(HI,xnγ) 1986La08,1979De03,1978Ka06

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 106, 619 (2005)	1-Nov-2005

Data from 1986La08 indicate coexistence of prolate and oblate nuclear shapes in ^{185}Au. The energies of the h11/2 configurations have minima for oblate (11/2[505]) and prolate (1/2[550]) Nilsson orbitals. The corresponding rotational bandheads are at 220.1 keV and 1210.1 keV, respectively. $T_{1/2}$=26 ns for the 220.1 level can be explained as resulting from the decay of an oblate to a prolate structure (1983Be48).

1986La08: ^{170}Yb(^{19}F,4nγ), E=97 MeV; 1.9 mg/cm^2 ^{170}Yb target on Pb backing; 5 Ge detectors and 6 NaI counters; γγ coin, γ(θ).

1979De03: ^{170}Yb(^{19}F,4nγ), E=92 MeV; ^{165}Ho(^{24}Mg,4nγ), E=120 MeV; ^{175}Lu(^{16}O,6nγ), E=112 MeV. Ga(Li) coaxial and planar detectors; γγ(t), γγ(θ), γ(θ). Other: 1985Pa06.

1978Ka06: ^{175}Lu(^{16}O,6nγ), E=113 MeV; ^{169}Tm(^{20}Ne,4nγ), E=98, 103 MeV. UNISOR facility; γγ(t), γ(θ), ce.

2004Jo07: ^{159}Tb(^{30}Si,4nγ), E=140 MeV. 12 Compton suppressed HPGe detectors with 14 BGO array; Measured lifetimes by recoil-distance Doppler-shift method.

^{185}Au Levels

Band(α,a) $K^\pi=5/2^-$ decoupled rotational band. configuration=$h_{9/2}$. Prolate shape.

E(level)[b]	Jπ†	$T_{1/2}$[a]	E(level)[b]	Jπ†	$T_{1/2}$[a]
0.0	$5/2^-$	4.25[c] min *6*	2146.4[#]	$(29/2^+)$	2.77 ps *+10−12*
8.9	$(9/2^-)$		2302.5[&d]		
107.4[d]	$(7/2)^-$	0.37[c] ns *4*	2503[‡d]	$(31/2^-)$	
220.3[@]	$(11/2^-)$	26[c] ns *2*	2561.7[&d]		
221.7	$(13/2^-)$	116 ps *+11−10*	2584.3	$(33/2^-)$	
301.4	$(11/2)^-$		2619.3[#]	$(33/2^+)$	2.31 ps *+13−20*
544.6	$(17/2^-)$	13.5 ps *+10−8*	2687.0[d]	$(31/2^-)$	
616.8	$(15/2)^-$		2831.6[&d]		
682.7[@]	$(15/2^-)$		3037.3[&d]		
776.1[‡d]	$(15/2^-)$		3059[‡d]	$(35/2^-)$	
860.1[#]	$(13/2^+)$		3117.3[#]	$(37/2^+)$	<2.9 ps
953.8	$(21/2^-)$	4.3 ps *4*	3225.1	$(37/2^-)$	
1029.4	$(19/2^-)$		3309.7[d]	$(35/2^-)$	
1040.8[#]	$(17/2^+)$		3365.0[&d]		
1136.2[‡d]	$(19/2^-)$		3657[‡d]	$(39/2^-)$	
1210.1[&d]			3657.3[#]	$(41/2^+)$	
1328.1[#]	$(21/2^+)$	16.2 ps *12*	3898.1[d]	$(41/2^-)$	
1396.9[@]	$(19/2^-)$		3945.8[d]	$(39/2^-)$	
1438.1	$(25/2^-)$	<3.5 ps	4244.7[#]	$(45/2^+)$	
1509.4	$(23/2^-)$		4293[‡d]	$(43/2^-)$	
1548.8[&d]			4612[d]	$(45/2^-)$	
1564.5[‡d]	$(23/2^-)$		4872.9[#d]	$(49/2^+)$	
1705.8[#]	$(25/2^+)$	4.8 ps *3*	4967[‡d]	$(47/2^-)$	
1761.2[&d]			5372[d]	$(49/2^-)$	
1986.3	$(29/2^-)$		5545[#d]	$(53/2^+)$	
1994.6[‡]	$(27/2^-)$		5695[‡d]	$(51/2^-)$	
2025.2[@d]	$(23/2^-)$		6273[#d]	$(57/2^+)$	
2095.0[d]	$(27/2^-)$		7038[#]	$(61/2^+)$	

