Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev	NDS 159, 1 (2019)	30-Aug-2019

Q(β^-)=−8760 *80*; S(n)=11100 *30*; S(p)=−100 *1*; Q(α)=56298 *4* 2017Wa10

^{177}Au Levels

Cross Reference (XREF) Flags

- A ^{181}Tl α decay (2.9 s)
- B ^{181}Tl α decay (1.40 ms)
- C (HI,xnγ)

E(level)†	J$^\pi$	$T_{1/2}$	XREF	Comments
0.0	1/2$^+$	1.501 s *20*	ABC	%α=40 *6*; %ε+%β^+=60 *6* μ=1.15 *5* %α: From 2009An14. %ε+β^+ decay has not been directly measured. Other: %α=35 (1975Ca06). J$^\pi$: J=1/2 from hyperfine splitting (2018Cu04); π from μ; Favored alpha decay of ^{181}Tl g.s. (J^π=1/2$^+$); J^π systematics in neighboring odd-Z nuclei. $T_{1/2}$: Unweighted average of 1.53 s *7* (2009An14), 1.462 s *32* (2001Ko44) and 1.511 s *13* (2014AlZX). μ: From hyperfine anomaly (2018Cu04). Eα=6159 keV *7* (2018Cu04), 6161 keV *7* (2009An14), 6156 keV *6* (2001Ko44), 6153 keV *6* (2014AlZX), 6186 keV *10* (1996To01), 6150 keV *10* (1973Ga08), 6154 keV *10* (1996Pa01) and 6180 keV *20* (1993BoZK,1992BlZW,1992BoZO). configuration: $\pi(s^{-1}_{1/2})$.
24.90 *23*	(3/2$^+$)		BC	XREF: B(26). J$^\pi$: From systematics of similar structures in neighboring nuclei and the proposed configuration. The assignment is tentative. Other: J^π=(5/2$^+$) in 2009An14. configuration: $\pi(d^{-1}_{3/2})$. The assignment is tentative.
182.7@ *5*	(11/2$^-$)	1.193 s *13*	BC	%α=60 *10*; %ε+%β^+=40 *10* XREF: B(186). Additional information 1. %α: From 2009An14. %ε+β^+ decay has not been directly measured. Other: %α=65 (1975Ca06). J$^\pi$: Favored α decay to the ^{173}Ir isomeric state (J^π=11/2$^-$); J^π systematics in neighboring odd-Z nuclei and proposed configuration. $T_{1/2}$: Unweighted average of 1.180 s *12* (2001Ko44) and 1.205 s *3* (2014AlZX). Others: 1.0 s *2* (2009An14), 1.3 s *4* (1968Si01), 1.3 s *2* (1996Pa01), 1.18 s *7* (1991Se01) and 1.3 s *1* (1975Ca06). Eα=6124 keV *7* (2009An14), 6122 keV *6* (2001Ko44), 6118 *6* (2014AlZX), 6118 keV *9* (1996Pa01), 6110 keV *10* (1975Ca06), 6110 keV *10* (1973Ga08) and 6115 keV *100* (1968Si01). configuration: Spherical (weakly-deformed) $\pi(h^{-1}_{11/2})$ configuration.
290.30 *23*	(5/2$^+$)		C	J$^\pi$: 265.4γ to (3/2$^+$), 290.3γ to (1/2$^+$).
423.6‡ *6*	(9/2$^-$)	≤15 ns	BC	XREF: B(431). J$^\pi$: 240.8γ (M1+E2) to (11/2$^-$). $T_{1/2}$: From intensity balance considerations (2001Ko44).
703.5@ *7*	(13/2$^-$)		C	J$^\pi$: 520.7γ (M1+E2) to (11/2$^-$).
706.6@ *7*	(15/2$^-$)		C	J$^\pi$: 523.8γ (E2) to (11/2$^-$).
713.5‡ *6*	(13/2$^-$)		C	J$^\pi$: 289.9γ to (9/2$^-$); band assignment.
743.00 *25*	(9/2$^+$)		C	J$^\pi$: 319.4γ to (9/2$^-$), 452.7γ to (5/2$^+$).

