977.46	45/2−	E2
701.2 3	4.7 4	5031.88	45/2+	4330.69	41/2+	E2
704.32 10	15.3 6	5655.62	49/2+	4951.29	45/2+	E2
716.7 7	1.9 3	2740.30	29/2+	2023.62	27/2−	E1
719.4 3	6.4 5	2160.10	25/2+	1440.74	23/2−	E1
721.58 20	3.87 23	5234.3	45/2−	4512.7	41/2−	E2
722.0[ac] 15	0.5 5	910.09	15/2−	188.08	11/2−	E2
725.60 14	10.0 5	5399.3	47/2+	4673.68	43/2+	E2
730.2 4	5.3 5	6045.4	51/2−	5315.27	47/2−	E2
730.69 6	35.1 12	5363.20	49/2−	4632.50	45/2−	E2
732.0 9	1.6 4	5763.9	49/2+	5031.88	45/2+	E2
734.1 3	10.3 11	5418.3	47/2+	4684.19	43/2+	E2
734.4 3	8.6 9	5763.9	49/2+	5029.44	45/2+	E2
734.69 13	15.5 8	6025.69	51/2+	5291.00	47/2+	E2
745.1 3	5.6 4	5777.0	49/2+	5031.88	45/2+	E2
747.6 5	2.3 3	5777.0	49/2+	5029.44	45/2+	E2
752.64 22	3.28 22	5986.9	49/2−	5234.3	45/2−	E2
755.3 3	5.1 4	2554.75	27/2+	1799.40	25/2−	E1
758.32 25	7.0 5	6176.6	51/2+	5418.3	47/2+	E2
761.39 13	12.5 6	6417.00	53/2+	5655.62	49/2+	E2
763.78 20	7.4 4	6163.1	51/2+	5399.3	47/2+	E2
766.60 25	6.9 5	6530.5	53/2+	5763.9	49/2+	E2
767.04 7	24.5 9	5760.50	51/2−	4993.46	47/2−	E2
767.6 7	4.7 7	1695.58	19/2+	928.00	19/2−	E1
773.83 16	6.0 4	6451.4	53/2−	5677.6	49/2−	E2
774.4 9	2.3 3	2367.59	25/2+	1593.20	21/2+	E2
780.30 20	7.0 4	6557.3	53/2+	5777.0	49/2+	E2
788.97 13	14.0 6	6814.67	55/2+	6025.69	51/2+	E2
792.78 20	6.5 4	11189.4	75/2−	10396.66	71/2−	E2
794.2 4	4.8 4	6970.8	55/2+	6176.6	51/2+	E2
795.5 4	1.89 21	6782.4	53/2−	5986.9	49/2−	E2

Continued on next page (footnotes at end of table)

(HI,xnγ) 1992Ra17 (continued)

γ(^{157}Ho) (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]
797.95 *22*	6.8 *4*	6961.0	55/2+	6163.1	51/2+	E2
799.0 *3*	5.0 *4*	6844.4	55/2−	6045.4	51/2−	E2
805.70 *19*	7.6 *4*	7336.2	57/2+	6530.5	53/2+	E2
814.34 *15*	12.0 *6*	7231.35	57/2+	6417.00	53/2+	E2
815.79 *8*	26.0 *9*	6178.98	53/2−	5363.20	49/2−	E2
820.4 *3*	5.3 *4*	7377.7	57/2+	6557.3	53/2+	E2
829.25 *20*	9.9 *6*	2852.86	31/2−	2023.62	27/2−	E2
829.5 *5*	1.75 *23*	2270.28	23/2+	1440.74	23/2−	E1
837.5 *14*	1.1 *3*	7808.3	59/2+	6970.8	55/2+	E2
838.6[ac] *9*	3.5 *10*	1342.45	19/2−	503.82	15/2−	E2
839.1 *6*	1.58 *23*	7621.5	(57/2−)	6782.4	53/2−	(E2)
839.8 *8*	2.0 *5*	7810.6	59/2+	6970.8	55/2+	E2
840.12 *19*	11.6 *6*	7654.79	59/2+	6814.67	55/2+	E2
842.86 *9*	21.2 *8*	6603.36	55/2−	5760.50	51/2−	E2
847.3 *7*	1.8 *3*	7808.3	59/2+	6961.0	55/2+	E2
849.6 *8*	2.0 *4*	7810.6	59/2+	6961.0	55/2+	E2
851.3 *3*	6.2 *5*	7302.8	57/2−	6451.4	53/2−	E2
857.46 *18*	9.5 *5*	8193.6	61/2+	7336.2	57/2+	E2
866.12 *17*	10.7 *5*	8097.5	61/2+	7231.35	57/2+	E2
870.8 *4*	5.5 *4*	7715.2	59/2−	6844.4	55/2−	E2
874.8 *4*	3.8 *4*	8252.5	61/2+	7377.7	57/2+	E2
889.0 *7*	1.31 *20*	8510.5	(61/2−)	7621.5	(57/2−)	(E2)
891.36 *17*	11.5 *6*	8546.2	63/2+	7654.79	59/2+	E2
894.2[a] *14*	2.0 *6*	12306.6	79/2−	11412.5	75/2−	E2
894.26 *17*	19.4 *8*	7073.25	57/2−	6178.98	53/2−	E2
897.3 *6*	3.7 *4*	2696.72	29/2−	1799.40	25/2−	E2
897.6 *10*	1.9 *4*	8708.2	63/2+	7810.6	59/2+	E2
905.3 *11*	1.4 *4*	8713.6	(63/2+)	7808.3	59/2+	(E2)
908.43 *11*	17.0 *7*	7511.79	59/2−	6603.36	55/2−	E2
915.0 *4*	4.6 *4*	9108.6	65/2+	8193.6	61/2+	E2
918.09 *21*	9.3 *6*	9015.6	65/2+	8097.5	61/2+	E2
918.9 *4*	8.1 *8*	2156.93	(23/2+)	1238.05	21/2−	(E1)
924.1[ac] *13*	2.8 *8*	1852.10	23/2−	928.00	19/2−	E2
926.85 *25*	9.5 *8*	2367.59	25/2+	1440.74	23/2−	E1
930.2 *4*	4.5 *4*	8232.9	61/2−	7302.8	57/2−	E2
938.9 *11*	0.81 *18*	9449.4	(65/2−)	8510.5	(61/2−)	(E2)
940.0 *6*	3.0 *6*	9192.5	65/2+	8252.5	61/2+	E2
942.5 *4*	3.2 *3*	2270.28	23/2+	1327.83	19/2+	E2
943.6 *6*	3.8 *5*	8658.8	63/2−	7715.2	59/2−	E2
943.8 *3*	8.5 *6*	9489.9	67/2+	8546.2	63/2+	E2
946.3 *4*	7.4 *8*	1695.58	19/2+	749.28	17/2−	E1
948.79 *14*	13.0 *5*	10396.66	71/2−	9447.86	67/2−	E2
958.63 *11*	17.9 *7*	8470.42	63/2−	7511.79	59/2−	E2
962.5 *9*	1.5 *5*	9670.7	(67/2+)	8708.2	63/2+	(E2)
964.7 *7*	4.1 *5*	2405.41	27/2−	1440.74	23/2−	E2
969.1 *4*	7.0 *5*	9984.7	69/2+	9015.6	65/2+	E2
970.2 *4*	5.0 *5*	10078.8	69/2+	9108.6	65/2+	E2
971.00 *15*	14.0 *6*	8044.25	61/2−	7073.25	57/2−	E2
974.8 *9*	2.0 *8*	9688.4	(67/2+)	8713.6	(63/2+)	(E2)
977.44 *13*	14.4 *6*	9447.86	67/2−	8470.42	63/2−	E2
990.5 *11*	0.92 *18*	10439.8	(69/2−)	9449.4	(65/2−)	(E2)
995.1 *5*	4.5 *5*	9228.0	65/2−	8232.9	61/2−	E2
997.33 *25*	8.5 *5*	10487.2	71/2+	9489.9	67/2+	E2
1003.9[ac] *9*	2.3 *5*	5315.27	47/2−	4311.41	43/2−	E2
1009.5 *5*	4.4 *4*	11088.3	73/2+	10078.8	69/2+	E2

Continued on next page (footnotes at end of table)

(HI,xnγ) 1992Ra17 (continued)

γ(^{157}Ho) (continued)