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(HI,xnγ) 1986La08,1979De03,1978Ka06 (continued)

^{185}Au Levels (continued)

† Spin assignments for members of the various rotational bands are supported by γ(θ) and γγ(θ) measurements of 1986La08, 1979De03, and 1978Ka06.
‡ Band(A): $K^\pi=(1/2^-)$ decoupled rotational band. configuration=$f_{7/2}$. Prolate shape.
# Band(B): $K^\pi=13/2^+$ decoupled rotational band. configuration=13/2. Prolate shape.
@ Band(C): $K^\pi=11/2^-$ decoupled rotational band. configuration=$h_{11/2}$. Oblate shape.
& Band(D): $K^\pi=1/2^-$ rotational band. configuration=$h_{11/2}$. Prolate shape.
[a] From recoil-distance method (2004Jo07), unless otherwise stated.
[b] From 1979De03, unless otherwise specified.
[c] From Adopted Levels.
[d] From 1986La08.

γ(^{185}Au)

E_γ†	I_γ@	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ&	Comments
8.9		8.9	$(9/2^-)$	0.0	$5/2^-$			E_γ: from ^{185}Hg ε decay.
98.5‡[b] *3*		107.4	$(7/2)^-$	8.9	$(9/2^-)$			Eγ=100.0 *5* (1979De03).
181.0 *5*	≈10	1040.8	$(17/2^+)$	860.1	$(13/2^+)$			
194.0 *5*		301.4	$(11/2)^-$	107.4	$(7/2)^-$			
196.4[b]		1705.8	$(25/2^+)$	1509.4	$(23/2^-)$			
205.7‡ *3*		3037.3		2831.6				
211.5 *3*	24	220.3	$(11/2^-)$	8.9	$(9/2^-)$	M1		Mult.: from ce data of 1982Bo27.
212.4‡ *3*		1761.2		1548.8				
212.9 *3*	100	221.7	$(13/2^-)$	8.9	$(9/2^-)$	E2		
243.6‡ *3*		860.1	$(13/2^+)$	616.8	$(15/2)^-$			
259.2‡ *3*		2561.7		2302.5				
263.9‡ *3*		2025.2	$(23/2^-)$	1761.2				
264.6‡ *3*		1040.8	$(17/2^+)$	776.1	$(15/2^-)$	D		Mult.: from γ(θ) (1986La08). Level scheme requires E1.
269.9‡ *3*		2831.6		2561.7				
277.3‡ *3*		2302.5		2025.2	$(23/2^-)$			
287.3 *3*	35	1328.1	$(21/2^+)$	1040.8	$(17/2^+)$	E2		
292.6 *3*	53	301.4	$(11/2)^-$	8.9	$(9/2^-)$	M1+E2	1.0 *+10−6*	Mult.: E1+M2 is ruled out by RUL.
299.0 *5*		1328.1	$(21/2^+)$	1029.4	$(19/2^-)$			
315.4 *3*	45	616.8	$(15/2)^-$	301.4	$(11/2)^-$	E2		
322.9 *3*	58	544.6	$(17/2^-)$	221.7	$(13/2^-)$	E2		
327.7‡ *3*		3365.0		3037.3				
338.7‡ *3*		1548.8		1210.1				
360.1‡ *3*		1136.2	$(19/2^-)$	776.1	$(15/2^-)$			
364.1‡ *3*		1761.2		1396.9	$(19/2^-)$			
377.7 *3*	35	1705.8	$(25/2^+)$	1328.1	$(21/2^+)$	E2		
395.2 *3*	26	616.8	$(15/2)^-$	221.7	$(13/2^-)$	M1+E2	2.1 *+36−20*	
409.2 *3*	44	953.8	$(21/2^-)$	544.6	$(17/2^-)$	E2		
412.7 *3*	21	1029.4	$(19/2^-)$	616.8	$(15/2)^-$	E2		
424.1 *3*	50	1040.8	$(17/2^+)$	616.8	$(15/2)^-$	D		Mult.: δ=0.07, from 287.3γ − 424.1γ cascade; δ=0.03, from 377.7γ − 424.1γ cascade, γγ(θ) (1979De03).
428.3‡		1564.5	$(23/2^-)$	1136.2	$(19/2^-)$			
429.6‡ *3*		1994.6	$(27/2^-)$	1564.5	$(23/2^-)$			
440.6 *3*	27	2146.4	$(29/2^+)$	1705.8	$(25/2^+)$	E2		
462.4 *3*	22	682.7	$(15/2^-)$	220.3	$(11/2^-)$	E2		Mult.: from ce data of 1982Bo27.