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Adopted Levels, Gammas (continued)

^{177}Au Levels (continued)

E(level)[†]	J^π	XREF	Comments
743.00+x[#] *5*	(13/2$^+$)	C	Additional information 2. J^π: Systematics of similar structures in neighboring nuclei; proposed configuration. configuration: Well-deformed π1/2[660] ($i_{13/2}$) band member.
903.10+x[#] *10*	(17/2$^+$)	C	J^π: 160.1γ E2 to (13/2$^+$); band assignment.
931.0[&] *7*	(11/2$^-$)	C	J^π: 227.5γ (M1+E2) to (13/2$^-$). configuration: Well-deformed π11/2[505] ($h_{11/2}$).
1096.2[‡] *7*	(17/2$^-$)	C	J^π: 382.7γ (E2) to (13/2$^-$); band assignment.
1102.6[&] *7*	(13/2$^-$)	C	J^π: 171.6γ to (11/2$^-$), 396.0γ to (15/2$^-$), 399.1γ (M1+E2) to (13/2$^-$); band assignment.
1160.40+x[#] *15*	(21/2$^+$)	C	J^π: 257.3γ to (17/2$^+$); band assignment.
1305.6[&] *7*	(15/2$^-$)	C	J^π: 203.0γ to (13/2$^-$), 374.6γ to (11/2$^-$); band assignment.
1430.7[@] *9*	(17/2$^-$)	C	J^π: 727.2γ to (13/2$^-$).
1499.40+x[#] *18*	(25/2$^+$)	C	J^π: 339.0γ to (21/2$^+$); band assignment.
1526.2[&] *8*	(17/2$^-$)	C	J^π: 220.6γ to (15/2$^-$), 423.6γ to (13/2$^-$); band assignment.
1532.0[‡] *8*	(21/2$^-$)	C	J^π: 435.8γ to (17/2$^-$); band assignment.
1577.4[@] *9*	(19/2$^-$)	C	J^π: 870.8γ to (15/2$^-$).
1758.3[&] *8*	(19/2$^-$)	C	J^π: 232.1γ to (17/2$^-$), 452.7γ to (15/2$^-$); band assignment.
1909.30+x[#] *20*	(29/2$^+$)	C	J^π: 409.9γ to (25/2$^+$); band assignment.
2004.3[&] *8*	(21/2$^-$)	C	J^π: 245.9γ to (19/2$^-$), 478.0γ to (17/2$^-$); band assignment.
2020.2[‡] *8*	(25/2$^-$)	C	J^π: 488.2γ to (21/2$^-$); band assignment.
2262.5[&] *9*	(23/2$^-$)	C	J^π: 258.2γ to (21/2$^-$), 504.4γ to (19/2$^-$); band assignment.
2381.20+x[#] *23*	(33/2$^+$)	C	J^π: 471.9γ to (29/2$^+$); band assignment.
2533.2[&] *9*	(25/2$^-$)	C	J^π: 270.7γ to (23/2$^-$), 528.9γ to (21/2$^-$); band assignment.
2553.8[‡] *9*	(29/2$^-$)	C	J^π: 533.6γ to (25/2$^-$); band assignment.
2810.3[&] *11*	(27/2$^-$)	C	J^π: 277γ to (25/2$^-$), 548γ to (23/2$^-$); band assignment.
2907.10+x[#] *25*	(37/2$^+$)	C	J^π: 525.9γ to (33/2$^+$); band assignment.
3100.4[&] *11*	(29/2$^-$)	C	J^π: 290.2γ to (27/2$^-$), 567γ to (25/2$^-$); band assignment.
3121.0[‡] *11*	(33/2$^-$)	C	J^π: 567.2γ to (29/2$^-$); band assignment.
3480.6+x[#] *4*	(41/2$^+$)	C	J^π: 573.5γ to (37/2$^+$); band assignment.
3709.0?[‡] *14*	(37/2$^-$)	C	J^π: 588.0γ to (33/2$^-$); band assignment.
4096.3+x[#] *4*	(45/2$^+$)	C	J^π: 615.7γ to (41/2$^+$); band assignment.
4753.3+x[#] *5*	(49/2$^+$)	C	J^π: 657.0γ to (45/2$^+$); band assignment.
5444.3+x[#] *6*	(53/2$^+$)	C	J^π: 691.0γ to (49/2$^+$); band assignment.
6158.2+x?[#] *12*	(57/2$^+$)	C	J^π: 714.0γ to (53/2$^+$); band assignment.

