(HI,xnγ) 1999Mu05

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 106, 367 (2005)	31-Aug-2005

Dataset includes ^{150}Sm(^{35}Cl,4nγ) and ^{142}Nd(^{46}Ti,αp2nγ).

1999Mu05: ^{150}Sm(^{35}Cl,4nγ); E=168 MeV; 95% enriched ^{150}Sm target; HHIRF spin spectrometer array (18 HPGe detectors, 52 NaI(Tl) detectors); θ=24.7°, 41.4°, 63.4°, 116.6°, 138.6°, 155.3°; measured Eγ, Iγ, DCO ratios, γγ coin, γ-K x ray coin.

1999So01: ^{142}Nd(^{46}Ti,αp2nγ); E=230 MeV, GASP γ detector array, ISIS Si ball for charged-particle detection, recoil mass spectrometer for recoil detection; measured (prompt γ)-recoil coin and triple γ-γ-charged particle coin; measured Eγ (0.2 keV uncertainty), Iγ (unreported); level J^π based on systematics for odd-A Au isotopes.

^{181}Au Levels

The level scheme is that of 1999Mu05; the much less extensive scheme of 1999So01 is in total agreement with this.
Additional information 1.

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0+x[#]	9/2⁻	958.2+x[c] 3	21/2⁺	2095.7+x[@] 4	27/2⁻	3443.1+x[#] 5	37/2⁻
0.0+y[g]	(11/2⁻)	987.97+x[&] 19	19/2⁻	2096.1+x[#] 4	29/2⁻	3500.1+x[c] 5	41/2⁺
29.4+x[@] 3	7/2⁻	1003.1+x[#] 3	21/2⁻	2241.6+y[f] 5	(29/2⁻)	3706.9+x[a] 5	(39/2⁻)
228.98+x[#] 15	13/2⁻	1006.0+x[@] 3	19/2⁻	2287.4+x[c] 5	33/2⁺	3844.6+x[&] 5	39/2⁻
242.64+x[@] 16	11/2⁻	1137.43+y[f] 25	(21/2⁻)	2366.4+x[b] 5		3861.0+x[d] 5	41/2⁺
305.46+y[f] 16	(13/2⁻)	1325.7+x[c] 4	25/2⁺	2388.7+x[d] 6	(29/2⁺)	4129.1+x 7	(41/2⁻)
333.89+x[&] 17	11/2⁻	1366.4+x[b] 4		2515.9+x[&] 4	31/2⁻	4190.5+x[c] 6	45/2⁺
458.54+y[g] 16	(15/2⁻)	1387.4+y[g] 3	(23/2⁻)	2535.2+x[e] 5	(31/2⁺)	4205.1+x[#] 7	(41/2⁻)
529.36+x[c] 19	13/2⁺	1431.9+x[&] 3	23/2⁻	2538.6+y[g] 5	(31/2⁻)	4260.1+x[a] 5	(43/2⁻)
571.58+x[#] 21	17/2⁻	1513.5+x[#] 4	25/2⁻	2722.1+x[@] 5	31/2⁻	4440.9+x[d] 5	(45/2⁺)
574.56+x[@] 18	15/2⁻	1518.3+x[@] 4	23/2⁻	2742.5+x[#] 5	33/2⁻	4634.6+x[&] 7	(43/2⁻)
620.28+x[&] 18	15/2⁻	1654.3+y[f] 3	(25/2⁻)	2807.7+x[d] 5	(33/2⁺)	4865.8+x[a] 6	(47/2⁻)
635.1+x[b] 4		1772.4+x[c] 4	29/2⁺	2864.3+x[c] 5	37/2⁺	4929.7+x[c] 6	49/2⁺
685.66+x[c] 22	17/2⁺	1837.7+x[b] 4		2945.3+x[b] 5		5026.1+x[d] 6	(49/2⁺)
687.14+y[f] 20	(17/2⁻)	1934.7+y[g] 3	(27/2⁻)	2967.7+x[e] 5	(35/2⁺)	5650.1+x[d] 8	(53/2⁺)
902.64+y[g] 24	(19/2⁻)	1942.8+x[&] 3	27/2⁻	3140.8+x[&] 5	35/2⁻	5717.7+x[c] 6	(53/2⁺)
955.0+x[b] 3		2029.1+x[e] 4	27/2⁺	3298.5+x[d] 5	37/2⁺		

† From least-squares adjustment of Eγ. Energies assume excitations of x and y, respectively, for the lowest energy level observed in this study (J^π=9/2⁻) and for the bandhead of the possible $h_{11/2}$ coupled structure. From level energy systematics for odd-A Au isotopes, a 5/2⁻ or 3/2⁻ g.s. is expected, and x=90 *50* and y=260 *20* are estimated by the evaluator for the lowest 9/2 and 11/2 levels, respectively.