E_γ [†]	I_γ [‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult. [#]
1010.9 *8*	2.8 *4*	10203.4	(69/2+)	9192.5	65/2+	(E2)
1012.6 *9*	1.5 *5*	10683.3	(71/2+)	9670.7	(67/2+)	(E2)
1015.8 *5*	4.0 *4*	11412.5	75/2−	10396.66	71/2−	E2
1017.3 *3*	6.4 *4*	11002.0	73/2+	9984.7	69/2+	E2
1032.2[ac] *10*	1.2 *3*	2270.28	23/2+	1238.05	21/2−	E1
1035.9 *3*	8.6 *6*	9080.1	65/2−	8044.25	61/2−	E2
1036.9 *12*	2.1 *6*	10264.9	(69/2−)	9228.0	65/2−	(E2)
1042.7 *19*	0.54 *18*	11482.5	(73/2−)	10439.8	(69/2−)	(E2)
1045.1[ac] *10*	2.1 *10*	5677.6	49/2−	4632.50	45/2−	E2
1046.6[a] *12*	1.7 *4*	10734.9?	(71/2+)	9688.4	(67/2+)	(E2)
1049.8 *3*	8.1 *5*	11537.0	75/2+	10487.2	71/2+	E2
1052.0[ac] *9*	3.0 *10*	6045.4	51/2−	4993.46	47/2−	E2
1052.8 *20*	2.0 *7*	13108.4	(81/2+)	12055.6	77/2+	(E2)
1053.6 *9*	5.4 *8*	12055.6	77/2+	11002.0	73/2+	E2
1063.0 *4*	5.2 *4*	13369.6	83/2−	12306.6	79/2−	E2
1069.8 *5*	3.7 *4*	10149.9	69/2−	9080.1	65/2−	E2
1077.2 *13*	1.3 *3*	11280.6	(73/2+)	10203.4	(69/2+)	(E2)
1079[b]		1079+x		x		
1084[ac] *4*	0.7 *3*	6844.4	55/2−	5760.50	51/2−	E2
1088.2[ac] *25*	0.5 *3*	6451.4	53/2−	5363.20	49/2−	E2
1099.2 *7*	3.0 *4*	12636.2	(79/2+)	11537.0	75/2+	(E2)
1111.8[ac] *9*	2.5 *6*	7715.2	59/2−	6603.36	55/2−	E2
1112.5 *8*	3.8 *9*	1861.8	(19/2+)	749.28	17/2−	(E1)
1117.2 *4*	5.2 *4*	12306.6	79/2−	11189.4	75/2−	E2
1124[ac] *4*	0.5 *3*	7302.8	57/2−	6178.98	53/2−	E2
1127.8 *7*	2.1 *8*	2055.78	(21/2+)	928.00	19/2−	(E1)
1130[b]		2209+x		1079+x		
1138.2 *7*	2.2 *3*	14507.8	87/2−	13369.6	83/2−	E2
1153.9 *12*	1.6 *3*	12566.4	(79/2−)	11412.5	75/2−	(E2)
1159.7[ac] *19*	1.3 *3*	8232.9	61/2−	7073.25	57/2−	E2
1183[b]		3392+x		2209+x		
1183.8[a] *16*	1.4 *4*	9228.0	65/2−	8044.25	61/2−	E2
1238[b]		4630+x		3392+x		
1295[b]		5925+x		4630+x		
1356[b]		7281+x		5925+x		
1367.9 *9*	1.80 *25*	15875.7	(91/2−)	14507.8	87/2−	(E2)
1415[b]		8696+x		7281+x		
1477[b]		10173+x		8696+x		
1530[b]		11703+x		10173+x		
1585[b]		13288+x		11703+x		
1630[bc]		14918+x?		13288+x		

[†] From 1992Ra17, except where noted. Other: 1974Gr01, 1976RiZJ, 1982Ha27, and 1986Si01.

[‡] From 1992Ra17 and based on analysis of data from the whole scheme including simulation of coincidence spectra for the scheme; that is, these are not determined as simple singles Iγ.

[#] From 1992Ra17 based on analysis of data for the whole scheme including γ(θ) data, γ intensities in coincidence spectra, and J^π assignments. Note that multipolarity assignments are made for all γ′s. Other assignments: 1974Gr01, 1984Ha35, 1985Si04, and 1986Si01.

[@] Average of values from 1984Ha35 and 1992Ra17, with sign given by 1992Ra17 changed to that of 1984Ha35 to conform to

Continued on next page (footnotes at end of table)

(HI,xnγ) 1992Ra17 (continued)

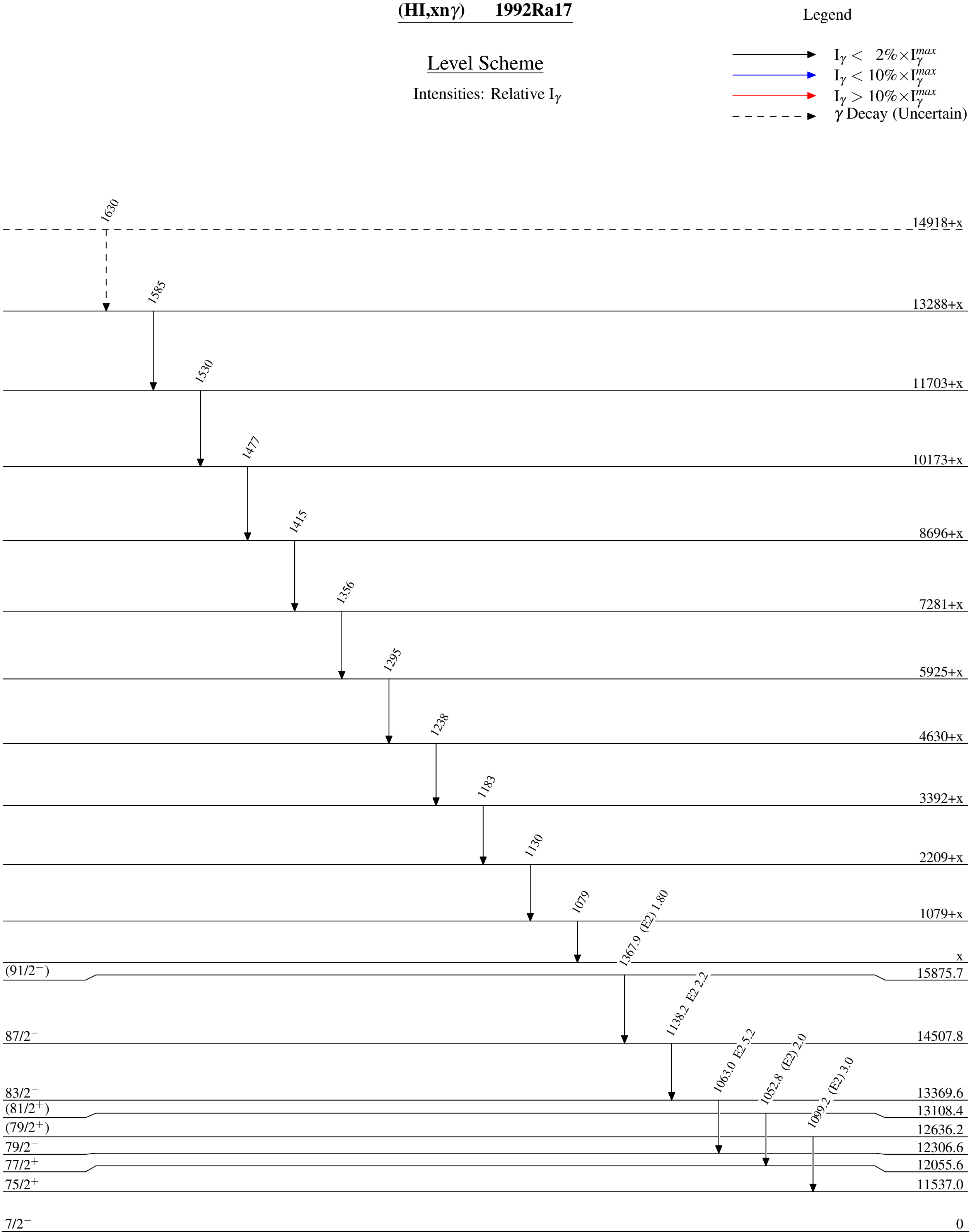
γ(^{157}Ho) (continued)

convention used in ENSDF.
[&] Computed by author (1992Ra17) from intensity balance.
[a] Transition tentative (1992Ra17).
[b] From 2012Wa39.
[c] Placement of transition in the level scheme is uncertain.