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(HI,xnγ) 1986La08,1979De03,1978Ka06 (continued)

γ(^{185}Au) (continued)

E_γ[†]	I_γ[@]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
472.9 *3*	18	2619.3	(33/2$^+$)	2146.4	(29/2$^+$)	E2	
476[‡]		2025.2	(23/2$^-$)	1548.8			
476[‡]		3037.3		2561.7			
480.0 *3*	10	1509.4	(23/2$^-$)	1029.4	(19/2$^-$)	E2	
484.3 *3*	30	1438.1	(25/2$^-$)	953.8	(21/2$^-$)	E2	Mult.: from γ(θ) (1986La08).
484.9 *3*		1029.4	(19/2$^-$)	544.6	(17/2$^-$)		
485.2 *3*	11	1994.6	(27/2$^-$)	1509.4	(23/2$^-$)	E2	Mult.: from γ(θ) (1986La08).
498.0 *3*	12	3117.3	(37/2$^+$)	2619.3	(33/2$^+$)	E2	
509[‡]		2503	(31/2$^-$)	1994.6	(27/2$^-$)		
527.8[‡] *3*		1210.1		682.7	(15/2$^-$)		
530.2[‡] *3*		2095.0	(27/2$^-$)	1564.5	(23/2$^-$)	E2	Mult.: from γ(θ) (1986La08).
536.5[‡] *3*		2561.7		2025.2	(23/2$^-$)		
540.0 *3*	9	3657.3	(41/2$^+$)	3117.3	(37/2$^+$)	E2	
541.2[‡] *3*		2302.5		1761.2			
548.2 *3*	17	1986.3	(29/2$^-$)	1438.1	(25/2$^-$)	E2	
551.5[‡] *3*		1761.2		1210.1			
555.2 *3*		776.1	(15/2$^-$)	220.3	(11/2$^-$)		
555.5[‡] *3*		3059	(35/2$^-$)	2503	(31/2$^-$)		
555.6 *3*	14	1509.4	(23/2$^-$)	953.8	(21/2$^-$)		
556.6 *3*	11	1994.6	(27/2$^-$)	1438.1	(25/2$^-$)		
558.7 *3*	9	860.1	(13/2$^+$)	301.4	(11/2)$^-$	D	
585.3[‡] *3*		2095.0	(27/2$^-$)	1509.4	(23/2$^-$)		
587.4 *3*	7	4244.7	(45/2$^+$)	3657.3	(41/2$^+$)		
592.0[a] *3*		1136.2	(19/2$^-$)	544.6	(17/2$^-$)		
592.0[a‡] *3*		2687.0	(31/2$^-$)	2095.0	(27/2$^-$)		
598.0 *3*		2584.3	(33/2$^-$)	1986.3	(29/2$^-$)	E2	
598.6[‡] *3*		3657	(39/2$^-$)	3059	(35/2$^-$)		
611		1564.5	(23/2$^-$)	953.8	(21/2$^-$)		
622.7[‡] *3*		3309.7	(35/2$^-$)	2687.0	(31/2$^-$)		
628.0[‡] *3*		2025.2	(23/2$^-$)	1396.9	(19/2$^-$)		
628.2[‡] *3*		4872.9	(49/2$^+$)	4244.7	(45/2$^+$)		
635.4[‡] *3*		4293	(43/2$^-$)	3657	(39/2$^-$)		
636.1[‡] *3*		3945.8	(39/2$^-$)	3309.7	(35/2$^-$)		
640.8 *3*	4	3225.1	(37/2$^-$)	2584.3	(33/2$^-$)		
672[‡]		5545	(53/2$^+$)	4872.9	(49/2$^+$)		
673.0[‡] *3*		3898.1	(41/2$^-$)	3225.1	(37/2$^-$)		
674[‡]		4967	(47/2$^-$)	4293	(43/2$^-$)		
714[‡]		4612	(45/2$^-$)	3898.1	(41/2$^-$)		
714.2 *3*	8	1396.9	(19/2$^-$)	682.7	(15/2$^-$)		
728[a‡b]		5695	(51/2$^-$)	4967	(47/2$^-$)		
728[a‡]		6273	(57/2$^+$)	5545	(53/2$^+$)		
760[‡b]		5372	(49/2$^-$)	4612	(45/2$^-$)		
765[‡b]		7038	(61/2$^+$)	6273	(57/2$^+$)		