[†] From a least-squares fit to Eγ.
[‡] Band(A): π1/2[541] ($h_{9/2}$) band.
[#] Band(B): π1/2[660] ($i_{13/2}$) band.
[@] Seq.(D): Spherical (weakly-deformed) $\pi h_{11/2}\otimes J^\pi$ (even-even core).
[&] Band(C): Well-deformed π11/2[505] ($h_{11/2}$) band.

Adopted Levels, Gammas (continued)

$\gamma(^{177}Au)$

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	Comments
24.90	$(3/2^+)$	(24.9 *3*)	100	0.0	$1/2^+$		E_γ: From level energy differences.
290.30	$(5/2^+)$	265.4 *2*	100 *3*	24.90	$(3/2^+)$		
		290.3 *4*	50.3 *17*	0.0	$1/2^+$		
423.6	$(9/2^-)$	240.8 *3*	100	182.7	$(11/2^-)$	(M1+E2)	E_γ: 241.5 keV *3* (2009An14). Mult.: R(DCO)=0.9 *4* implies M1,E2.
703.5	$(13/2^-)$	520.7 *5*	100	182.7	$(11/2^-)$	(M1+E2)	Mult.: R(DCO)=0.59 *14*.
706.6	$(15/2^-)$	523.8 *5*	100	182.7	$(11/2^-)$	(E2)	Mult.: R(DCO)=1.5 *5* implies M1,E2.
713.5	$(13/2^-)$	289.9 *2*	100	423.6	$(9/2^-)$		
743.00	$(9/2^+)$	319.4 *2*	52 *6*	423.6	$(9/2^-)$		
		452.7 *2*	100 *3*	290.30	$(5/2^+)$		
743.00+x	$(13/2^+)$	(29.5+y *5*)		713.5	$(13/2^-)$		E_γ: From level energy differences. Required by coincidence relationship.
903.10+x	$(17/2^+)$	160.1 *1*	100	743.00+x	$(13/2^+)$	E2	Mult.: From α(exp)=0.70 *7* (2001Ko44) deduced using intensity balance considerations from $\gamma\gamma$ coincidence spectrum produced by summing gates on γ rays above the Iπ=$(17/2^+)$ level.
931.0	$(11/2^-)$	227.5 *5*	100	703.5	$(13/2^-)$	(M1+E2)	Mult.: R(DCO)=1.5 *7* and α(exp)=0.58 *23* in 2017Ve03,2014AlZX, from the K x-ray intensity balance.
1096.2	$(17/2^-)$	382.7 *3*	100	713.5	$(13/2^-)$	(E2)	Mult.: R(DCO)=1.1 *3*.
1102.6	$(13/2^-)$	171.6 *5*	25.4 *24*	931.0	$(11/2^-)$		
		396.0 *5*	100 *15*	706.6	$(15/2^-)$		
		399.1 *5*	31 *3*	703.5	$(13/2^-)$	(M1+E2)	Mult.: R(DCO)=1.2 8 implies M1,E2.
1160.40+x	$(21/2^+)$	257.3 *1*	100	903.10+x	$(17/2^+)$		
