(HI,xnypγ) 1992Li22

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. Ohya	NDS 111, 1619 (2010)	20-Jan-2009

1992Li22: ^{92}Mo(^{34}S,2p2nγ) E=150,155 MeV, ^{106}Cd(^{19}F,2p2nγ) E=95 MeV, ^{92}Mo(^{32}S,3pγ) E=145 MeV; Ge + BGO Compton suppressed spectrometer; γ singles, γγ coincidence, γγ-particle coin, DCO ratio; deduced band structures.

^{121}Cs Levels

E(level)	Jπ&	$T_{1/2}$[a]
0.0‡	3/2(+)	155 s *4*
68.5# *3*	9/2(+)	122 s *3*
98.2 *5*		
210.8‡ *5*	(7/2+)	
313.9# *6*	(11/2+)	
589.9# *7*	(13/2+)	
627.7‡ *7*	(11/2+)	
893.9# *7*	(15/2+)	
1197.9‡ *9*	(15/2+)	
1220.8# *7*	(17/2+)	
1568.1# *8*	(19/2+)	
1863.9‡ *14*	(19/2+)	
1888.8@ *8*	(17/2−)	
1928.3# *9*	(21/2+)	
2077.5@ *8*	(19/2−)	
2294.6@ *9*	(21/2−)	
2295.3# *10*	(23/2+)	
2451.4‡ *15*	(23/2+)	
2543.6@ *9*	(23/2−)	
2661.5# *10*	(25/2+)	
2824.9@ *10*	(25/2−)	
3019.3# *11*	(27/2+)	
3031.5‡ *15*	(27/2+)	
3138.6@ *10*	(27/2−)	
3369.7# *12*	(29/2+)	
3482.2@ *10*	(29/2−)	
3698.5‡ *18*	(31/2+)	
3775.8# *12*	(31/2+)	
3856.8@ *11*	(31/2−)	
4172.7?# *16*	(33/2+)	
4256.5@ *12*	(33/2−)	
4455.6‡ *18*	(35/2+)	
4623?# *1*	(35/2+)	
4683.8@ *13*	(35/2−)	
5066.1?# *15*	(37/2+)	
5294.4‡ *18*	(39/2+)	
6216.3‡ *19*	(43/2+)	
7225.8‡ *20*	(47/2+)	

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(HI,xnypγ) 1992Li22 (continued)

^{121}Cs Levels (continued)

E(level)	J$^{\pi}$[&]	Comments
8322.9[‡] *20*	(51/2$^+$)	
9512.2[‡] *20*	(55/2$^+$)	
10796.2[‡] *23*	(59/2$^+$)	
12184?[‡] *1*	(63/2$^+$)	
x[†]	(11/2$^-$)	Additional information 1.
x+285.8[†] *5*	(15/2$^-$)	
x+757.1[†] *7*	(19/2$^-$)	
x+1372.0[†] *9*	(23/2$^-$)	
x+2098.2[†] *10*	(27/2$^-$)	
x+2914.6[†] *12*	(31/2$^-$)	
x+3808.6[†] *13*	(35/2$^-$)	
x+4776.9[†] *14*	(39/2$^-$)	
x+5820.7[†] *15*	(43/2$^-$)	
x+6940.7[†] *18*	(47/2$^-$)	
x+8144.7[†] *20*	(51/2$^-$)	
x+9438.7[†] *23*	(55/2$^-$)	
x+10811[†]	(59/2$^-$)	

[†] Band(A): decoupled rotational band on 1h$_{11/2}$.
[‡] Band(B): 3/2$^+$[422].
[#] Band(C): 9/2[404].
[@] Band(D): three quasi-particle band on 1h$_{11/2}$.
[&] Spins and parities are proposed based on angular distribution, and DCO ratios in (HI,xnypγ), except g.s. and 68.5 keV level.
[a] From Adopted Levels.

γ(^{121}Cs)

Anistropy ratios notations are: (1)anisotropy ratio(A)=I(37°)/I(79°) from projected spectra in the Si-ball charged particle gate signals. (2)anisotropy ratio(B)=I(37°)/I(79°) from coincidence spectra in the plastic phoswich scintillator-ball charged particle gate signals.