‡ From 1999Mu05, based on measured DCO ratios and deduced band structure, assuming J^π=9/2⁻ for the lowest-energy level observed in this study (consistent with systematics for Au isotopes).

[#] Band(A): (π $h_{9/2}$) band, α=+1/2.

[@] Band(a): Possible (π $h_{9/2}$) band, α=−1/2. Prolate orbital; unfavored signature.

[&] Band(B): Possible (π $f_{7/2}$) band, α=−1/2. Prolate orbital; energetically favored signature.

[a] Band(C): π=− band, α=−1/2. Yrast for J≥39/2.

[b] Band(D): Possible π=− band. May be signature partner of the (π $f_{7/2}$) band which includes the 243+x level.

[c] Band(E): 1/2[660] band, α=+1/2.

[d] Band(F): Possible (π 1/2[660])⊗(ν 1/2[521])⊗(ν 5/2[512]) band.

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(HI,xnγ) 1999Mu05 (continued)

^{181}Au Levels (continued)

[e] Band(G): Possible 1/2[660] band, α=−1/2.
[f] Band(H): Possible (π $h_{11/2}$) band, α=+1/2. Coupled oblate band.
[g] Band(h): Possible (π $h_{11/2}$) band, α=−1/2. Coupled oblate band.

$\gamma(^{181}Au)$

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	Comments
111.1 *2*	13.0 *5*	685.66+x	17/2$^+$	574.56+x	15/2$^-$	(D)	Mult.: DCO=0.86 *2*.
153.1 *2*	4.2 *5*	458.54+y	(15/2$^-$)	305.46+y	(13/2$^-$)		
156.3# *2*	101 *3*	685.66+x	17/2$^+$	529.36+x	13/2$^+$	Q	Mult.: DCO=0.89 *2*.
213.2# *2*	139 *5*	242.64+x	11/2$^-$	29.4+x	7/2$^-$	(Q)	Mult.: DCO=0.90 *10*.
215.5 *2*	8.3 *5*	902.64+y	(19/2$^-$)	687.14+y	(17/2$^-$)		
228.7 *2*	9.9 *7*	687.14+y	(17/2$^-$)	458.54+y	(15/2$^-$)		
228.9# *2*	133.1 *11*	228.98+x	13/2$^-$	0.0+x	9/2$^-$	Q	Mult.: DCO=0.90 *4*.
234.8 *2*	7.6 *4*	1137.43+y	(21/2$^-$)	902.64+y	(19/2$^-$)		
242.6# *2*	43.8	242.64+x	11/2$^-$	0.0+x	9/2$^-$	D	Mult.: DCO=0.78 *4*.
250.2 *2*	6.8 *4*	1387.4+y	(23/2$^-$)	1137.43+y	(21/2$^-$)		
267.1 *2*	7.1 *4*	1654.3+y	(25/2$^-$)	1387.4+y	(23/2$^-$)		
272.5# *2*	177 *5*	958.2+x	21/2$^+$	685.66+x	17/2$^+$	Q	Mult.: DCO=1.04 *2*.
280.5 *2*	4.5 *3*	1934.7+y	(27/2$^-$)	1654.3+y	(25/2$^-$)		
286.5 *2*	11.1 *7*	620.28+x	15/2$^-$	333.89+x	11/2$^-$		