(HI,xnγ) 1992Ra17

Level Scheme

Intensities: Relative I_γ

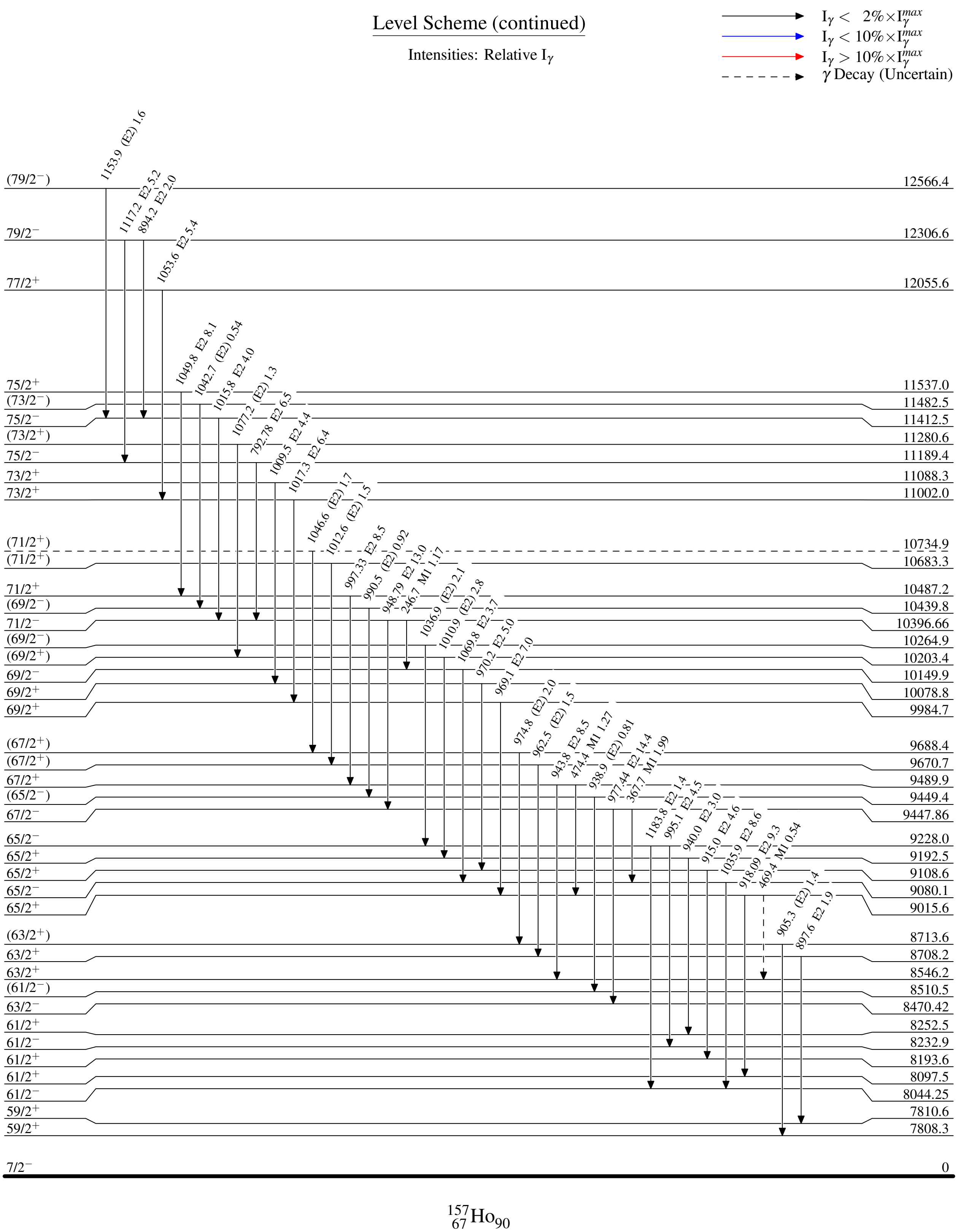


$^{157}_{67}Ho_{90}$

(HI,xnγ) 1992Ra17

Level Scheme (continued)

Intensities: Relative I_γ



$^{157}_{67}Ho_{90}$

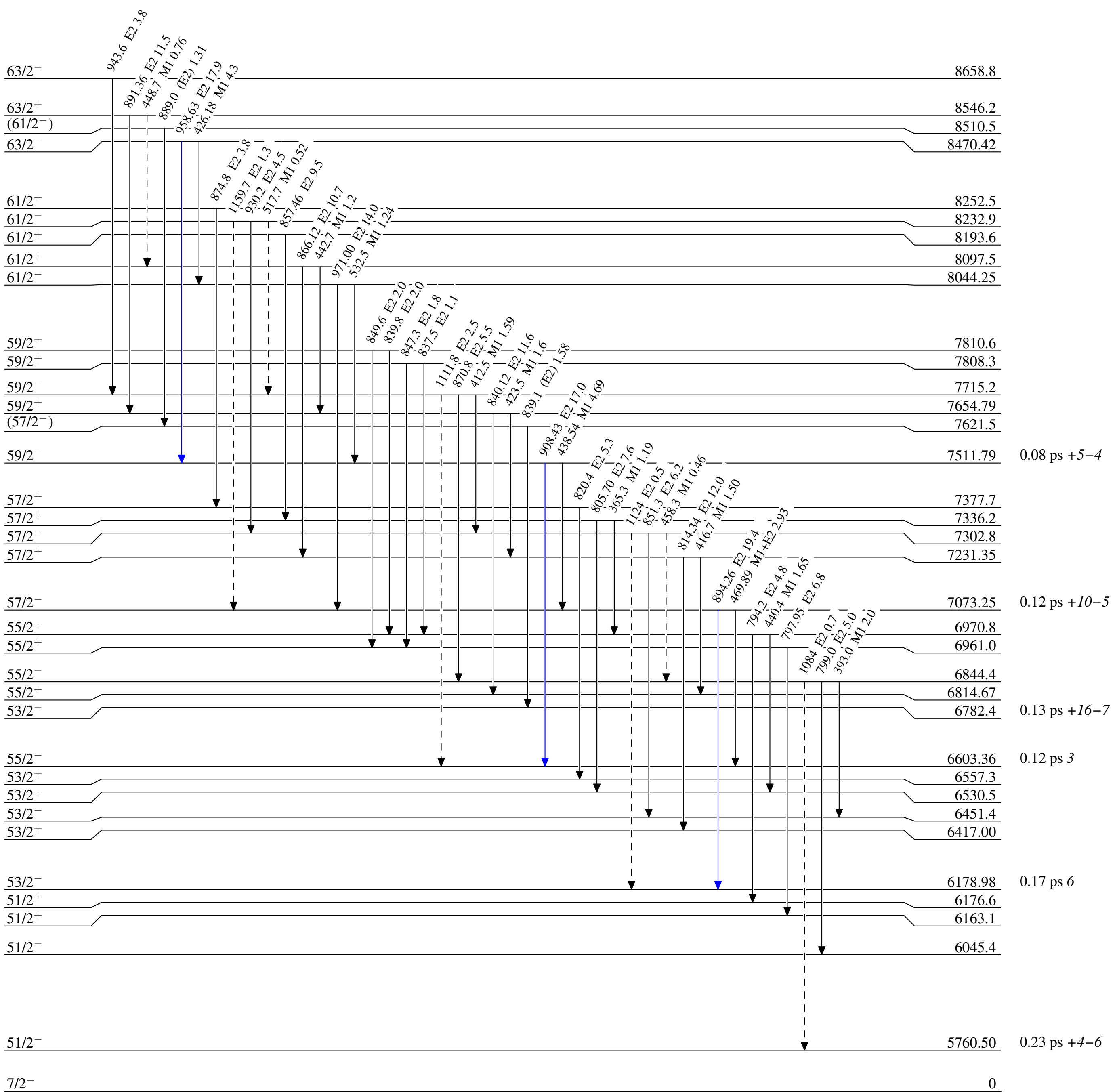
(HI,xnγ) 1992Ra17

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)



$^{157}_{67}Ho_{90}$

(HI,xnγ) 1992Ra17

Level Scheme (continued)