E$_\gamma$	I$_\gamma$	E$_i$(level)	J$_i^\pi$	E$_f$	J$_f^\pi$	Mult.[#]	α[@]	Comments
68.5 *3*	100	68.5	9/2$^{(+)}$	0.0	3/2$^{(+)}$			E$_\gamma$: from adopted gammas.
98.2 *5*	100 *10*	98.2		0.0	3/2$^{(+)}$			E$_\gamma$: from adopted gammas.
188.4 *5*	2.5 *2*	2077.5	(19/2$^-$)	1888.8	(17/2$^-$)	D		Mult.: anisotropy ratio(A)=0.9 *2*; E1 assumed.
210.8 *5*	7.4 *6*	210.8	(7/2$^+$)	0.0	3/2$^{(+)}$	Q		Mult.: anisotropy ratio(A)=1.0 *1*, anisotropy ratio(B)=1.2 *2*.
217.5 *5*	3.0 *3*	2294.6	(21/2$^-$)	2077.5	(19/2$^-$)	D		Mult.: anisotropy ratio(B)=1.2 *2*.
245.5 *5*	63 *4*	313.9	(11/2$^+$)	68.5	9/2$^{(+)}$	(D)		Mult.: anisotropy ratio(A)=1.0 *1*, anisotropy ratio(B)=1.07 *4*.
248.8[†] *5*	4.3 *3*	2543.6	(23/2$^-$)	2294.6	(21/2$^-$)	D		Mult.: anisotropy ratio(A)=0.9 *1*.
275.9 *5*	54 *4*	589.9	(13/2$^+$)	313.9	(11/2$^+$)	D		Mult.: anisotropy ratio(A)=1.0 *1*, anisotropy ratio(B)=1.09 *4*.
280.9[†] *5*	17.7 *13*	2824.9	(25/2$^-$)	2543.6	(23/2$^-$)	D		Mult.: anisotropy ratio(A)=1.0 *1*.
285.8 *5*	100	x+285.8	(15/2$^-$)	x	(11/2$^-$)	(E2)	0.0508	α(K)=0.0414 *7*; α(L)=0.00746 *12*;

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(HI,xnypγ) 1992Li22 (continued)