286.7# *2*	149 *5*	529.36+x	13/2$^+$	242.64+x	11/2$^-$	D	Mult.: DCO=0.76 *12*.
297.0 *5*	3.4 *3*	2538.6+y	(31/2$^-$)	2241.6+y	(29/2$^-$)		
300.4# *2*	35.7 *12*	529.36+x	13/2$^+$	228.98+x	13/2$^-$	Q	Mult.: DCO=1.02 *8*.
305.4 *2*	6.0	305.46+y	(13/2$^-$)	0.0+y	(11/2$^-$)		
308.0 *5*	2.8 *3*	2241.6+y	(29/2$^-$)	1934.7+y	(27/2$^-$)		
319.9 *2*	3.1 *6*	955.0+x		635.1+x			
331.1 *2*	8.2 *4*	3298.5+x	37/2$^+$	2967.7+x	(35/2$^+$)		
331.9# *2*	45.2 *18*	574.56+x	15/2$^-$	242.64+x	11/2$^-$	Q	Mult.: DCO=0.92 *5*.
334.0 *2*	5.0	333.89+x	11/2$^-$	0.0+x	9/2$^-$		
342.6# *2*	74.7 *25*	571.58+x	17/2$^-$	228.98+x	13/2$^-$		
345.6 *2*	8.8 *6*	574.56+x	15/2$^-$	228.98+x	13/2$^-$		
367.5# *2*	178 *5*	1325.7+x	25/2$^+$	958.2+x	21/2$^+$	Q	Mult.: DCO=1.04 *2*.
367.7 *2*	21.0 *10*	987.97+x	19/2$^-$	620.28+x	15/2$^-$		
380.4 *2*	3.4 *6*	955.0+x		574.56+x	15/2$^-$		
381.6 *2*	5.9 *6*	687.14+y	(17/2$^-$)	305.46+y	(13/2$^-$)		
391.2 *2*	12.0 *7*	620.28+x	15/2$^-$	228.98+x	13/2$^-$	D	Mult.: DCO=0.37 *10*.
411.4 *2*	11.5 *8*	1366.4+x		955.0+x			
413.4 *2*	8.2 *5*	987.97+x	19/2$^-$	574.56+x	15/2$^-$		
416.4 *2*	11.5 *5*	987.97+x	19/2$^-$	571.58+x	17/2$^-$	D	Mult.: DCO=0.3 *4*.
419.0 *5*	4.4 *3*	2807.7+x	(33/2$^+$)	2388.7+x	(29/2$^+$)		
428.0 *5*	4.5 *6*	1431.9+x	23/2$^-$	1003.1+x	21/2$^-$		
430.0 *5*	7.4 *7*	1942.8+x	27/2$^-$	1513.5+x	25/2$^-$		
431.4 *2*	28.6 *14*	1006.0+x	19/2$^-$	574.56+x	15/2$^-$	Q	Mult.: DCO=1.07 *16*.
431.5# *2*	51.7 *18*	1003.1+x	21/2$^-$	571.58+x	17/2$^-$	Q	Mult.: DCO=1.19 *8*.
432.6 *2*	8.6 *6*	2967.7+x	(35/2$^+$)	2535.2+x	(31/2$^+$)		
444.0 *5*	6.5 *7*	902.64+y	(19/2$^-$)	458.54+y	(15/2$^-$)		
444.0 *2*	44.4 *16*	1431.9+x	23/2$^-$	987.97+x	19/2$^-$		Mult.: DCO=1.3 *4*.
446.7# *2*	152 *5*	1772.4+x	29/2$^+$	1325.7+x	25/2$^+$	Q	Mult.: DCO=1.11 *3*.
450.3 *2*	10.2 *7*	1137.43+y	(21/2$^-$)	687.14+y	(17/2$^-$)		
458.6 *2*	7.9 *11*	458.54+y	(15/2$^-$)	0.0+y	(11/2$^-$)		
471.3 *2*	10.8 *6*	1837.7+x		1366.4+x			

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(HI,xnγ) 1999Mu05 (continued)

