Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	E. A. Mccutchan	NDS 126, 151 (2015)	1-Feb-2015

Q(β^-)=−3542 *24*; S(n)=7970 *24*; S(p)=2247 *27*; Q(α)=4660 *40* 2012Wa38
S(2n)=17868 *29*; S(2p)=6900 *40* (2012Wa38).
α: Additional information 1.

^{180}Ir Levels

Cross Reference (XREF) Flags

A ^{180}Pt ε decay (56 s)
B ^{184}Au α decay (47.6 s)
C ^{154}Sm(^{31}P,5nγ)

E(level)†	Jπ‡	T1/2	XREF	Comments
0.0#	(5+)	1.5 min *1*	BC	%ε+%β+=100 Jπ: direct feeding to 4+, 5, and 6+ states in ^{180}Os. $T_{1/2}$: weighted average of 1.5 min *1* (1972Ak03) and 1.5 min *2* (1973LaZC). Others: 1971Na27, 1992Bo19. E(level): doubly-decoupled band observed in ^{154}Sm(^{31}P,5nγ) assigned to the ground state by evaluator. configuration=π1/2[541]ν1/2[521]; doubly-decoupled band.
80.4 *5*			B	Eγ=80.4 observed in ^{184}Au α-decay. Eγ=80.6 from ^{180}Pt ε-decay is probably the same transition.
98.22@ *19*	(6+)		C	
113.5			B	Eγ=113.5 observed in ^{184}Au α-decay. Eγ=113.0 from ^{180}Pt ε-decay is probably the same transition.
164.00# *10*	(7+)		C	
167			B	
180.80& *17*	(7+)		C	Jπ: (E2) 274γ from (9+).
212.4 *5*			B	
296.94@ *20*	(8+)		C	Jπ: D+Q 115γ to (7+).
441.83& *19*	(9+)		C	Jπ: (E2) 278γ to (7+).
454.50# *14*	(9+)		C	
623.92@ *22*	(10+)		C	
825.3& *21*	(11+)		C	
847.80# *18*	(11+)		C	
1057.20@ *23*	(12+)		C	
1302.57& *23*	(13+)		C	
1328.8# *4*	(13+)		C	
1571.18@ *24*	(14+)		C	
1846.39& *24*	(15+)		C	
1876.8# *5*	(15+)		C	
2120.16@ *25*	(16+)		C	
2179.2 *4*	(16+)		C	
2385.4& *3*	(17+)		C	
2406.8# *7*	(17+)		C	
2495.8 *7*	(17+)		C	
2622.2@ *4*	(18+)		C	

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Adopted Levels, Gammas (continued)

^{180}Ir Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
2882.7[&] 4	(19+)	C	
2902.3[#] 9	(19+)	C	
3162.2[@] 4	(20+)	C	
3452.7[&] 6	(21+)	C	
3752.5[@] 5	(22+)	C	
4394.0[@] 7	(24+)	C	
5089.3[@] 9	(26+)	C	
0+y[a]	J	C	Jπ: based on a comparison of similar band in ^{178}Re, 2002Zh01 suggest Jπ=(8−) for the bandhead.
91.19+y[b] 22	J+1	C	
146.48+y[a] 22	J+2	C	
345.63+y[b] 24	J+3	C	
431.53+y[a] 24	J+4	C	
733.2+y[b] 3	J+5	C	
852.1+y[a] 3	J+6	C	
1224.4+y[b] 4	J+7	C	
1389.7+y[a] 3	J+8	C	
1797.9+y[b] 4	J+9	C	
2021.5+y[a] 3	J+10	C	
2441.9+y[b] 4	J+11	C	
2721.5+y[a] 3	J+12	C	
3139.6+y[b] 4	J+13	C	
3458.3+y[a] 5	J+14	C	
3859.6+y[b] 7	J+15	C	
0+z	(7+)	C	Jπ: (E1) 78.5γ from (8−).
78.49+z[c] 10	(8−)	C	Jπ: (M1) 95.3γ from (9−).
173.7+z[d] 4	(9−)	C	Jπ: from comparison of the (9−) to (7−) transition energies in similar bands in neighboring Ir and Re nuclei.
304.7+z[c] 4	(10−)	C	
461.1+z[d] 5	(11−)	C	
648.4+z[c] 5	(12−)	C	
858.7+z[d] 5	(13−)	C	
1089.2+z[c] 5	(14−)	C	
1336.7+z[d] 5	(15−)	C	
1599.1+z[c] 5	(16−)	C	
1876.0+z[d] 5	(17−)	C	
2165.9+z[c] 5	(18−)	C	
2470.1+z[d] 5	(19−)	C	
2787.3+z[c] 5	(20−)	C	
3119.4+z[d] 6	(21−)	C	
3466.2+z[c] 6	(22−)	C	
3823.9+z[d] 6	(23−)	C	
4196.2+z[c] 8	(24−)	C	
4575.2+z[d] 8	(25−)	C	
0+u[e]	J1	C	
147.1+u[f] 3	J1+1	C	
315.4+u[e] 3	J1+2	C	
501.5+u[f] 4	J1+3	C	