γ(^{121}Cs) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	Comments
								α(M)=0.001561 *24*; α(N+..)=0.000366 *6* α(N)=0.000323 *5*; α(O)=4.18×10^{-5} *7*; α(P)=1.398×10^{-6} *21* Mult.: anisotropy ratio(A)=1.2 *2*, anisotropy ratio(B)=1.20 *7*, RUL consistent with E2.
303.9 *5*	40 *3*	893.9	(15/2$^+$)	589.9	(13/2$^+$)	D		Mult.: anisotropy ratio(A)=1.1 *2*, anisotropy ratio(B)=1.2 *3*.
313.5† *5*	12.3 *9*	3138.6	(27/2$^-$)	2824.9	(25/2$^-$)	D		Mult.: anisotropy ratio(A)=1.2 *2*, anisotropy ratio(B)=1.2 *3*.
327.4 *5*	30.8 *22*	1220.8	(17/2$^+$)	893.9	(15/2$^+$)	D		Mult.: anisotropy ratio(A)=1.1 *1*, anisotropy ratio(B)=1.04 *5*.
343.4 *5*	2.8 *3*	3482.2	(29/2$^-$)	3138.6	(27/2$^-$)	D		Mult.: anisotropy ratio(A)=1.6 *3*.
347.0† *5*	30.3 *22*	1568.1	(19/2$^+$)	1220.8	(17/2$^+$)	D		Mult.: anisotropy ratio(A)=1.1 *2*.
350† *1*	16.3 *12*	3369.7	(29/2$^+$)	3019.3	(27/2$^+$)	D		Mult.: anisotropy ratio(A)=1.3 *2*.
357.9 *5*	12.5 *10*	3019.3	(27/2$^+$)	2661.5	(25/2$^+$)	D		Mult.: anisotropy ratio(A)=1.2 *2*.
360.2 *5*	25.3 *18*	1928.3	(21/2$^+$)	1568.1	(19/2$^+$)	D		Mult.: anisotropy ratio(A)=1.0 *1*.
366† *1*	<40.1	2661.5	(25/2$^+$)	2295.3	(23/2$^+$)	(D)		I_γ: Iγ(366γ)+Iγ(367)=40 *3*. Mult.: anisotropy ratio(A)=1.2 *2* for 366γ+367γ.
367† *1*	<40	2295.3	(23/2$^+$)	1928.3	(21/2$^+$)	(D)		I_γ: Iγ(366γ)+Iγ(367). Mult.: anisotropy ratio(A)=1.2 *2* for 366γ+367γ=40 *3*.
374.7† *5*	21.0 *16*	3856.8	(31/2$^-$)	3482.2	(29/2$^-$)	D		Mult.: anisotropy ratio(A)=1.3 *2*.
394.4†*a* *5*	9.2 *7*	4172.7?	(33/2$^+$)	3775.8	(31/2$^+$)	D		Mult.: anisotropy ratio(A)=1.3 *2*.
399† *1*	3.8 *4*	4256.5	(33/2$^-$)	3856.8	(31/2$^-$)	D		Mult.: anisotropy ratio(A)=1.3 *2*.
404‡† *1*		2294.6	(21/2$^-$)	1888.8	(17/2$^-$)			
406.0 *5*	8.9 *7*	3775.8	(31/2$^+$)	3369.7	(29/2$^+$)	D		Mult.: anisotropy ratio(A)=1.4 *2*, anisotropy ratio(B)=1.2 *3*.
416.9 *5*	100 *8*	627.7	(11/2$^+$)	210.8	(7/2$^+$)	Q		Mult.: anisotropy ratio(A)=1.2 *2*, anisotropy ratio(B)=1.3 *2*.
427.0 *5*	3.3 *3*	4683.8	(35/2$^-$)	4256.5	(33/2$^-$)	D		Mult.: anisotropy ratio(A)=1.4 *3*.
466 *1*	4.1 *4*	2543.6	(23/2$^-$)	2077.5	(19/2$^-$)	Q		Mult.: anisotropy ratio(A)=0.9 *2*.
471.3 *5*	208 *16*	x+757.1	(19/2$^-$)	x+285.8	(15/2$^-$)	E2	0.01110	α(K)=0.00934 *14*; α(L)=0.001403 *21*; α(M)=0.000290 *5*; α(N+..)=6.91×10^{-5} *10* α(N)=6.06×10^{-5} *9*; α(O)=8.12×10^{-6} *12*; α(P)=3.34×10^{-7} *5* Mult.: anisotropy ratio(A)=1.4 *2*, anisotropy ratio(B)=1.33 *5*, RUL consistent with E2.
521 *1*	14.4 *14*	589.9	(13/2$^+$)	68.5	9/2$^{(+)}$	Q		Mult.: anisotropy ratio(A)=4.9 *8*, anisotropy ratio(B)=0.88 *26*.
530.6 *5*	6.8 *6*	2824.9	(25/2$^-$)	2294.6	(21/2$^-$)	Q		Mult.: anisotropy ratio(A)=1.9 *3*, anisotropy ratio(B)=2.1 *4*.
570.2 *5*	12.0 *10*	1197.9	(15/2$^+$)	627.7	(11/2$^+$)	Q		Mult.: anisotropy ratio(A)=1.6 *2*, anisotropy ratio(B)=1.3 *2*.
580.1† *1*	<28.4	3031.5	(27/2$^+$)	2451.4	(23/2$^+$)	(Q)		I_γ: Iγ(580.1γ)+Iγ(580.2γ)=28.4 *23*.
580.2† *5*	28.4 *23*	893.9	(15/2$^+$)	313.9	(11/2$^+$)	(E2)	0.00630 *9*	α=0.00630 *9*; α(K)=0.00534 *8*; α(L)=0.000761 *11*; α(M)=0.0001566 *23*; α(N+..)=3.75×10^{-5} *6*

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(HI,xnypγ) 1992Li22 (continued)