[†] From 1979De03, unless otherwise specified.
[‡] From 1986La08.
[#] From 1979De03 and 1978Ka06. All quadrupole transitions of 1978Ka06 are assumed by the evaluator to be stretched E2.

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(HI,xnγ) 1986La08,1979De03,1978Ka06 (continued)

$\gamma(^{185}Au)$ (continued)

[@] From 1979De03. Fractional uncertainties are ≤10%.
[&] From $\gamma\gamma(\theta)$, $\gamma(\theta)$ (1979De03).
[a] Multiply placed.
[b] Placement of transition in the level scheme is uncertain.

(HI,xnγ) 1986La08,1979De03,1978Ka06

Level Scheme

Intensities: Relative I_γ

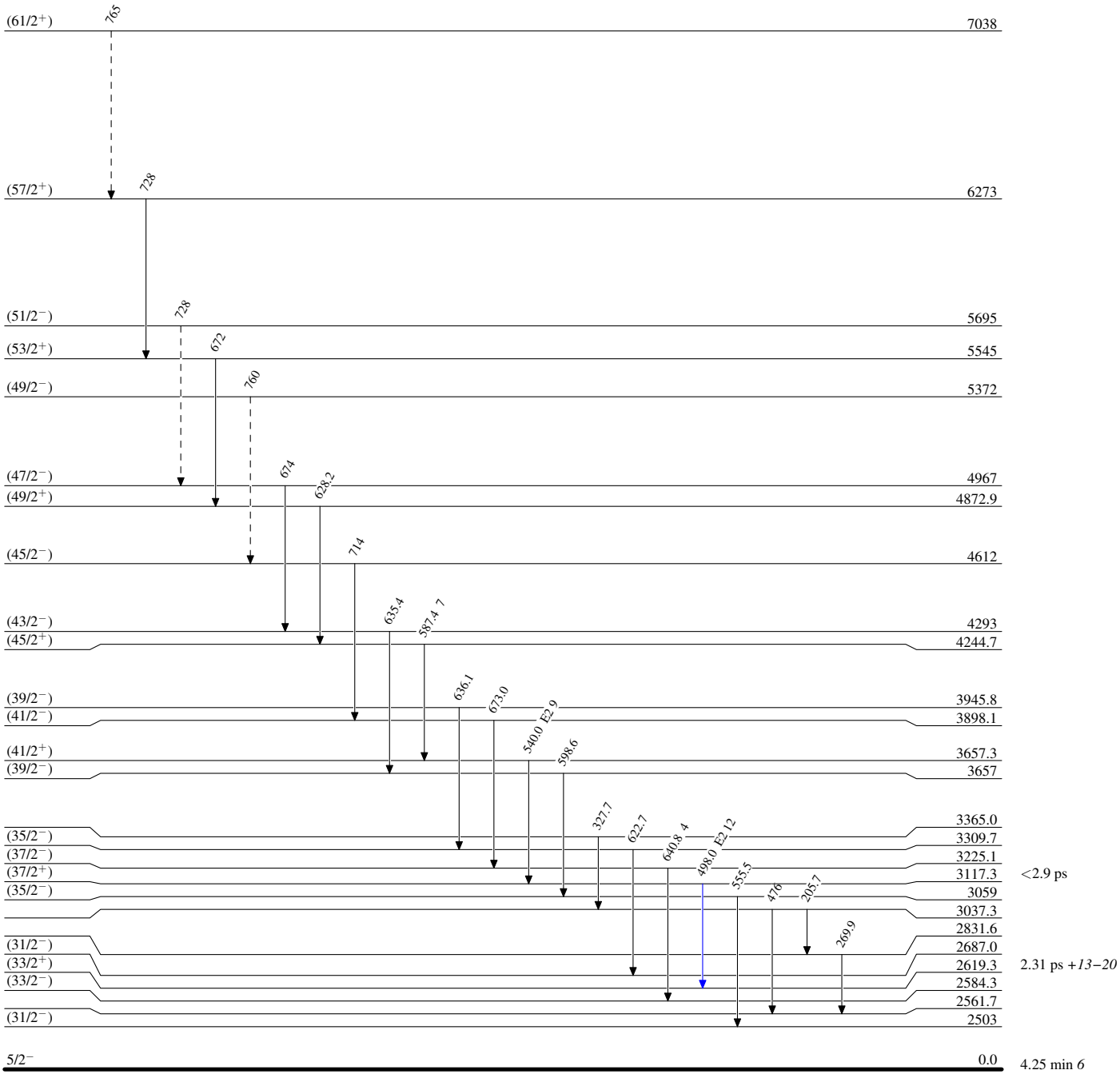
Legend

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

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

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

γ Decay (Uncertain)



$^{185}_{79}Au_{106}$

(HI,xnγ) 1986La08,1979De03,1978Ka06

Level Scheme (continued)