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Adopted Levels, Gammas (continued)

^{180}Ir Levels (continued)

E(level)[†]	Jπ[‡]	XREF	E(level)[†]	Jπ[‡]	XREF	E(level)[†]	Jπ[‡]	XREF
701.6+u[e] 4	J1+4	C	1634.2+u[e] 4	J1+8	C	2765.5+u[e] 6	J1+12	C
915.3+u[f] 4	J1+5	C	1900.8+u[f] 4	J1+9	C	3087.5+u[f] 6	J1+13	C
1141.9+u[e] 4	J1+6	C	2179.0+u[e] 5	J1+10	C	3399.5+u[e] 6	J1+14	C
1381.8+u[f] 4	J1+7	C	2465.2+u[f] 5	J1+11	C	3740.8+u[f] 8	J1+15	C

† From a least-squares fit to Eγ′s by evaluator.

‡ From ^{154}Sm(^{31}P,5nγ) based on DCO ratios, intraband B(M1)/B(E2) ratios, systematics of band properties in neighboring nuclei and proposed configurations. Further support for band head assignments is given in the comments.

\# Band(A): Doubly-decoupled band, π1/2[541]ν1/2[521], α=1.

@ Band(B): π1/2[541]ν5/2[512], α=0. π1/2[541]ν7/2[514] is also possible but less likely. Band crossing is observed at ħω=0.26 MeV.

& Band(b): π1/2[541]ν5/2[512], α=1. π1/2[541]ν7/2[514] is also possible.

a Band(C): π1/2[541]ν($i_{13/2}$), α=0. Band crossing is observed at ħω ≈ 0.35 MeV.

b Band(c): π1/2[514]ν($i_{13/2}$), α=1.

c Band(D): π9/2[514]ν($i_{13/2}$), α=0. Main component from $i_{13/2}$ orbital is 7/2[633].

d Band(d): π9/2[514]ν($i_{13/2}$), α=1. Main component from $i_{13/2}$ orbital is 7/2[633].

e Band(E): π(5/2[402] or 9/2[514])ν9/2[624].

f Band(e): π(5/2[402] or 9/2[514])ν9/2[624].

γ(^{180}Ir)

E_i(level)	J_i^π	Eγ[†]	Iγ[†]	E_f	J_f^π	Mult.[‡]	α
80.4		80.4[#] 5		0.0	(5+)		
113.5		113.5[#] 5		0.0	(5+)		
164.00	(7+)	164.0 1	100	0.0	(5+)	E2[@]	0.690
180.80	(7+)	82.5 1	100	98.22	(6+)		
212.4		212.4[#] 5		0.0	(5+)		
296.94	(8+)	115.8 3	86 27	180.80	(7+)	(M1+E2)	
		198.8 1	100	98.22	(6+)		
441.83	(9+)	145.0 3	71 21	296.94	(8+)	(M1+E2)	
		261.0 1	100	180.80	(7+)	(E2)	0.1450
		277.8 5		164.00	(7+)	(E2)	0.1196 18
454.50	(9+)	273.7 1	69	180.80	(7+)	(E2)	0.1251
		290.5 1	100	164.00	(7+)	(E2)	0.1044
623.92	(10+)	182.0 5	17 5	441.83	(9+)	(M1+E2)	
		327.0 1	100	296.94	(8+)	(E2)	0.0737
825.3	(11+)	201.5 5	16 5	623.92	(10+)	(M1+E2)	
		383.5 1	100	441.83	(9+)	(E2)	0.0471
847.80	(11+)	393.3 1	100	454.50	(9+)	(E2)	0.0440
1057.20	(12+)	231.8 5	12 4	825.3	(11+)	(M1+E2)	
		433.3 1	100	623.92	(10+)	(E2)	0.0341
1302.57	(13+)	245.3 5	11 3	1057.20	(12+)		
		477.2 1	100	825.3	(11+)	(E2)	0.0267
1328.8	(13+)	481.0 3	100	847.80	(11+)	(E2)	0.0261
1571.18	(14+)	268.5 5	14 6	1302.57	(13+)		
		514.0 1	100	1057.20	(12+)	(E2)	0.0222
1846.39	(15+)	275.3 5	10 3	1571.18	(14+)		
		543.8 1	100	1302.57	(13+)	(E2)	0.0194