γ(^{121}Cs) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	α[@]	Comments
								α(N)=3.28×10^{-5} *5*; α(O)=4.45×10^{-6} *7*; α(P)=1.94×10^{-7} *3* I_γ: Iγ(580.1γ)+Iγ(580.2γ). Mult.: anisotropy ratio(A)=1.5 *2* for 580.1γ+580.2γ, anisotropy ratio(B)=1.9 *2*, RUL favors (E2) assignment.
587.5[†] *5*	17.0 *16*	2451.4	(23/2$^+$)	1863.9	(19/2$^+$)	Q		Mult.: anisotropy ratio(A)=1.5 *3*, anisotropy ratio(B)=1.2 *2*.
595[‡] *1*		3138.6	(27/2$^-$)	2543.6	(23/2$^-$)			
614.9 *5*	90 *7*	x+1372.0	(23/2$^-$)	x+757.1	(19/2$^-$)	E2	0.00541 *8*	α=0.00541 *8*; α(K)=0.00460 *7*; α(L)=0.000647 *10*; α(M)=0.0001330 *19*; α(N+..)=3.19×10^{-5} *5* α(N)=2.79×10^{-5} *4*; α(O)=3.79×10^{-6} *6*; α(P)=1.676×10^{-7} *24* Mult.: anisotropy ratio(A)=1.6 *2*, anisotropy ratio(B)=1.42 *7*, RUL consistent with E2.
630.9 *5*	24.0 *21*	1220.8	(17/2$^+$)	589.9	(13/2$^+$)	Q		Mult.: anisotropy ratio(A)=2.2 *3*, anisotropy ratio(B)=1.4 *1*.
657.6[‡] *5*		3482.2	(29/2$^-$)	2824.9	(25/2$^-$)	Q		Mult.: anisotropy ratio(B)=1.5 *5*.
666[†] *1*	<31.1	1863.9	(19/2$^+$)	1197.9	(15/2$^+$)			Mult.: anisotropy ratio(A)=0.8 *1* for 666γ+667γ=31.1 *22*. I_γ: Iγ(666γ)+Iγ(667γ).
667[†] *1*	31.1 *22*	3698.5	(31/2$^+$)	3031.5	(27/2$^+$)	(Q)		Mult.: anisotropy ratio(A)=0.8 *1* for 666γ+667γ. I_γ: Iγ(666γ)+Iγ(667γ)=31.1 *22*.
674.5[†] *5*	42 *3*	1568.1	(19/2$^+$)	893.9	(15/2$^+$)	Q		Mult.: anisotropy ratio(A)=1.2 *2*, anisotropy ratio(B)=1.5 *1*.
708[&] *1*	27.4[&] *22*	1928.3	(21/2$^+$)	1220.8	(17/2$^+$)	(Q)		Mult.: anisotropy ratio(A)=1.6 *2* for doubly placed 708γ, anisotropy ratio(B)=1.5 *1* for this transition.
708[&] *1*	<27.4[&]	3369.7	(29/2$^+$)	2661.5	(25/2$^+$)			Mult.: anisotropy ratio(A)=1.6 *2* for doubly placed 708γ.
718[‡†] *1*		3856.8	(31/2$^-$)	3138.6	(27/2$^-$)			
724[‡†] *1*		3019.3	(27/2$^+$)	2295.3	(23/2$^+$)	Q		Mult.: anisotropy ratio(A)=1.5 *1*.
726.2 *5*	<99	x+2098.2	(27/2$^-$)	x+1372.0	(23/2$^-$)	(Q)		I_γ: Iγ(726.2γ)+Iγ(727γ)=99 *8*. Mult.: anisotropy ratio(A)=1.7 *2* for 726.2γ+727γ, anisotropy ratio(B)=1.5 *1* for 726.2γ.
727 *1*	<99	2295.3	(23/2$^+$)	1568.1	(19/2$^+$)	(Q)		I_γ: Iγ(726.2γ)+Iγ(727γ)=99 *8*. Mult.: anisotropy ratio(A)=1.7 *2* for 726.2γ+727γ, anisotropy ratio(B)=1.6 *1* for 727γ.
733.2 *5*	26.1 *22*	2661.5	(25/2$^+$)	1928.3	(21/2$^+$)	Q		Mult.: anisotropy ratio(A)=1.8 *3*, anisotropy ratio(B)=1.6 *1*.
757[†] *1*	<34	3775.8	(31/2$^+$)	3019.3	(27/2$^+$)	(Q)		I_γ: Iγ(757γ)+Iγ(757.1γ)=34 *3*. Mult.: anisotropy ratio(A)=2.0 *3* for 757γ+757.1γ, anisotropy ratio(B)=1.2 *1* for 757γ.
757.1[†] *1*	<34	4455.6	(35/2$^+$)	3698.5	(31/2$^+$)	(Q)		I_γ: Iγ(757γ)+Iγ(757.1γ)=34 *3*. Mult.: anisotropy ratio(A)=2.0 *3* for 757γ+757.1γ, anisotropy ratio(B)=1.4 *3* for 757.1γ.

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(HI,xnypγ) 1992Li22 (continued)