γ(^{181}Au) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[‡]	Comments
484.7 *2*	8.6 *6*	1387.4+y	(23/2$^-$)	902.64+y	(19/2$^-$)		
490.7 *2*	9.9 *5*	3298.5+x	37/2$^+$	2807.7+x	(33/2$^+$)		
506.2 *2*	11.1 *6*	2535.2+x	(31/2$^+$)	2029.1+x	27/2$^+$		
510.5[#] *2*	36.9 *16*	1513.5+x	25/2$^-$	1003.1+x	21/2$^-$		
510.7 *2*	41.8 *17*	1942.8+x	27/2$^-$	1431.9+x	23/2$^-$		
512.3 *2*	24.3 *11*	1518.3+x	23/2$^-$	1006.0+x	19/2$^-$		Mult.: DCO=0.8 *3*.
514.9[#] *2*	120 *4*	2287.4+x	33/2$^+$	1772.4+x	29/2$^+$	Q	Mult.: DCO=0.95 *3*.
516.7 *2*	11.6 *7*	1654.3+y	(25/2$^-$)	1137.43+y	(21/2$^-$)		
528.7 *2*	10.2 *5*	2366.4+x		1837.7+x			
547.4 *2*	9.6 *6*	1934.7+y	(27/2$^-$)	1387.4+y	(23/2$^-$)		
553.2 *2*	8.7 *5*	4260.1+x	(43/2$^-$)	3706.9+x	(39/2$^-$)		
562.5 *2*	21.5 *8*	3861.0+x	41/2$^+$	3298.5+x	37/2$^+$	(Q)	Mult.: DCO=1.20 *20*.
566.1 *2*	11.0 *5*	3706.9+x	(39/2$^-$)	3140.8+x	35/2$^-$		
573.1 *2*	29.7 *11*	2515.9+x	31/2$^-$	1942.8+x	27/2$^-$		Mult.: DCO=1.7 *4*.
577.0[#] *2*	71.1 *22*	2864.3+x	37/2$^+$	2287.4+x	33/2$^+$	Q	Mult.: DCO=0.90 *6*.
578.9 *2*	5.4 *5*	2945.3+x		2366.4+x			
579.9 *2*	13.0 *6*	4440.9+x	(45/2$^+$)	3861.0+x	41/2$^+$		
582.2 *2*	15.4 *9*	2095.7+x	27/2$^-$	1513.5+x	25/2$^-$		Mult.: DCO=1.8 *4*.
582.6[#] *2*	21.1 *9*	2096.1+x	29/2$^-$	1513.5+x	25/2$^-$		Mult.: DCO=1.2 *3*.
585.2 *2*	10.5 *5*	5026.1+x	(49/2$^+$)	4440.9+x	(45/2$^+$)		
586.0 *5*	4.6 *6*	2241.6+y	(29/2$^-$)	1654.3+y	(25/2$^-$)		
604.0 *5*	8.7 *7*	2538.6+y	(31/2$^-$)	1934.7+y	(27/2$^-$)		
605.7 *2*	7.9 *5*	4865.8+x	(47/2$^-$)	4260.1+x	(43/2$^-$)		
624.0 *5*	8.7 *5*	5650.1+x	(53/2$^+$)	5026.1+x	(49/2$^+$)		
624.9 *2*	21.9 *9*	3140.8+x	35/2$^-$	2515.9+x	31/2$^-$		Mult.: DCO=0.64 *80*; uncertainty may be a typographical error, but ΔJ=2 placement would be inconsistent with a DCO of 0.64 *8*.
626.4 *2*	10.1 *6*	2722.1+x	31/2$^-$	2095.7+x	27/2$^-$		Mult.: DCO=1.0 *5*.
635.8[#] *2*	43.4 *14*	3500.1+x	41/2$^+$	2864.3+x	37/2$^+$	Q	Mult.: DCO=0.95 *9*.
646.4 *2*	14.0 *6*	2742.5+x	33/2$^-$	2096.1+x	29/2$^-$		Mult.: DCO=1.1 *4*.
682.0 *5*	4.2 *4*	2967.7+x	(35/2$^+$)	2287.4+x	33/2$^+$		
686.0 *5*	4.6 *4*	4129.1+x	(41/2$^-$)	3443.1+x	37/2$^-$		
690.4 *2*	20.7 *8*	4190.5+x	45/2$^+$	3500.1+x	41/2$^+$	Q	Mult.: DCO=1.10 *15*.
700.6 *2*	10.0 *5*	3443.1+x	37/2$^-$	2742.5+x	33/2$^-$		Mult.: DCO=1.8 *12*.
703.5 *2*	9.5 *6*	2029.1+x	27/2$^+$	1325.7+x	25/2$^+$	D	Mult.: DCO=0.47 *30*.
703.8 *2*	7.6 *5*	3844.6+x	39/2$^-$	3140.8+x	35/2$^-$		
739.2 *2*	9.7 *5*	4929.7+x	49/2$^+$	4190.5+x	45/2$^+$		Mult.: DCO=1.3 *5*.
762.0 *5*	3.4 *3*	4205.1+x	(41/2$^-$)	3443.1+x	37/2$^-$		
763.0 *5*	3.4 *4*	2535.2+x	(31/2$^+$)	1772.4+x	29/2$^+$		
788.0 *2*	1.9 *3*	5717.7+x	(53/2$^+$)	4929.7+x	49/2$^+$		
790.0 *5*	1.5 *3*	4634.6+x	(43/2$^-$)	3844.6+x	39/2$^-$		
996.8 *2*	5.7 *4*	3861.0+x	41/2$^+$	2864.3+x	37/2$^+$		Mult.: DCO=2.6 *15*.
1010.7 *2*	6.8 *4*	3298.5+x	37/2$^+$	2287.4+x	33/2$^+$		Mult.: DCO=1.1 *6*.
1035.2 *2*	8.6 *5*	2807.7+x	(33/2$^+$)	1772.4+x	29/2$^+$		
1063.0 *5*	4.9 *4*	2388.7+x	(29/2$^+$)	1325.7+x	25/2$^+$		

[†] From ^{150}Sm(^{35}Cl,4nγ) at E=168 MeV (1999Mu05). Transitions which were also reported in (^{46}Ti,αp2nγ) are indicated.