1305.6	$(15/2^-)$	203.0 *5*	86 *7*	1102.6	$(13/2^-)$	(M1+E2)	Mult.: R(DCO)=1.2 *5* implies M1,E2.
		374.6 *5*	56 *7*	931.0	$(11/2^-)$		
		599.0 *5*	100 *22*	706.6	$(15/2^-)$		
1430.7	$(17/2^-)$	727.2 *5*	100 *22*	703.5	$(13/2^-)$		
1499.40+x	$(25/2^+)$	339.0 *1*	100	1160.40+x	$(21/2^+)$	(E2)	Mult.: R(DCO)=1.02 *21*.
1526.2	$(17/2^-)$	220.6 *5*	100 *9*	1305.6	$(15/2^-)$	(M1+E2)	Mult.: R(DCO)=1.0 *4* implies M1,E2.
		423.6 *5*	71 *9*	1102.6	$(13/2^-)$		
1532.0	$(21/2^-)$	435.8 *3*	100	1096.2	$(17/2^-)$		
1577.4	$(19/2^-)$	870.8 *5*	100	706.6	$(15/2^-)$		
1758.3	$(19/2^-)$	232.1 *5*	76 *9*	1526.2	$(17/2^-)$		
		452.7 *5*	100 *12*	1305.6	$(15/2^-)$	(E2)	Mult.: R(DCO)=1.0 *7* implies M1,E2.
1909.30+x	$(29/2^+)$	409.9 *1*	100	1499.40+x	$(25/2^+)$	(E2)	Mult.: R(DCO)=0.82 *24* implies M1,E2.
2004.3	$(21/2^-)$	245.9 *5*	64 *9*	1758.3	$(19/2^-)$		
		478.0 *5*	100 *16*	1526.2	$(17/2^-)$		
2020.2	$(25/2^-)$	488.2 *3*	100	1532.0	$(21/2^-)$		
2262.5	$(23/2^-)$	258.2 *5*	100 *13*	2004.3	$(21/2^-)$		
		504.4 *5*	75 *16*	1758.3	$(19/2^-)$		
2381.20+x	$(33/2^+)$	471.9 *1*	100	1909.30+x	$(29/2^+)$		
2533.2	$(25/2^-)$	270.7 *5*	100 *16*	2262.5	$(23/2^-)$		
		528.9 *5*	86 *18*	2004.3	$(21/2^-)$		
2553.8	$(29/2^-)$	533.6 *4*	100	2020.2	$(25/2^-)$		
2810.3	$(27/2^-)$	277 *1*		2533.2	$(25/2^-)$		
		548 *1*		2262.5	$(23/2^-)$		
2907.10+x	$(37/2^+)$	525.9 *1*	100	2381.20+x	$(33/2^+)$		
3100.4	$(29/2^-)$	290.2 *5*	100	2810.3	$(27/2^-)$		
		567 *1*		2533.2	$(25/2^-)$		
3121.0	$(33/2^-)$	567.2 *5*	100	2553.8	$(29/2^-)$		
3480.6+x	$(41/2^+)$	573.5 *2*	100	2907.10+x	$(37/2^+)$		
3709.0?	$(37/2^-)$	588.0[‡] *10*	100	3121.0	$(33/2^-)$		
4096.3+x	$(45/2^+)$	615.7 *2*	100	3480.6+x	$(41/2^+)$		

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Adopted Levels, Gammas (continued)

$\gamma(^{177}Au)$ (continued)