γ(^{121}Cs) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
774[†] *1*	61 *5*	4256.5	(33/2$^-$)	3482.2	(29/2$^-$)	Q	Mult.: anisotropy ratio(A)=1.8 *3*, anisotropy ratio(B)=1.3 *2*.
803[†] *1*	35 *3*	4172.7?	(33/2$^+$)	3369.7	(29/2$^+$)	Q	Mult.: anisotropy ratio(A)=1.9 *3*.
816.4 *5*	70 *6*	x+2914.6	(31/2$^-$)	x+2098.2	(27/2$^-$)	Q	Mult.: anisotropy ratio(A)=1.8 *3*, anisotropy ratio(B)=1.4 *1*.
828[‡] *1*		4683.8	(35/2$^-$)	3856.8	(31/2$^-$)		
838.8 *5*	17.5 *15*	5294.4	(39/2$^+$)	4455.6	(35/2$^+$)	Q	Mult.: anisotropy ratio(A)=1.8 *3*, anisotropy ratio(B)=1.2 *5*.
848[†a] *1*	26.7 *24*	4623?	(35/2$^+$)	3775.8	(31/2$^+$)	Q	Mult.: anisotropy ratio(A)=2.3 *4*.
857.4[‡] *5*		2077.5	(19/2$^-$)	1220.8	(17/2$^+$)	(D)	Mult.: anisotropy ratio(B)=0.6 *3*; E1 assumed.
894.0[†] *5*	<52	x+3808.6	(35/2$^-$)	x+2914.6	(31/2$^-$)	(Q)	I_γ: Iγ(894.0γ)+Iγ(895γ)=52 *4*. Mult.: anisotropy ratio(A)=1.5 *2* for 894.0γ+895γ, anisotropy ratio(B)=1.2 *1* for 894.0γ.
895[†a] *1*	<51.6	5066.1?	(37/2$^+$)	4172.7?	(33/2$^+$)		I_γ: Iγ(894.0γ)+Iγ(895γ)=52 *4*. Mult.: anisotropy ratio(A)=1.5 *2* for 894.0γ+854γ.
921.9[‡] *5*		6216.3	(43/2$^+$)	5294.4	(39/2$^+$)		
968.3 *5*	39 *3*	x+4776.9	(39/2$^-$)	x+3808.6	(35/2$^-$)	Q	Mult.: anisotropy ratio(A)=1.9 *3*, anisotropy ratio(B)=1.4 *2*.
994.2 *5*	11.6 *11*	1888.8	(17/2$^-$)	893.9	(15/2$^+$)	D	Mult.: anisotropy ratio(A)=1.9 *3*, anisotropy ratio(B)=1.5 *2*; E1 assumed.
1009.5 *5*	16.4 *16*	7225.8	(47/2$^+$)	6216.3	(43/2$^+$)	Q	Mult.: anisotropy ratio(A)=2.9 *5*.
1043.8[†] *5*	20.6 *19*	x+5820.7	(43/2$^-$)	x+4776.9	(39/2$^-$)	Q	Mult.: anisotropy ratio(A)=2.8 *4*, anisotropy ratio(B)=1.5 *4*.
1097.1 *5*	12.7 *10*	8322.9	(51/2$^+$)	7225.8	(47/2$^+$)	Q	Mult.: anisotropy ratio(A)=1.3 *2*.
1120[†] *1*	12.2 *11*	x+6940.7	(47/2$^-$)	x+5820.7	(43/2$^-$)	Q	Mult.: anisotropy ratio(A)=1.4 *2*, anisotropy ratio(B)=2.3 *5*.
1189.3 *1*	8.1 *8*	9512.2	(55/2$^+$)	8322.9	(51/2$^+$)	Q	Mult.: anisotropy ratio(A)=2.3 *4*.
1204 *1*	7.6 *7*	x+8144.7	(51/2$^-$)	x+6940.7	(47/2$^-$)	Q	Mult.: anisotropy ratio(A)=1.8 *3*.
1284[†] *1*	7.0 *5*	10796.2	(59/2$^+$)	9512.2	(55/2$^+$)	Q	Mult.: anisotropy ratio(A)=1.7 *5*.
1294[‡] *1*		x+9438.7	(55/2$^-$)	x+8144.7	(51/2$^-$)		
1372[a] *1*	3.9 *5*	x+10811	(59/2$^-$)	x+9438.7	(55/2$^-$)	Q	Mult.: anisotropy ratio(A)=1.6 *4*.
1388[‡a] *1*		12184?	(63/2$^+$)	10796.2	(59/2$^+$)		

[†] Contaminated by other γ′s in (HI,xnypγ) (1992Li22).
[‡] No intensity was given in (HI,xnypγ) (1992Li22).
[#] From anisotropy ratios given in γ comments.
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.
[&] Multiply placed with undivided intensity.
[a] Placement of transition in the level scheme is uncertain.