Intensities: Relative I_γ

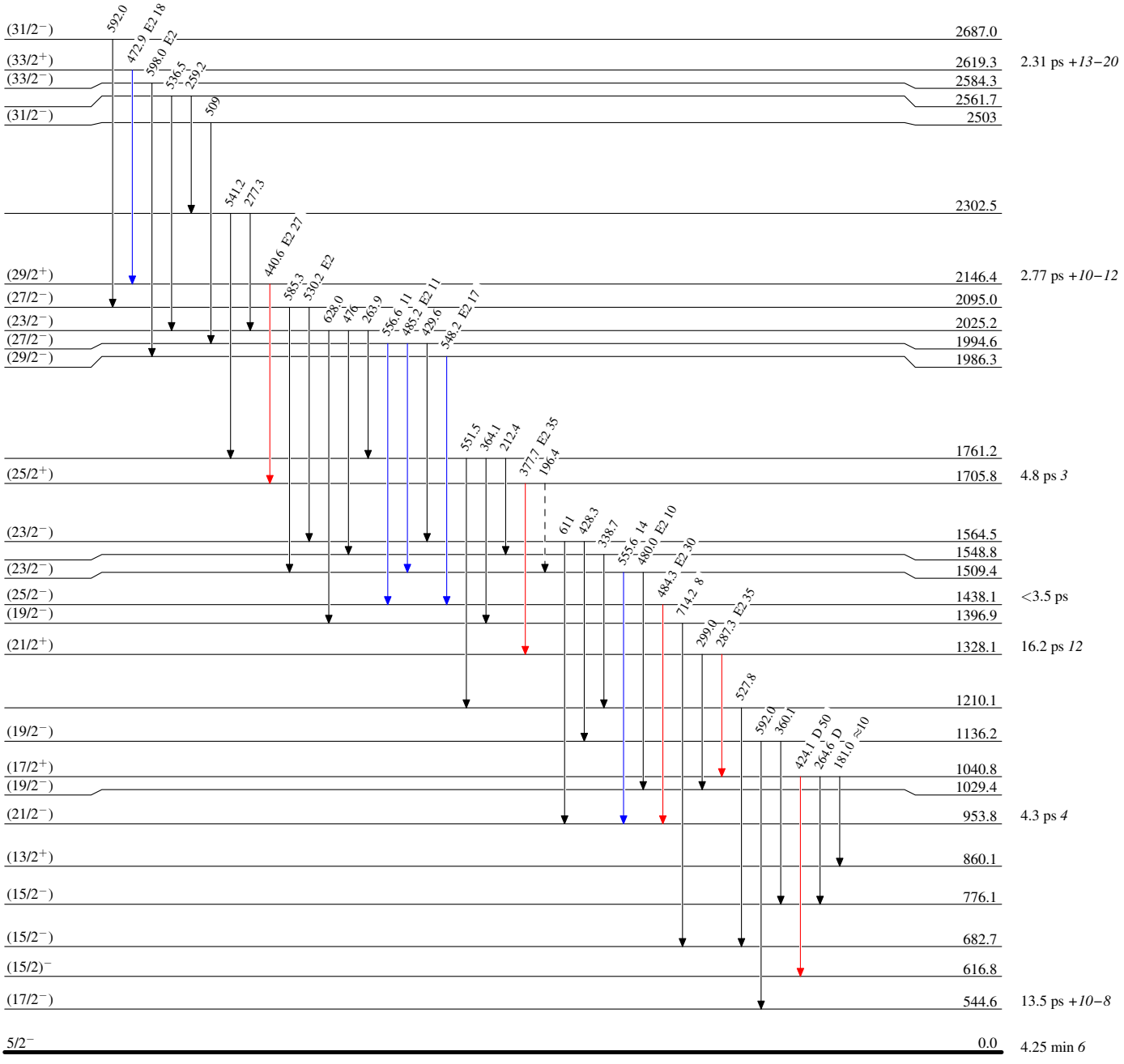
Legend

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

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