Intensities: Relative I_γ

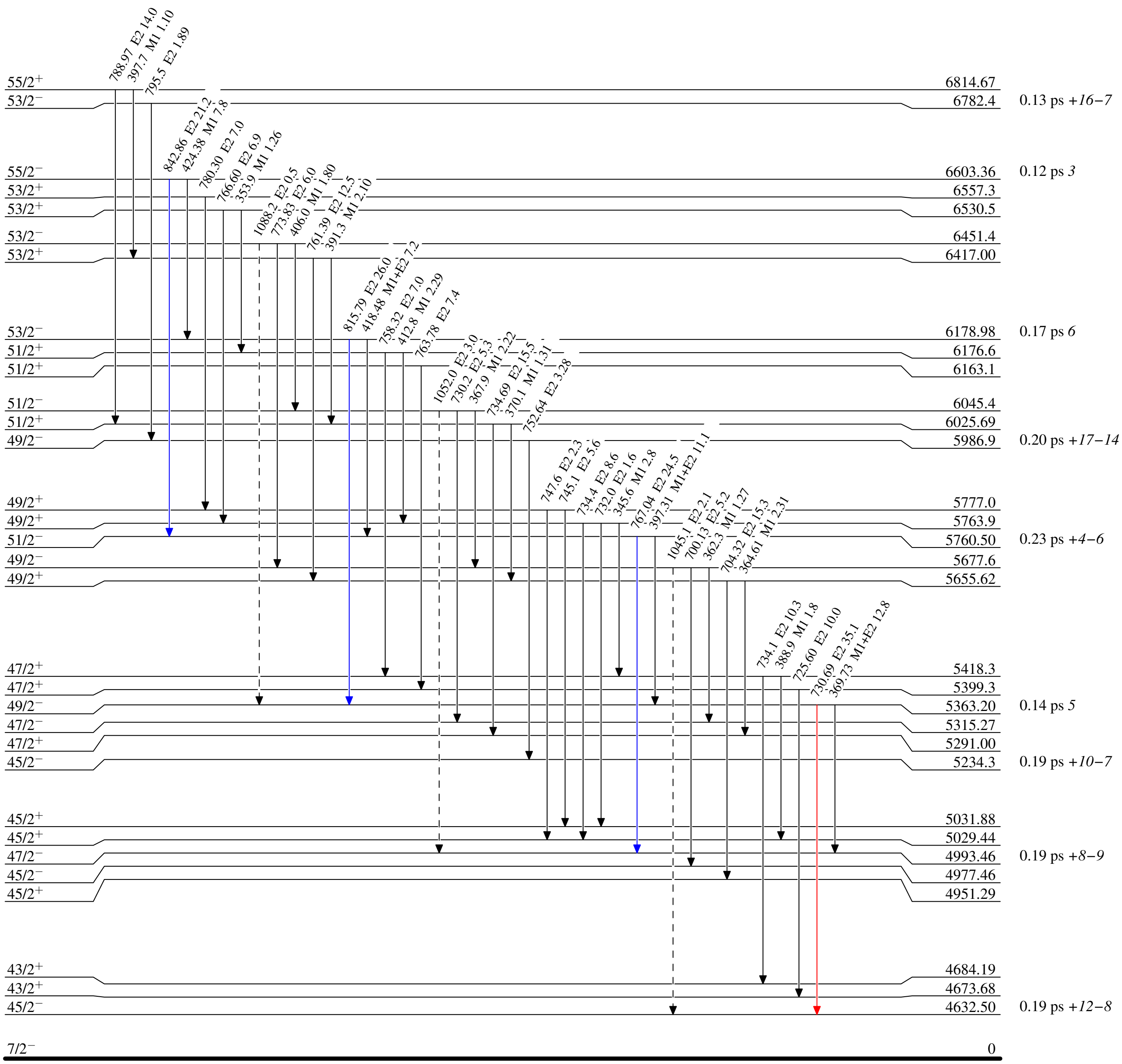
Legend

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

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

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

γ Decay (Uncertain)

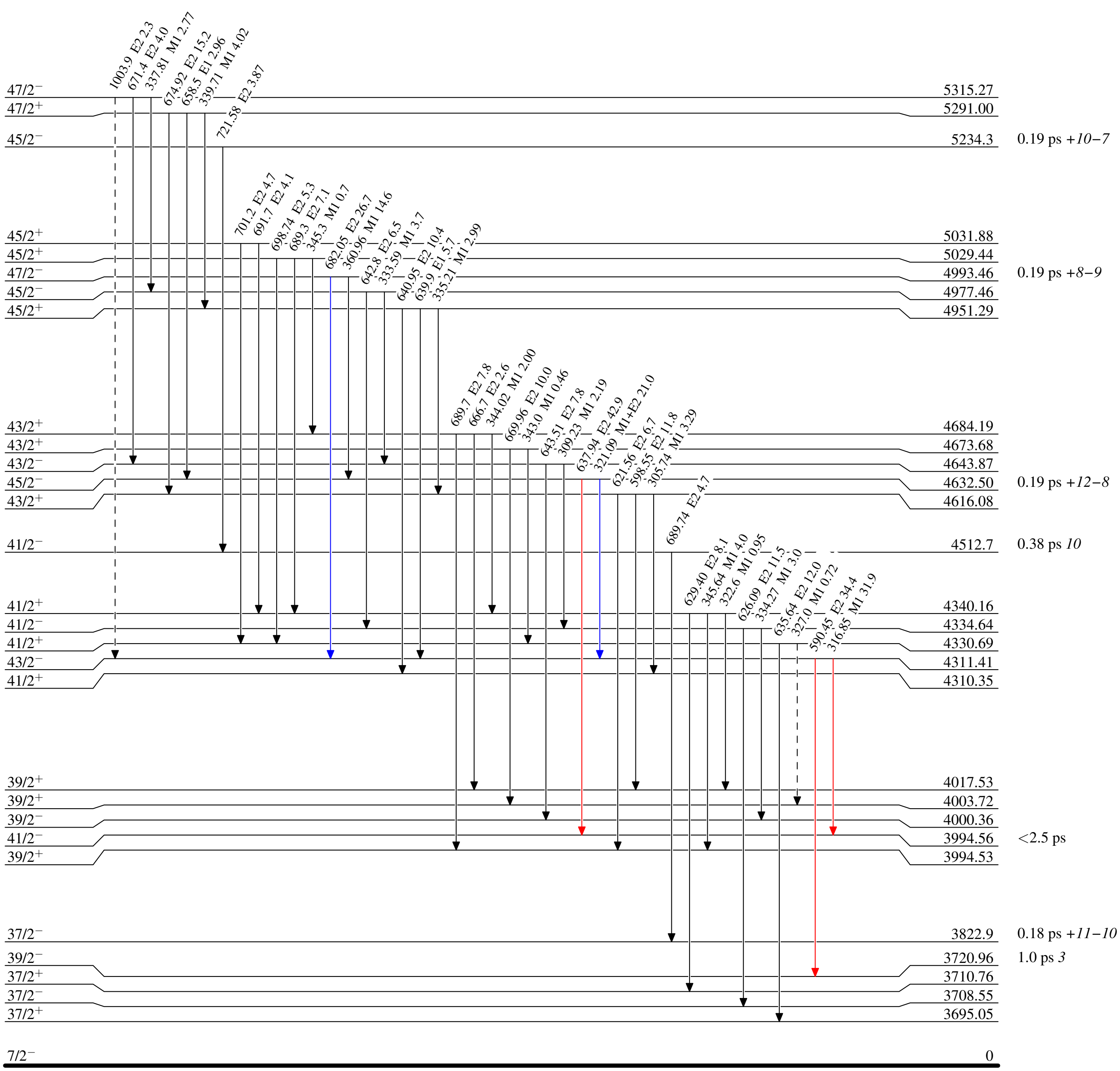


$^{157}_{67}Ho_{90}$

(HI,xnγ) 1992Ra17

Level Scheme (continued)