(HI,xnypγ) 1992Li22

Level Scheme

Intensities: Relative I_γ

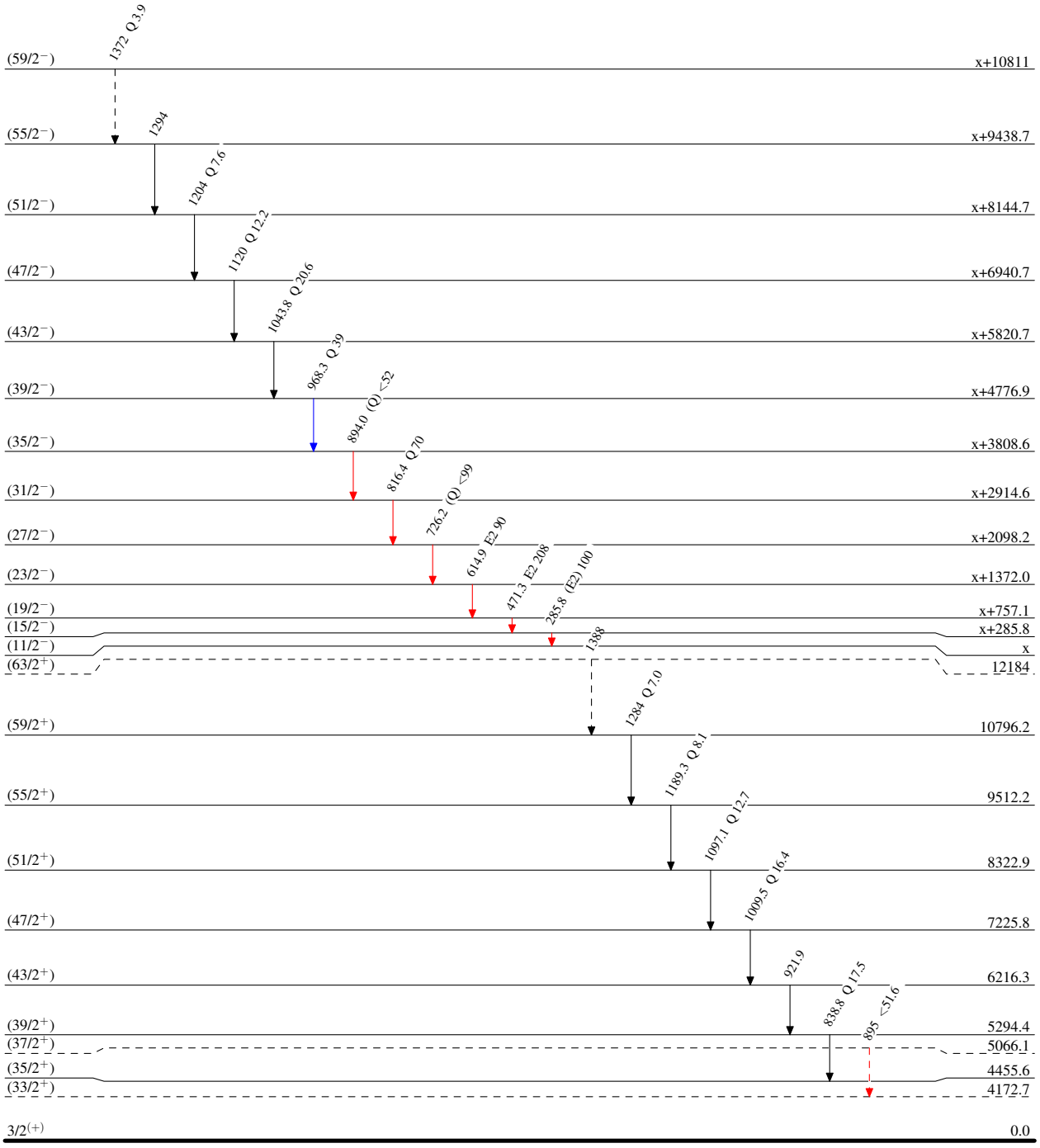
Legend

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

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

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

γ Decay (Uncertain)