[‡] From measured DCO ratio (24°, 63°); expected DCO ratios are 1.0 for stretched Q (or D, ΔJ=0) transitions and 0.6 for stretched D transitions (1999Mu05).

[#] Transition also reported in (^{46}Ti,αp2nγ) (1999So01).

(HI,xnγ) 1999Mu05

Level Scheme

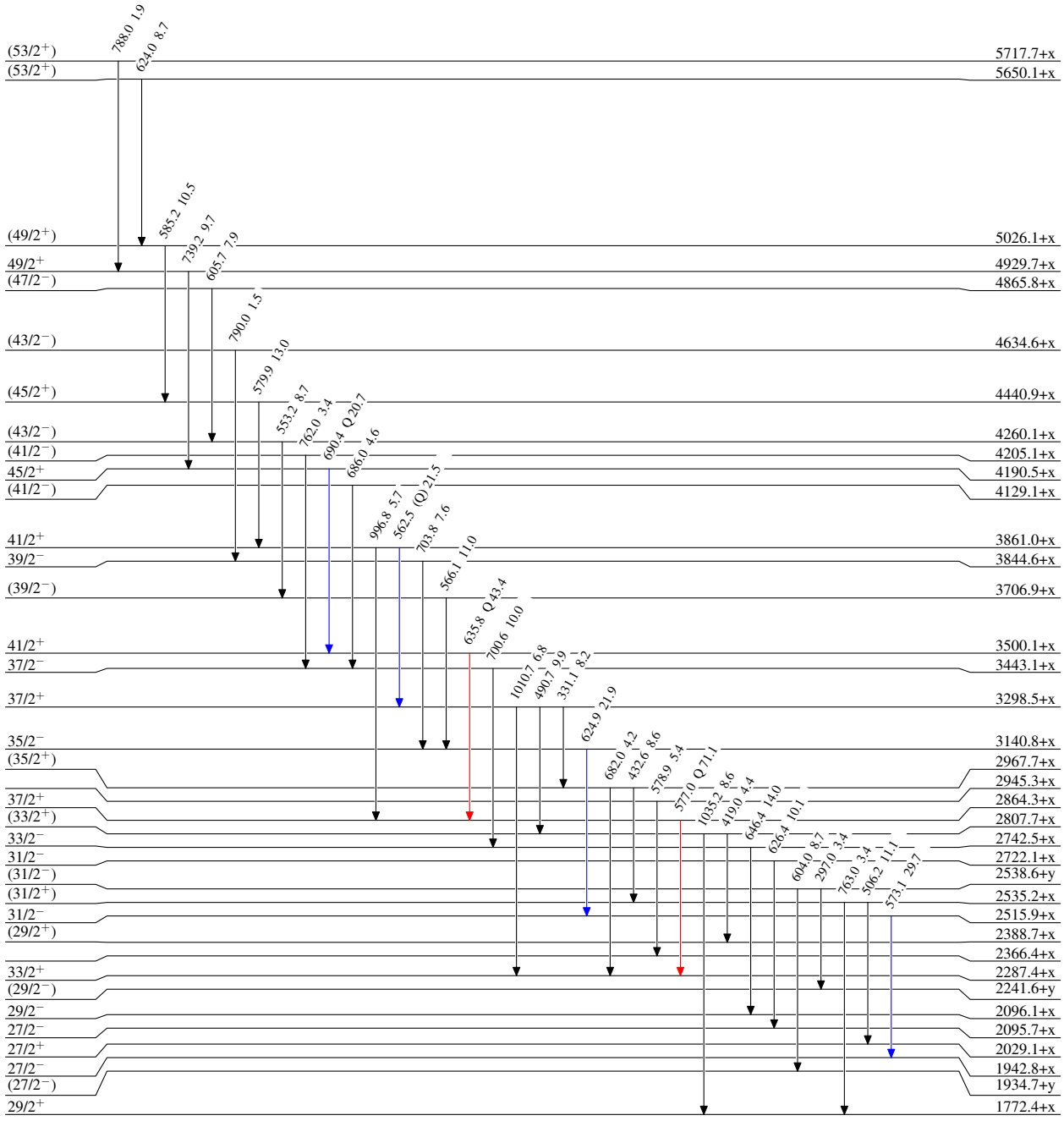