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

γ Decay (Uncertain)



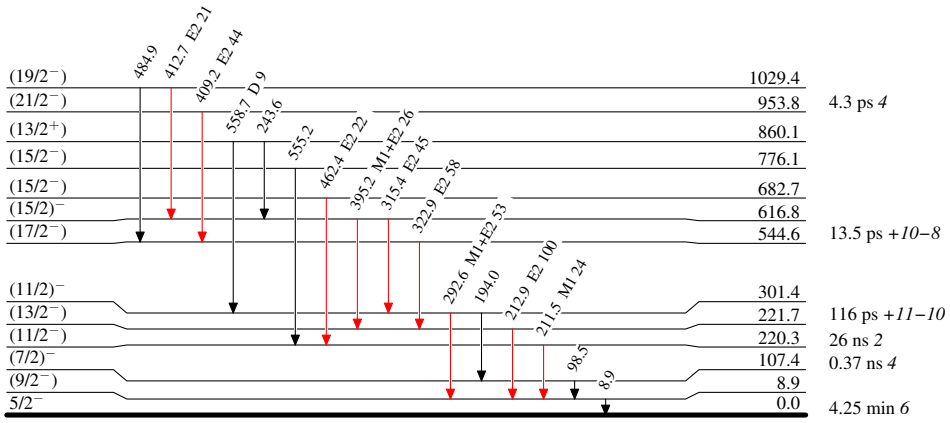
$^{185}_{79}Au_{106}$

(HI,xnγ) 1986La08,1979De03,1978Ka06

Level Scheme (continued)