Intensities: Relative I_γ

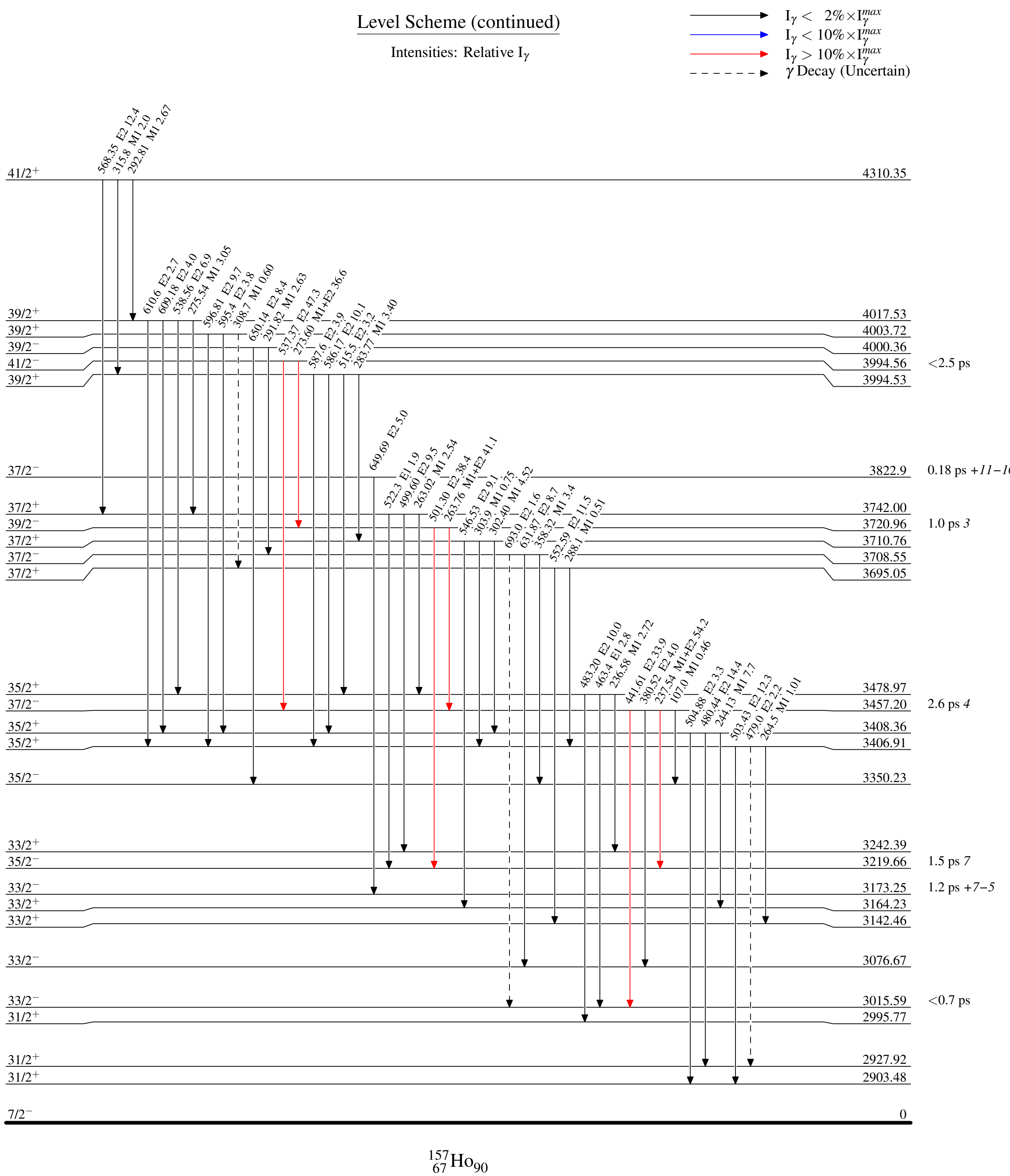


$^{157}_{67}Ho_{90}$

(HI,xnγ) 1992Ra17

Level Scheme (continued)