Intensities: Relative I_γ

Legend

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

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

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

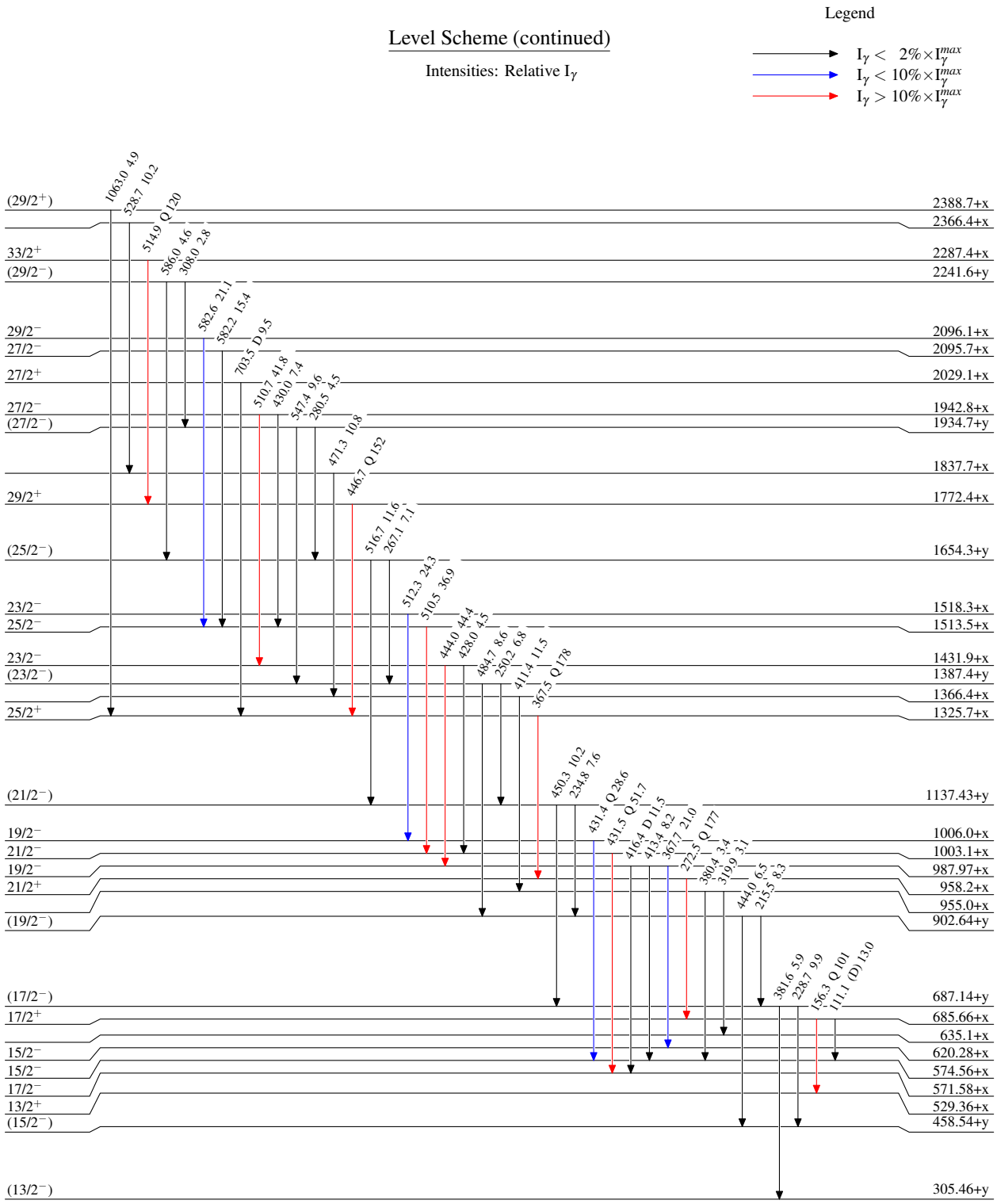


$^{181}_{79}Au_{102}$

(HI,xnγ) 1999Mu05

Level Scheme (continued)