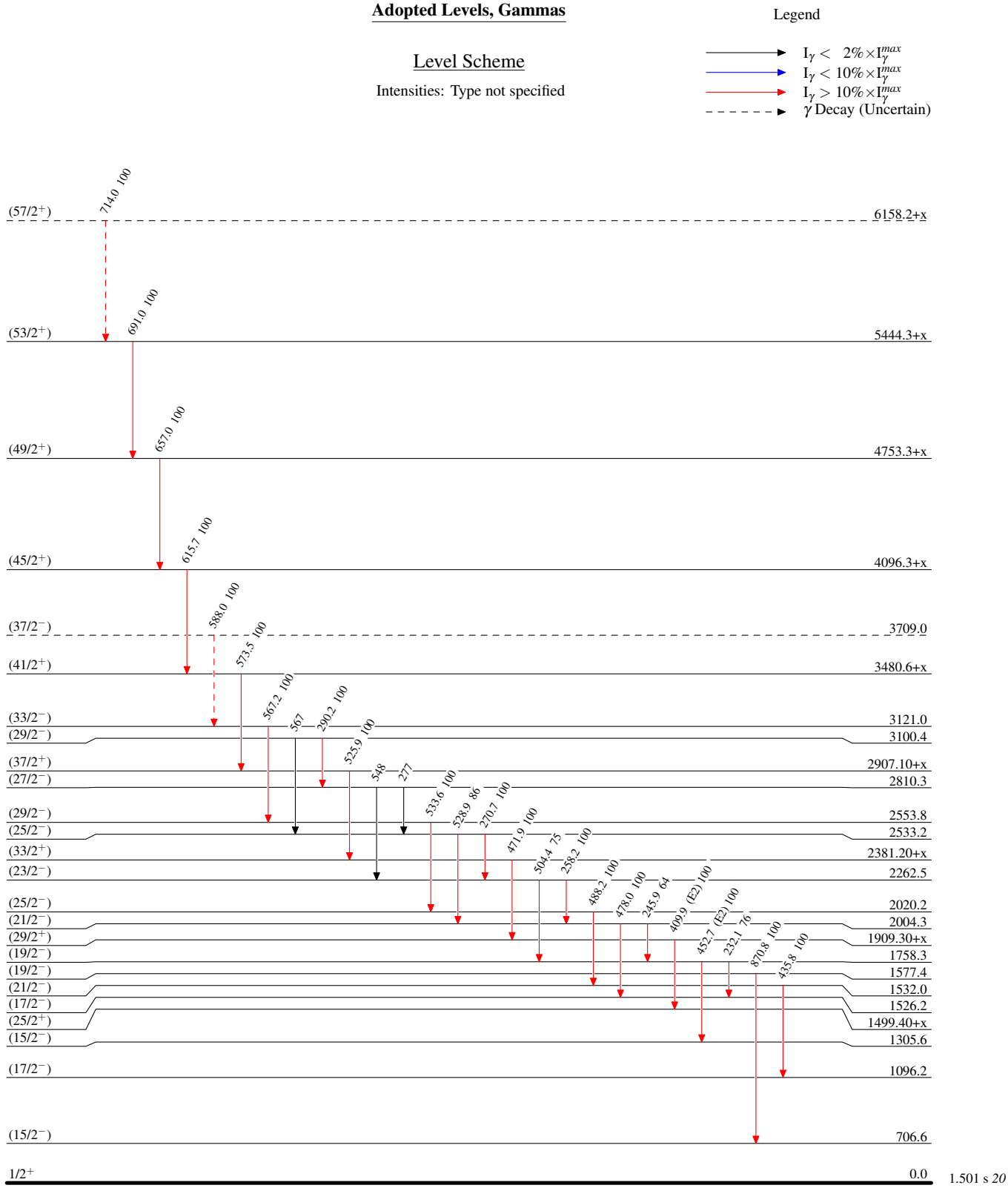
E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π
4753.3+x	$(49/2^+)$	657.0 *3*	100	4096.3+x	$(45/2^+)$
5444.3+x	$(53/2^+)$	691.0 *3*	100	4753.3+x	$(49/2^+)$
6158.2+x?	$(57/2^+)$	714.0[‡] *10*	100	5444.3+x	$(53/2^+)$

[†] From (HI,xnγ). The R(DCO) values are from 2014AlZX.
[‡] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