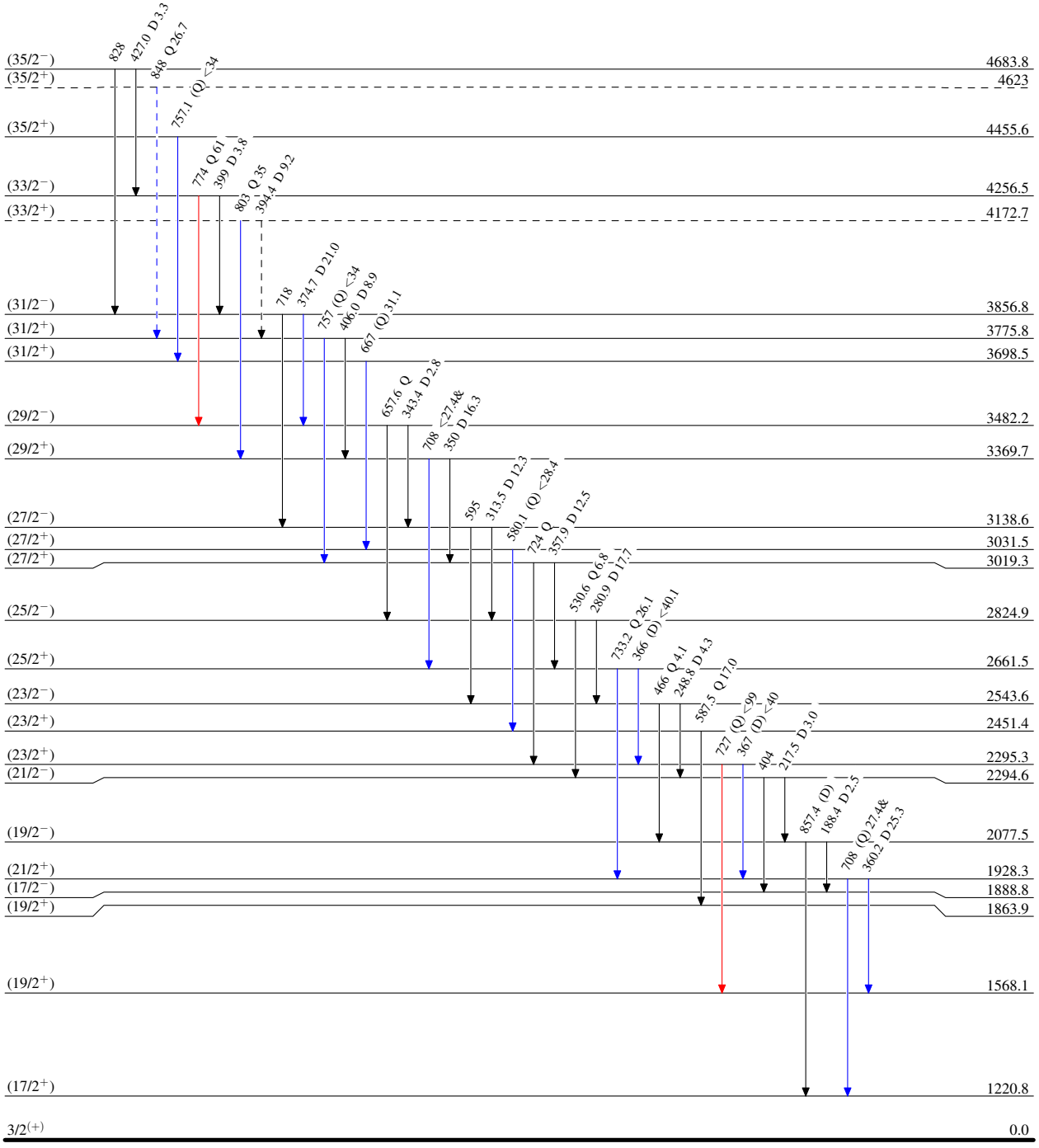
$^{121}_{55}Cs_{66}$

(HI,xnypγ) 1992Li22

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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)



155 s 4

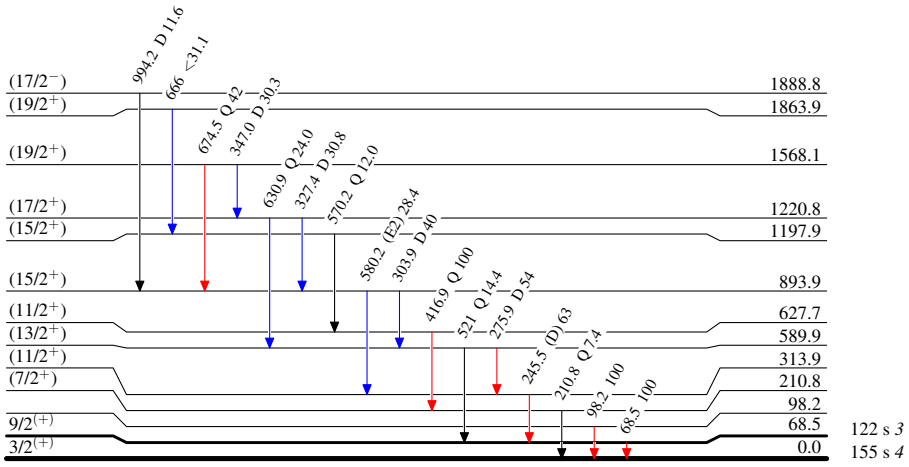
$^{121}_{55}Cs_{66}$

(HI,xnypγ) 1992Li22

Level Scheme (continued)