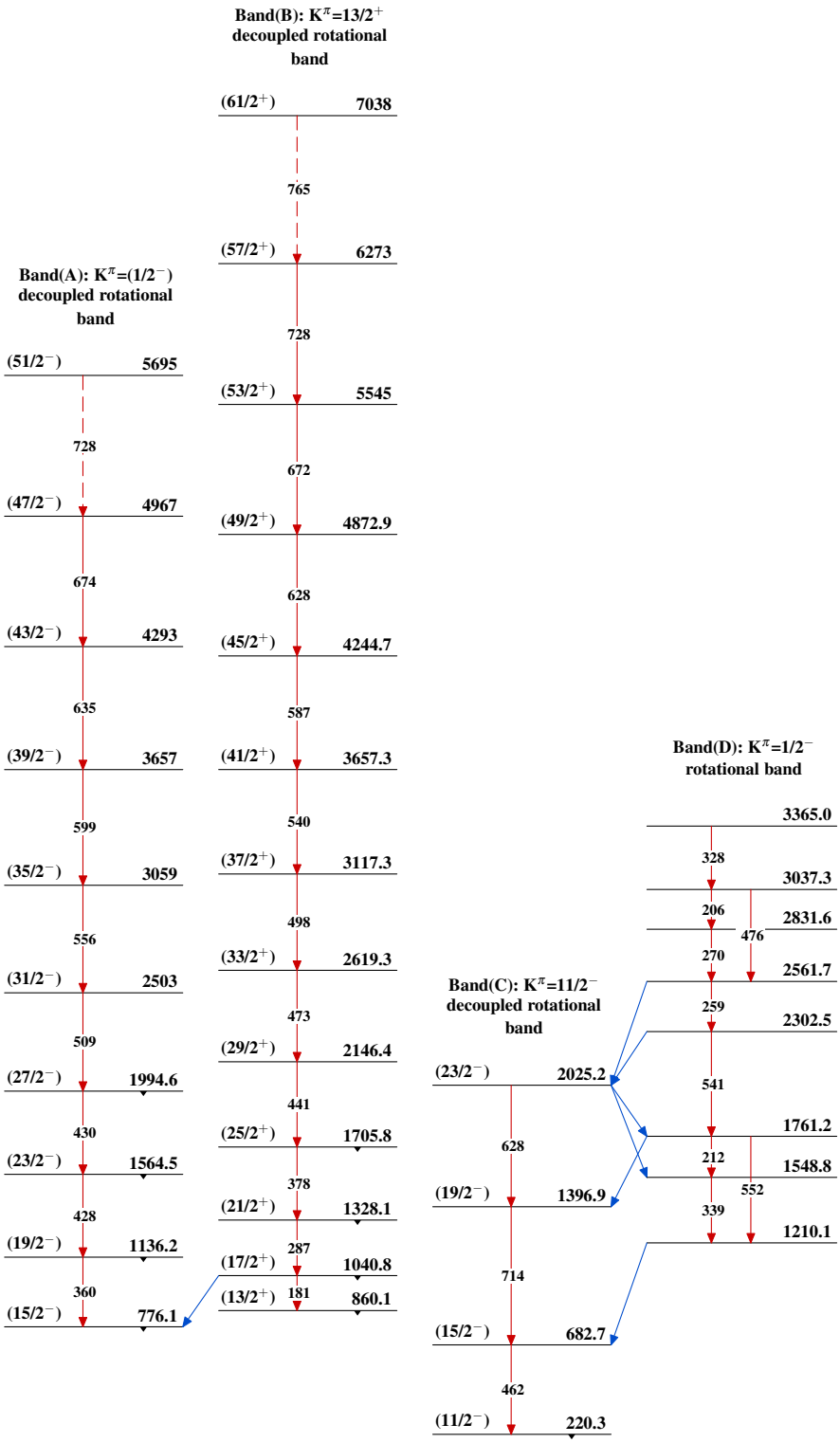
Intensities: Relative I_γ

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)



$^{185}_{79}Au_{106}$

(HI,xnγ) 1986La08,1979De03,1978Ka06



$^{185}_{79}Au_{106}$