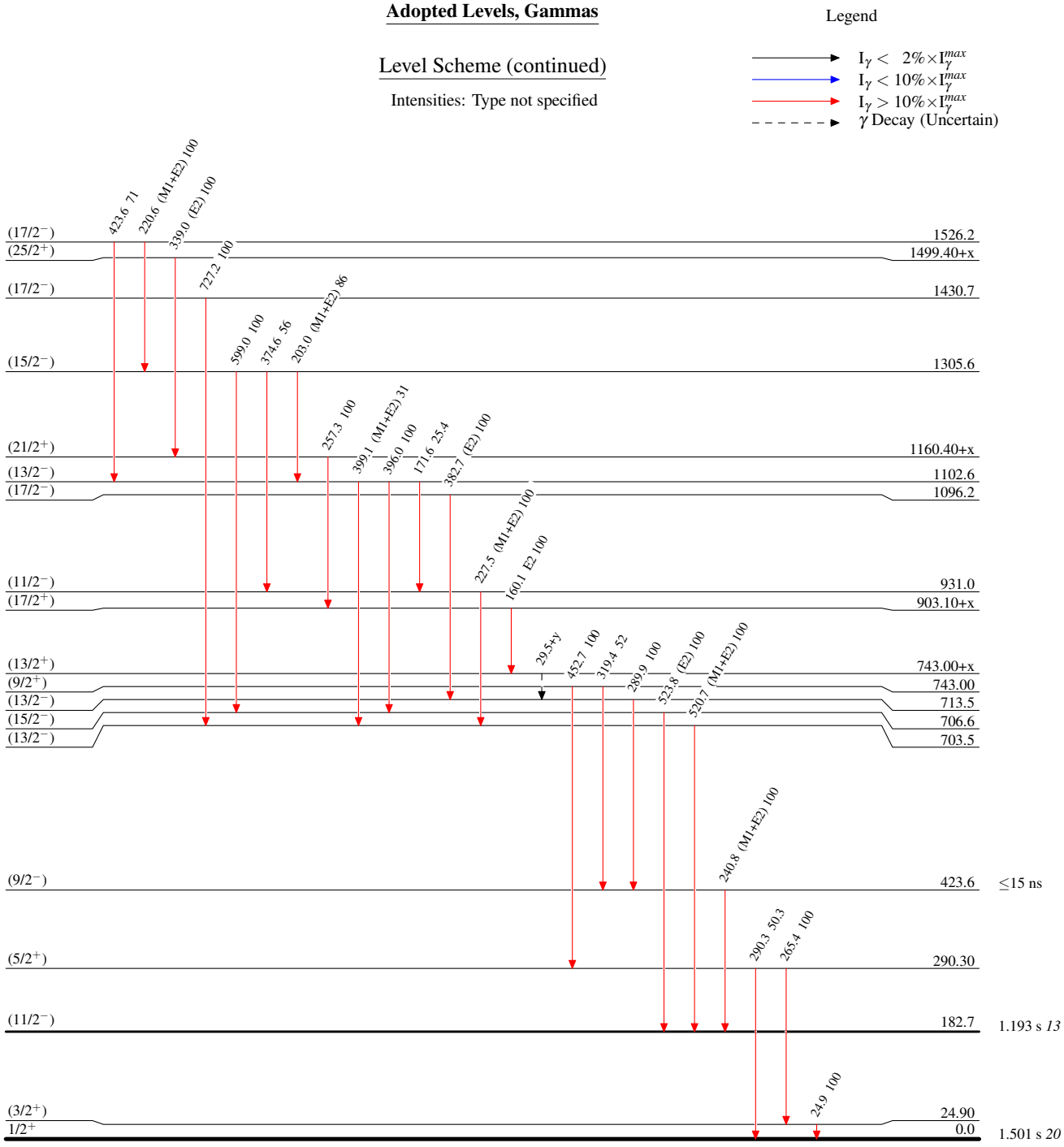


$^{177}_{79}Au_{98}$

Adopted Levels, Gammas

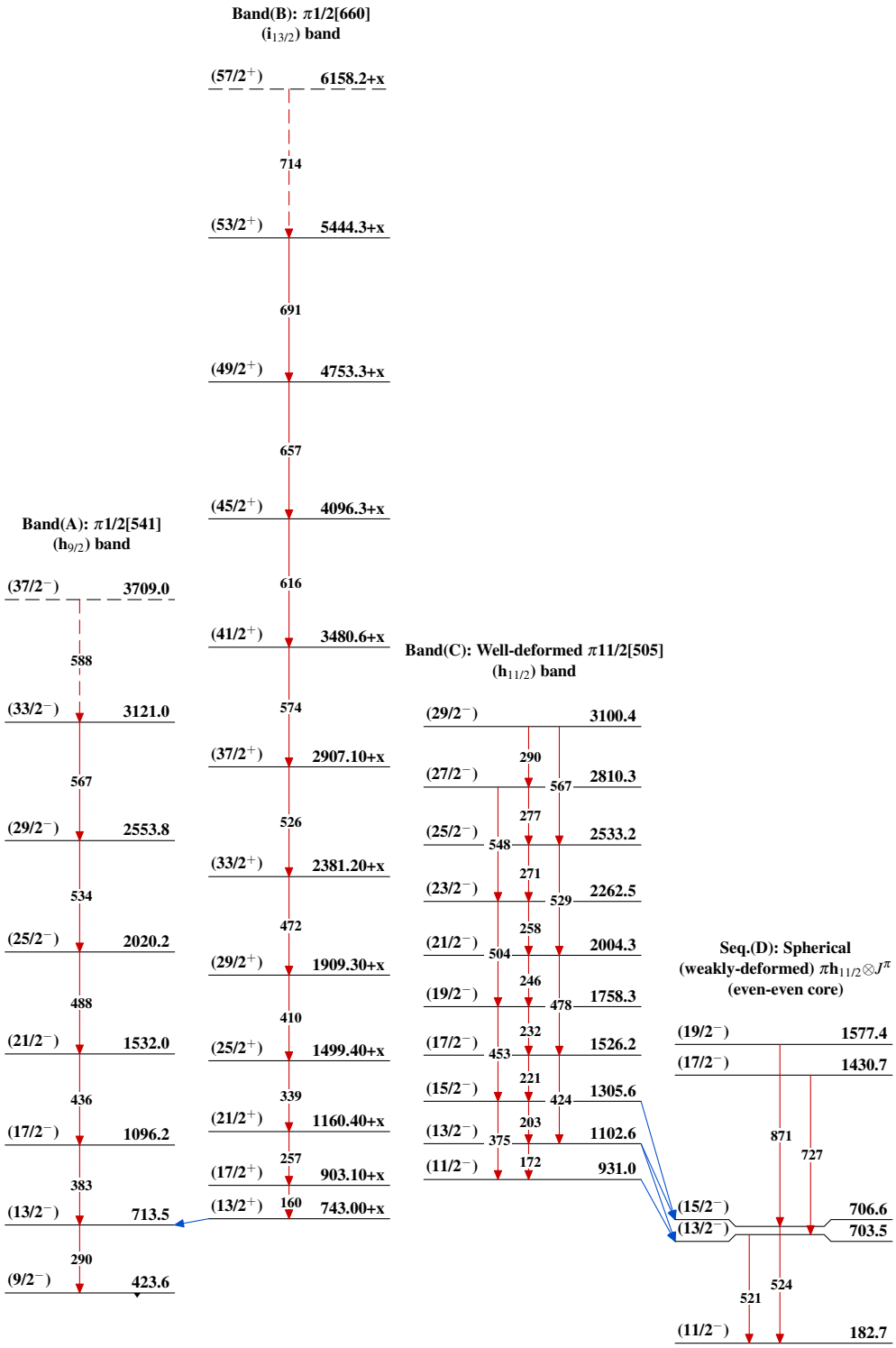
Level Scheme (continued)

Intensities: Type not specified



$^{177}_{79}Au_{98}$

Adopted Levels, Gammas



$^{177}_{79}Au_{98}$