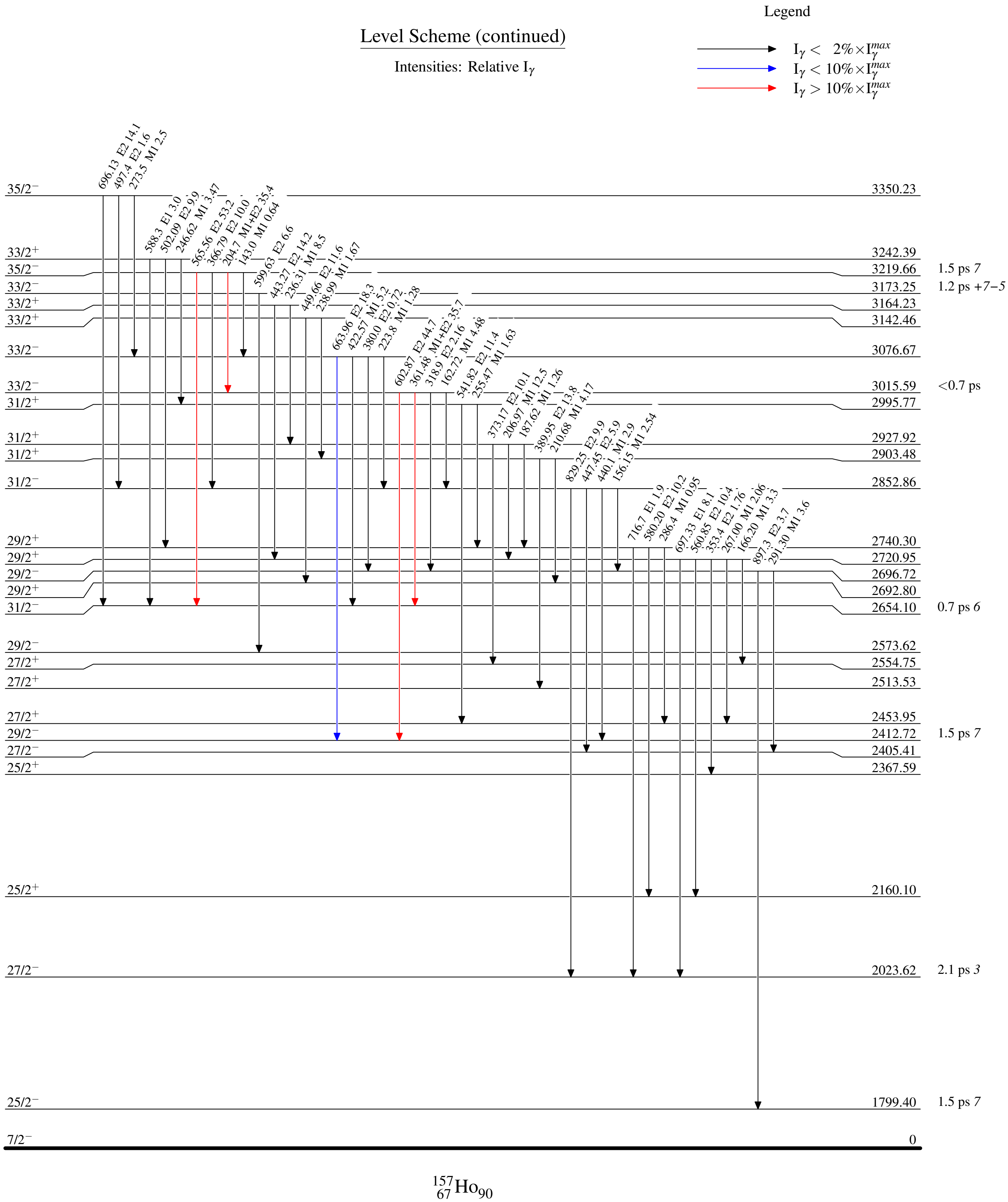
Intensities: Relative I_γ

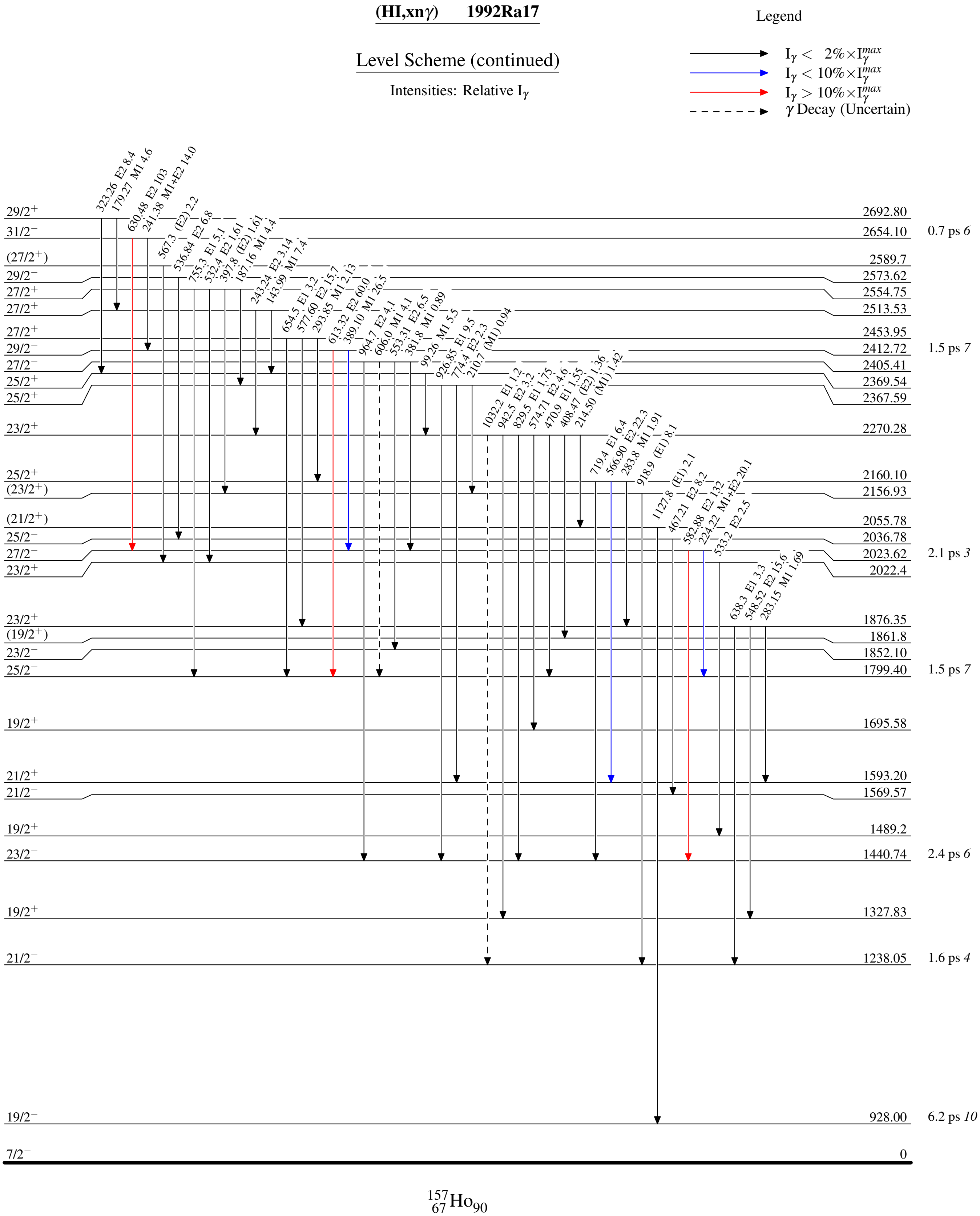


(HI,xnγ) 1992Ra17

Level Scheme (continued)

Intensities: Relative I_γ

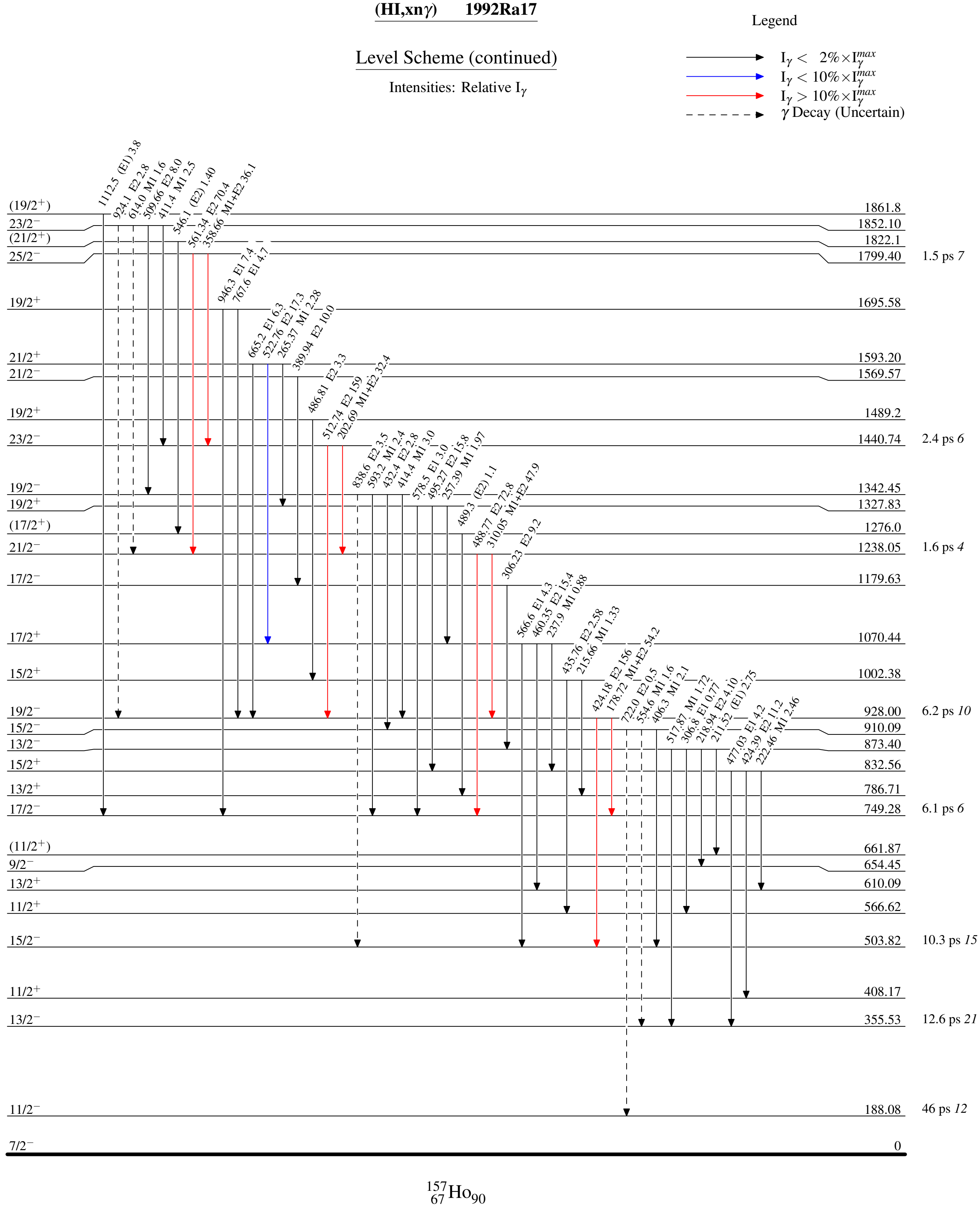



(HI,xnγ) 1992Ra17
Level Scheme (continued)
Intensities: Relative Iγ
Legend
Iγ < 2%×Iγmax
Iγ < 10%×Iγmax
Iγ > 10%×Iγmax
γ Decay (Uncertain)
29/2+ 2692.80
31/2− 2654.10 0.7 ps 6
(27/2+) 2589.7
29/2− 2573.62
27/2+ 2554.75
27/2+ 2513.53
27/2+ 2453.95
29/2− 2412.72 1.5 ps 7
27/2− 2405.41
25/2+ 2369.54
25/2+ 2367.59
23/2+ 2270.28
25/2+ 2160.10
(23/2+) 2156.93
(21/2+) 2055.78
25/2− 2036.78
27/2− 2023.62 2.1 ps 3
23/2+ 2022.4
23/2+ 1876.35
(19/2+) 1861.8
23/2− 1852.10
25/2− 1799.40 1.5 ps 7
19/2+ 1695.58
21/2+ 1593.20
21/2− 1569.57
19/2+ 1489.2
23/2− 1440.74 2.4 ps 6
19/2+ 1327.83
21/2− 1238.05 1.6 ps 4
19/2− 928.00 6.2 ps 10
7/2− 0
323.26 E2 8.4
179.27 M1 4.6
630.48 E2 103
241.38 M1+E2 14.0
567.3 (E2) 2.2
536.84 E2 6.8
755.3 E1 5.1
532.4 E2 1.61
397.8 (E2) 1.61
187.16 M1 4.4
243.24 E2 3.14
143.99 M1 7.4
654.5 E1 3.2
577.60 E2 15.7
293.85 M1 2.13
613.32 E2 60.0
389.10 M1 26.5
964.7 E2 4.1
606.0 M1 4.1
553.31 E2 6.5
381.8 M1 0.89
99.26 M1 5.5
926.85 E1 9.5
774.4 E2 2.3
210.7 (M1) 0.94
1032.2 E1 1.2
942.5 E2 3.2
829.5 E1 1.75
574.71 E2 4.6
470.9 E1 1.55
408.47 (E2) 1.36
214.50 (M1) 1.42
719.4 E1 6.4
566.90 E2 22.3
283.8 M1 1.91
918.9 (E1) 8.1
1127.8 (E1) 2.1
467.21 E2 8.2
582.88 E2 132
224.22 M1+E2 20.1
533.2 E2 2.5
638.3 E1 3.3
548.52 E2 15.6
283.15 M1 1.69
$^{157}_{67}Ho_{90}$