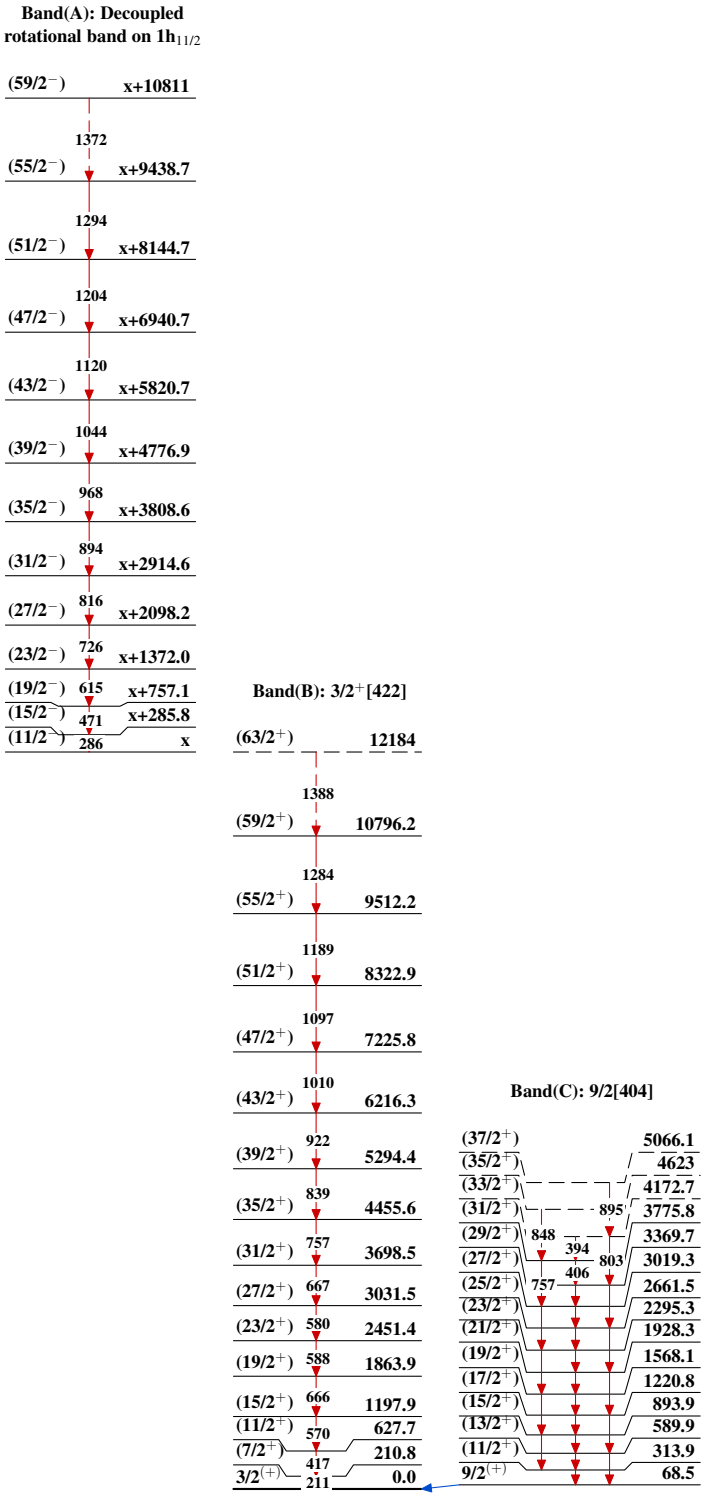
Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



$^{121}_{55}Cs_{66}$

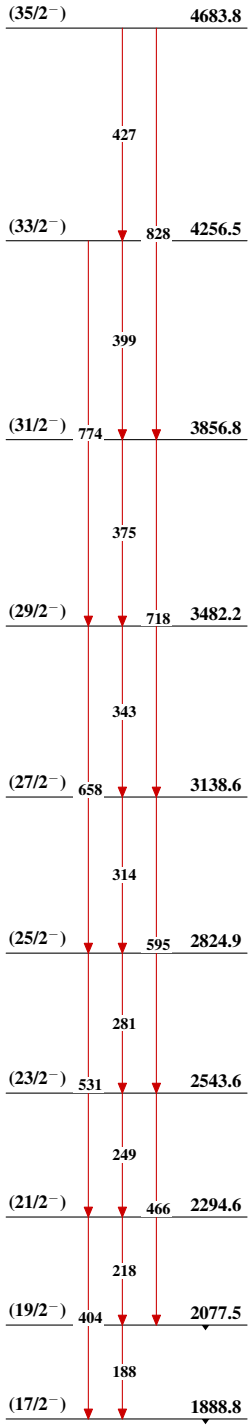
(HI,xnypγ) 1992Li22



$^{121}_{55}Cs_{66}$

(HI,xnypγ) 1992Li22 (continued)

Band(D): Three quasi-particle band on $1h_{11/2}$



$^{121}_{55}Cs_{66}$