Intensities: Relative I_γ

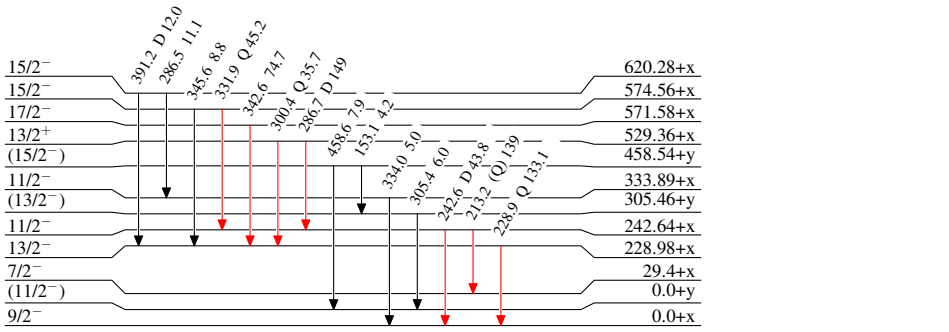


$^{181}_{79}Au_{102}$

(HI,xnγ) 1999Mu05

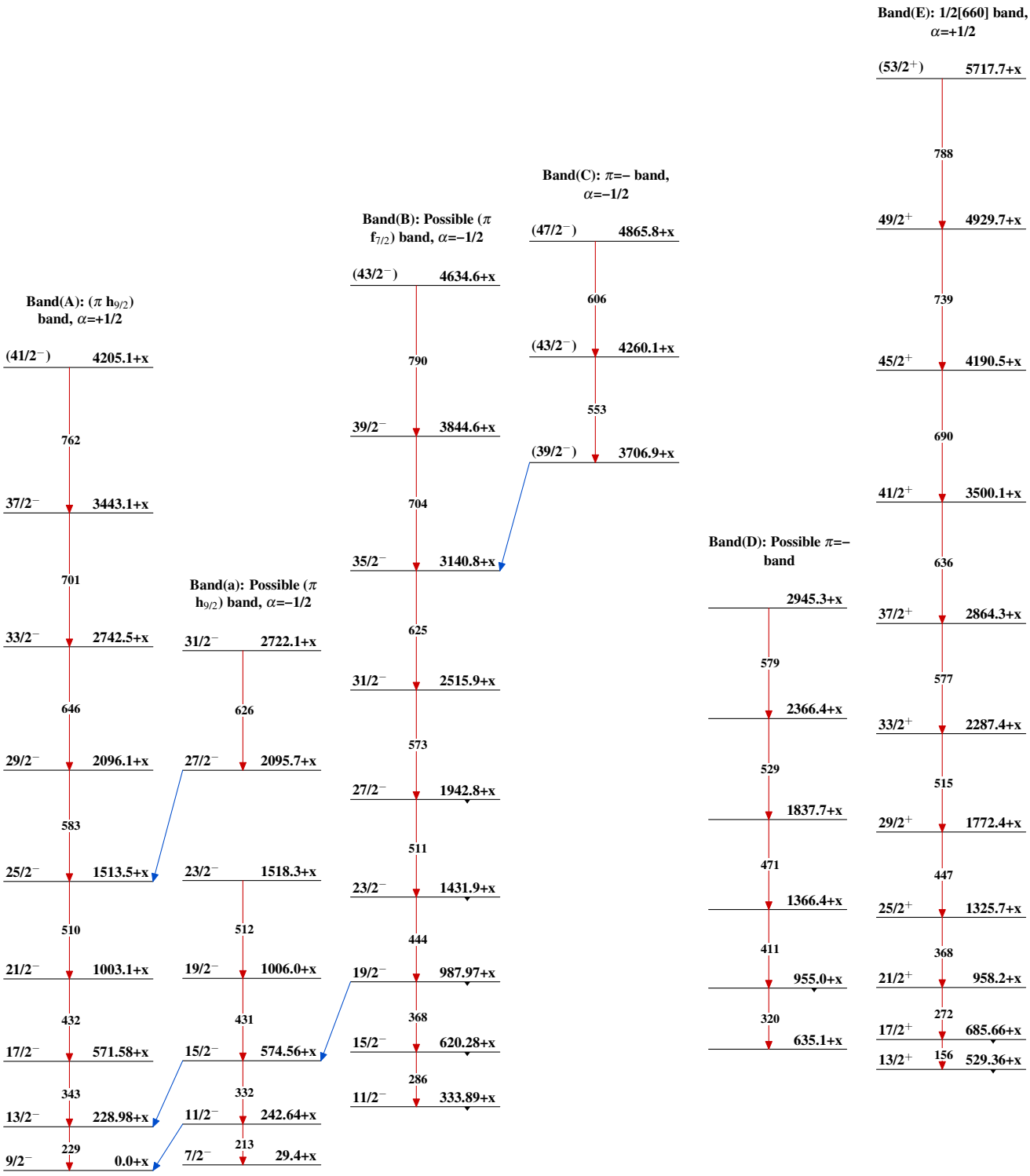
Level Scheme (continued)