(HI,xnγ) 1992Ra17

Level Scheme (continued)

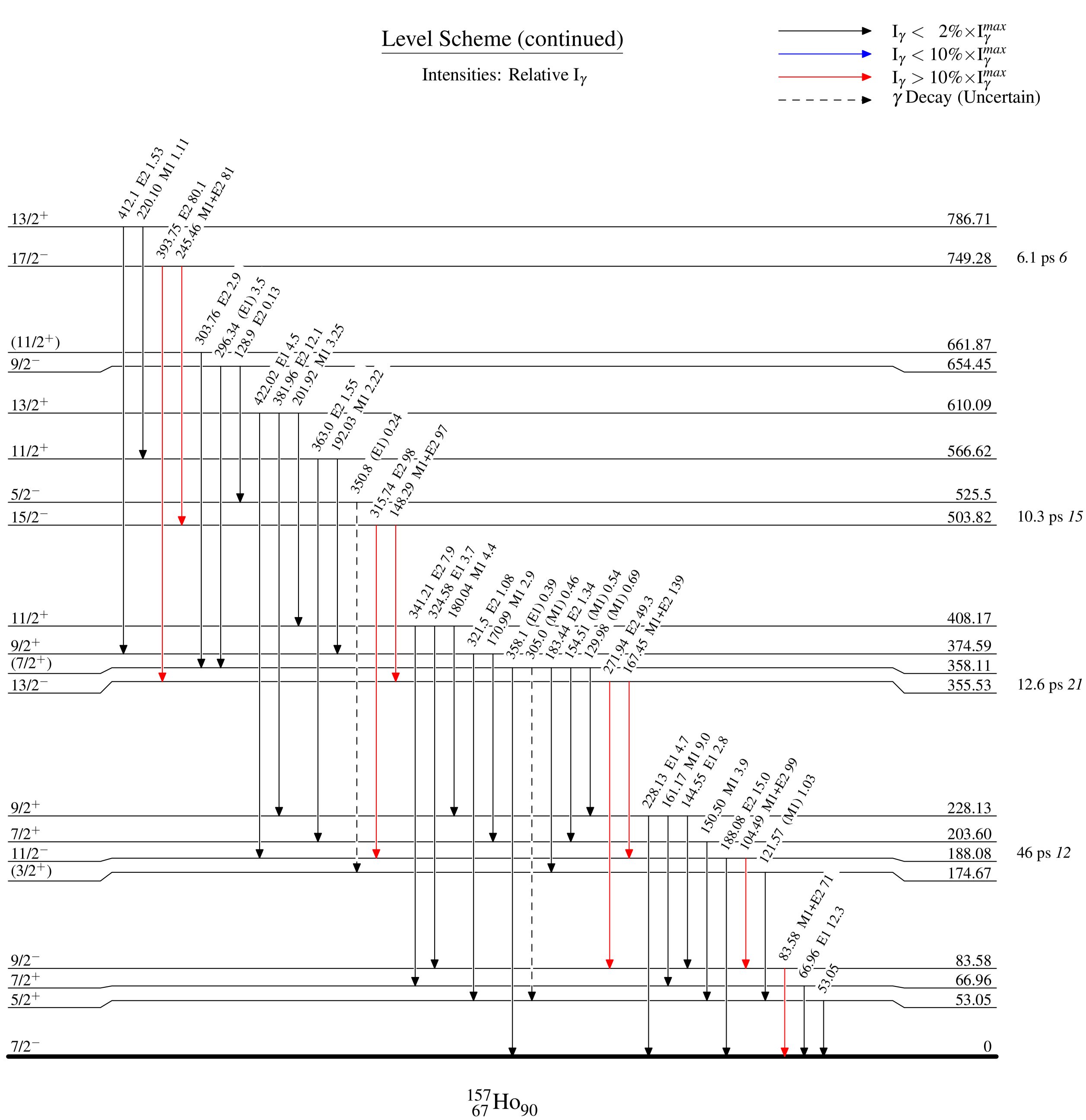
Intensities: Relative I_γ



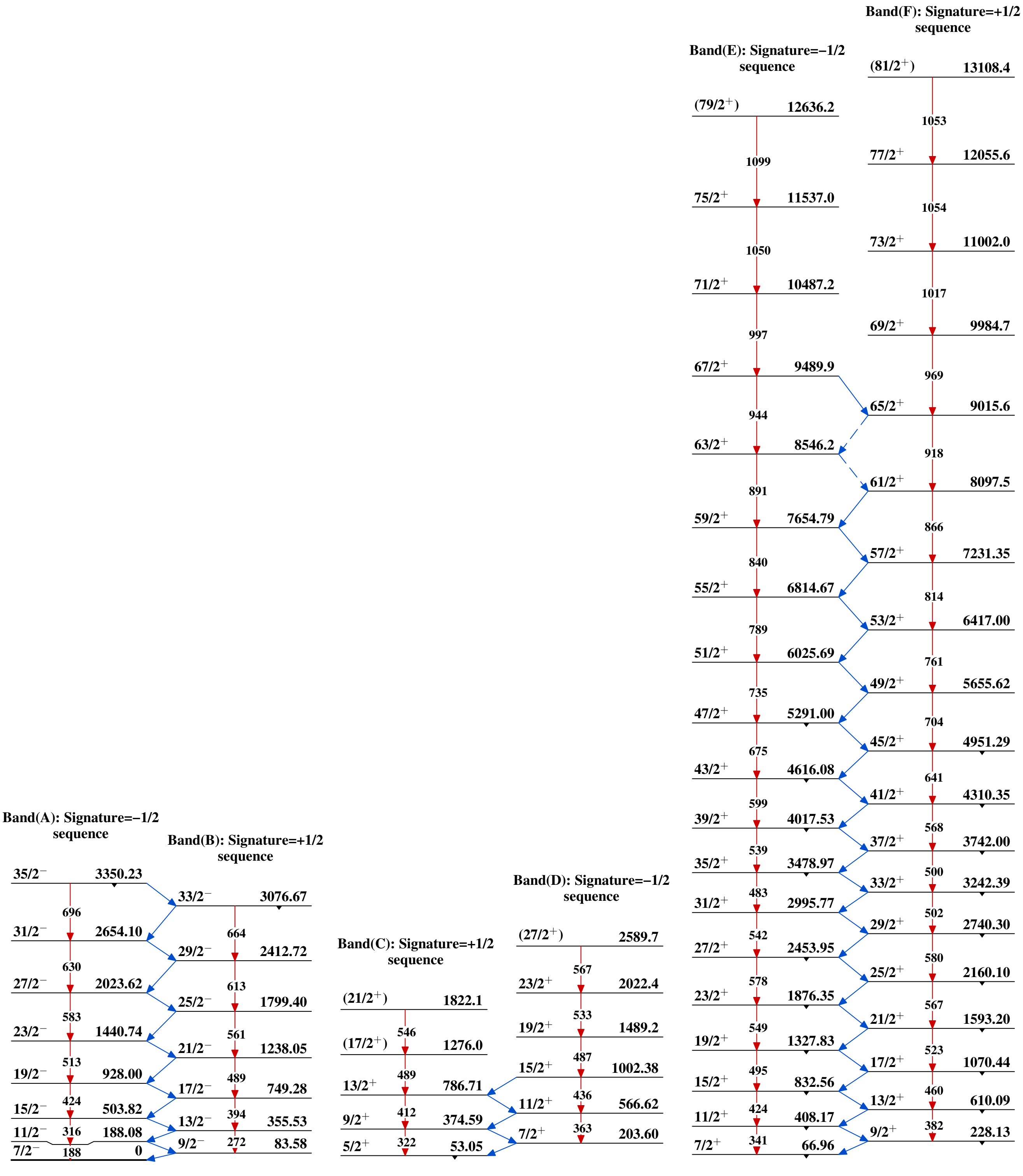
(HI,xnγ) 1992Ra17

Level Scheme (continued)