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Adopted Levels, Gammas (continued)

$\gamma(^{180}Ir)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	α
1876.8	(15+)	548.0 3	100	1328.8	(13+)	(E2)	0.0190
2120.16	(16+)	273.5 5	10 3	1846.39	(15+)		
		549.0 1	100	1571.18	(14+)	(E2)	0.0190
2179.2	(16+)	608.0 3	100	1571.18	(14+)	(E2)	0.01495
2385.4	(17+)	265.5 5	≤20	2120.16	(16+)		
		539.0 1	100	1846.39	(15+)	(E2)	0.0198
2406.8	(17+)	530.0 5	100	1876.8	(15+)	(E2)	0.0206
2495.8	(17+)	619.0 5	100	1876.8	(15+)		
2622.2	(18+)	236.5 5	≤29	2385.4	(17+)		
		443.0 5	53	2179.2	(16+)	(E2)	
		502.0 3	100	2120.16	(16+)	(E2)	0.0235
2882.7	(19+)	260.5 5	≤48	2622.2	(18+)		
		497.5 3	100	2385.4	(17+)	(E2)	0.0240
2902.3	(19+)	495.5 5	100	2406.8	(17+)	(E2)	0.0243
3162.2	(20+)	280.0 5	≤42	2882.7	(19+)		
		539.8 3	100	2622.2	(18+)	(E2)	0.0197
3452.7	(21+)	570.0 5	100	2882.7	(19+)	(E2)	0.01735
3752.5	(22+)	590.3 3	100	3162.2	(20+)	(E2)	0.01600
4394.0	(24+)	641.5 5	100	3752.5	(22+)	(E2)	0.01324
5089.3	(26+)	695.3 5	100	4394.0	(24+)		
91.19+y	J+1	91.2 3	100	0+y	J	(M1+E2)	
146.48+y	J+2	55.3 1	100	91.19+y	J+1		
		146.5 3	40 10	0+y	J		
345.63+y	J+3	199.1 1	100	146.48+y	J+2	(M1+E2)	
		254.4 3	38 10	91.19+y	J+1		
431.53+y	J+4	85.5 3	17 5	345.63+y	J+3		
		285.1 1	100	146.48+y	J+2	(E2)	0.1105
733.2+y	J+5	301.8 3	100	431.53+y	J+4	(M1+E2)	
		387.5 3	89 20	345.63+y	J+3		
852.1+y	J+6	118.8 5	5.6 15	733.2+y	J+5		
		420.6 1	100	431.53+y	J+4	(E2)	0.0368
1224.4+y	J+7	372.3 3	94 13	852.1+y	J+6	(M1+E2)	
		491.2 3	100	733.2+y	J+5		
1389.7+y	J+8	537.6 1	100	852.1+y	J+6	(E2)	0.0199
1797.9+y	J+9	408.1 3	65 13	1389.7+y	J+8	(M1+E2)	
		573.5 3	100	1224.4+y	J+7		
2021.5+y	J+10	631.8 1	100	1389.7+y	J+8	(E2)	0.01370
2441.9+y	J+11	420.5 5		2021.5+y	J+10		
		644.0 1		1797.9+y	J+9		
2721.5+y	J+12	700.0 1		2021.5+y	J+10	(E2)	0.01092
3139.6+y	J+13	418.0 5	≤7	2721.5+y	J+12		
		697.8 3	100	2441.9+y	J+11		
3458.3+y	J+14	736.8 3	100	2721.5+y	J+12		
3859.6+y	J+15	720.0 5	100	3139.6+y	J+13		
78.49+z	(8−)	78.5 1	100	0+z	(7+)	(E1)@	0.727
173.7+z	(9−)	95.3 3	100	78.49+z	(8−)	(M1)@	7.03 12
304.7+z	(10−)	131.0 3	100	173.7+z	(9−)	(M1+E2)	
461.1+z	(11−)	156.4 1	100	304.7+z	(10−)	(M1+E2)	
		287.5 5	19 3	173.7+z	(9−)	(E2)	
648.4+z	(12−)	187.3 1	100	461.1+z	(11−)	(M1+E2)	
		343.8 3	50 8	304.7+z	(10−)	(E2)	0.0638
858.7+z	(13−)	210.3 1	100	648.4+z	(12−)	(M1+E2)	
		397.8 3	86 12	461.1+z	(11−)	(E2)	0.0427
1089.2+z	(14−)	230.3 3	70 11	858.7+z	(13−)	(M1+E2)	
		440.8 1	100	648.4+z	(12−)	(E2)	0.0326
1336.7+z	(15−)	247.5 3	48 7	1089.2+z	(14−)	(M1+E2)	