Intensities: Relative I_γ



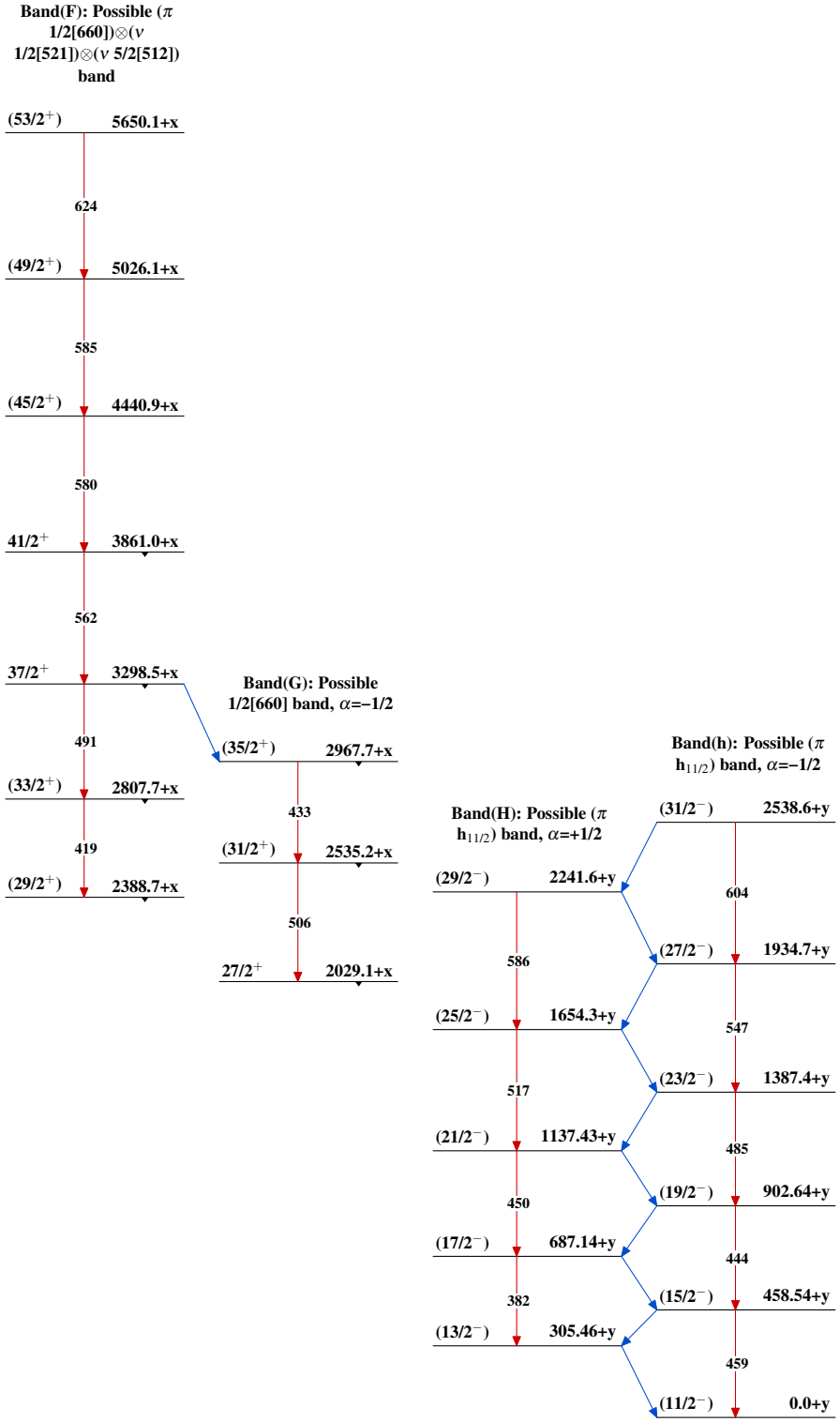
$^{181}_{79}Au_{102}$

(HI,xnγ) 1999Mu05



$^{181}_{79}Au_{102}$

(HI,xnγ) 1999Mu05 (continued)



$^{181}_{79}Au_{102}$