Intensities: Relative I_γ

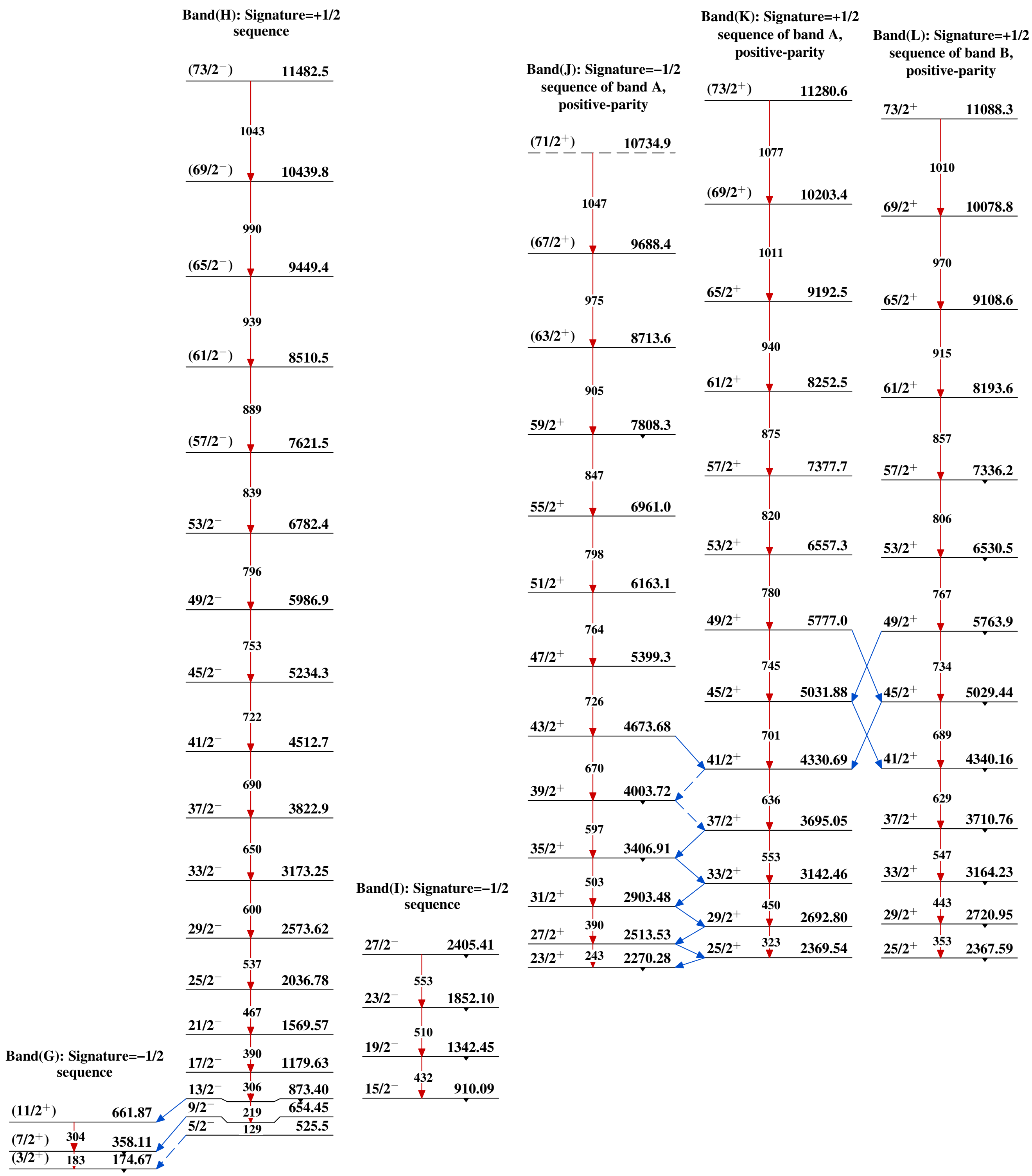


(HI,xnγ) 1992Ra17



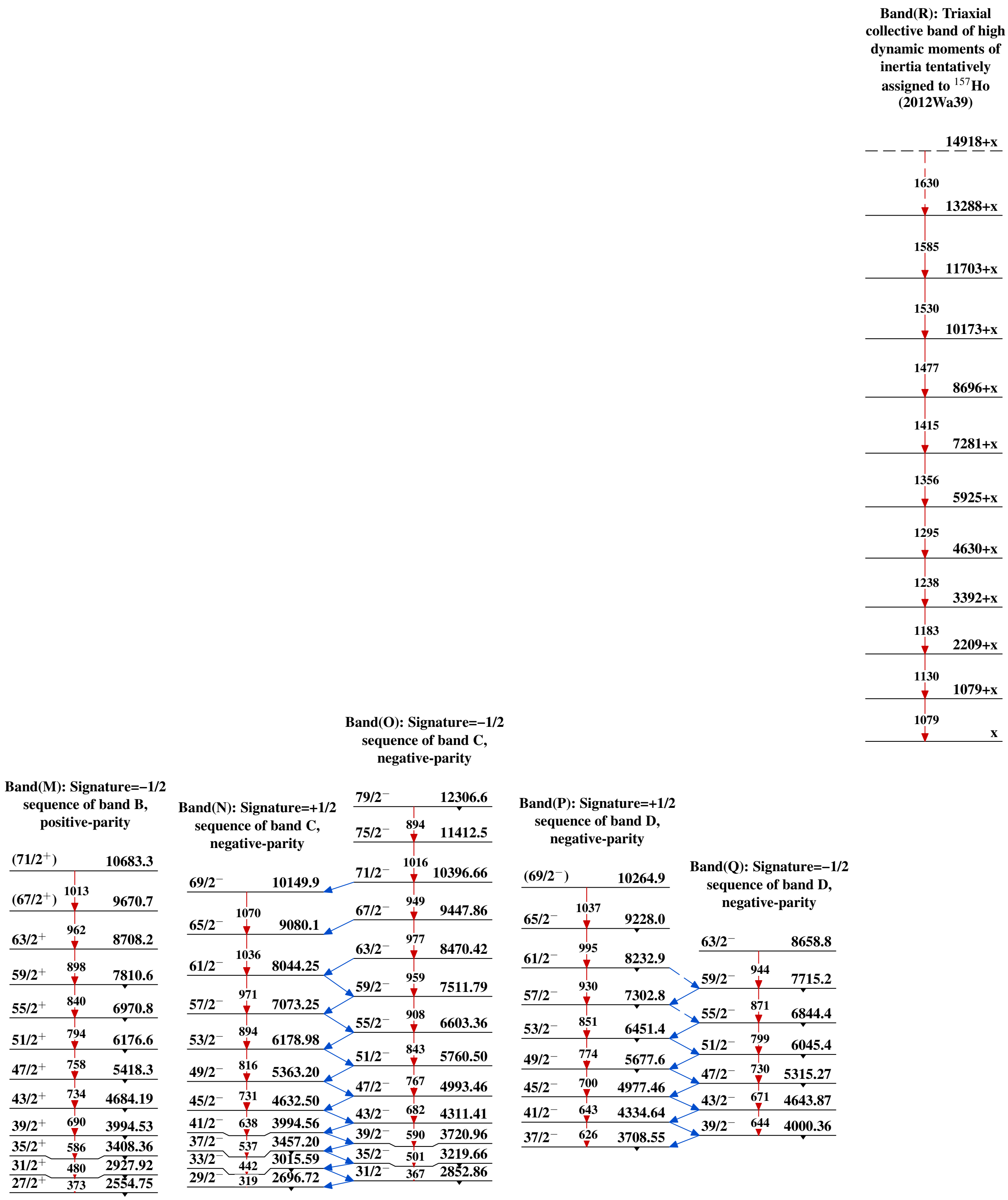
$^{157}_{67}Ho_{90}$

(HI,xnγ) 1992Ra17 (continued)



$^{157}_{67}Ho_{90}$

(HI,xnγ) 1992Ra17 (continued)



$^{157}_{67}Ho_{90}$