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Adopted Levels, Gammas (continued)

$\gamma(^{180}Ir)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	α
1336.7+z	(15⁻)	477.9 *1*	100	858.7+z	(13⁻)	(E2)	
1599.1+z	(16⁻)	262.3 *5*	35 *5*	1336.7+z	(15⁻)	(M1+E2)	
		510.0 *1*	100	1089.2+z	(14⁻)	(E2)	0.0226
1876.0+z	(17⁻)	277.0 *5*	29 *5*	1599.1+z	(16⁻)	(M1+E2)	
		539.3 *1*	100	1336.7+z	(15⁻)	(E2)	0.0198
2165.9+z	(18⁻)	289.8 *5*	29 *5*	1876.0+z	(17⁻)	(M1+E2)	
		566.8 *1*	100	1599.1+z	(16⁻)	(E2)	0.01758
2470.1+z	(19⁻)	304.3 *5*	20 *4*	2165.9+z	(18⁻)		
		594.1 *1*	100	1876.0+z	(17⁻)	(E2)	0.01576
2787.3+z	(20⁻)	317.3 *5*	22 *6*	2470.1+z	(19⁻)		
		621.4 *3*	100	2165.9+z	(18⁻)	(E2)	0.01423
3119.4+z	(21⁻)	332.0 *5*	19 *4*	2787.3+z	(20⁻)		
		649.3 *3*	100	2470.1+z	(19⁻)		
3466.2+z	(22⁻)	346.8 *5*	50 *25*	3119.4+z	(21⁻)		
		678.8 *5*	100	2787.3+z	(20⁻)		
3823.9+z	(23⁻)	704.5 *3*	100	3119.4+z	(21⁻)		
4196.2+z	(24⁻)	730.0 *5*	100	3466.2+z	(22⁻)		
4575.2+z	(25⁻)	751.3 *5*	100	3823.9+z	(23⁻)		
147.1+u	J1+1	147.1 *3*	100	0+u	J1	(M1+E2)	
315.4+u	J1+2	168.3 *1*	100	147.1+u	J1+1	(M1+E2)	
		315.5 *5*	37 *11*	0+u	J1		
501.5+u	J1+3	186.0 *3*	100	315.4+u	J1+2	(M1+E2)	
		354.8 *3*	69 *20*	147.1+u	J1+1	(E2)	0.0584
701.6+u	J1+4	200.3 *3*	96 *29*	501.5+u	J1+3	(M1+E2)	
		386.0 *3*	100	315.4+u	J1+2	(E2)	0.0463
915.3+u	J1+5	213.5 *3*	55 *7*	701.6+u	J1+4	(M1+E2)	
		413.8 *3*	100	501.5+u	J1+3	(E2)	0.0384
1141.9+u	J1+6	226.5 *5*	41 *12*	915.3+u	J1+5	(M1+E2)	
		440.3 *1*	100	701.6+u	J1+4	(E2)	0.0327
1381.8+u	J1+7	240.0 *5*	30 *9*	1141.9+u	J1+6	(M1+E2)	
		466.5 *1*	100	915.3+u	J1+5	(E2)	0.0282
1634.2+u	J1+8	252.3 *5*	26 *8*	1381.8+u	J1+7		
		492.3 *1*	100	1141.9+u	J1+6	(E2)	0.0247
1900.8+u	J1+9	266.5 *5*	30 *9*	1634.2+u	J1+8		
		519.0 *1*	100	1381.8+u	J1+7	(E2)	0.0217
2179.0+u	J1+10	278.2 *5*	25 *9*	1900.8+u	J1+9		
		544.8 *3*	100	1634.2+u	J1+8	(E2)	0.0193
2465.2+u	J1+11	564.4 *3*	100	1900.8+u	J1+9	(E2)	0.01776
2765.5+u	J1+12	586.5 *3*	100	2179.0+u	J1+10	(E2)	0.01624
3087.5+u	J1+13	622.3 *3*	100	2465.2+u	J1+11		
3399.5+u	J1+14	634.0 *3*	100	2765.5+u	J1+12		
3740.8+u	J1+15	653.3 *5*	100	3087.5+u	J1+13		

† From $^{154}Sm(^{31}P,5n\gamma)$, except where noted.

‡ From DCO ratios in $^{154}Sm(^{31}P,5n\gamma)$, except where noted. As these transitions are placed within rotational band structures, Q transitions are assumed E2 and D+Q transitions assumed M1+E2.

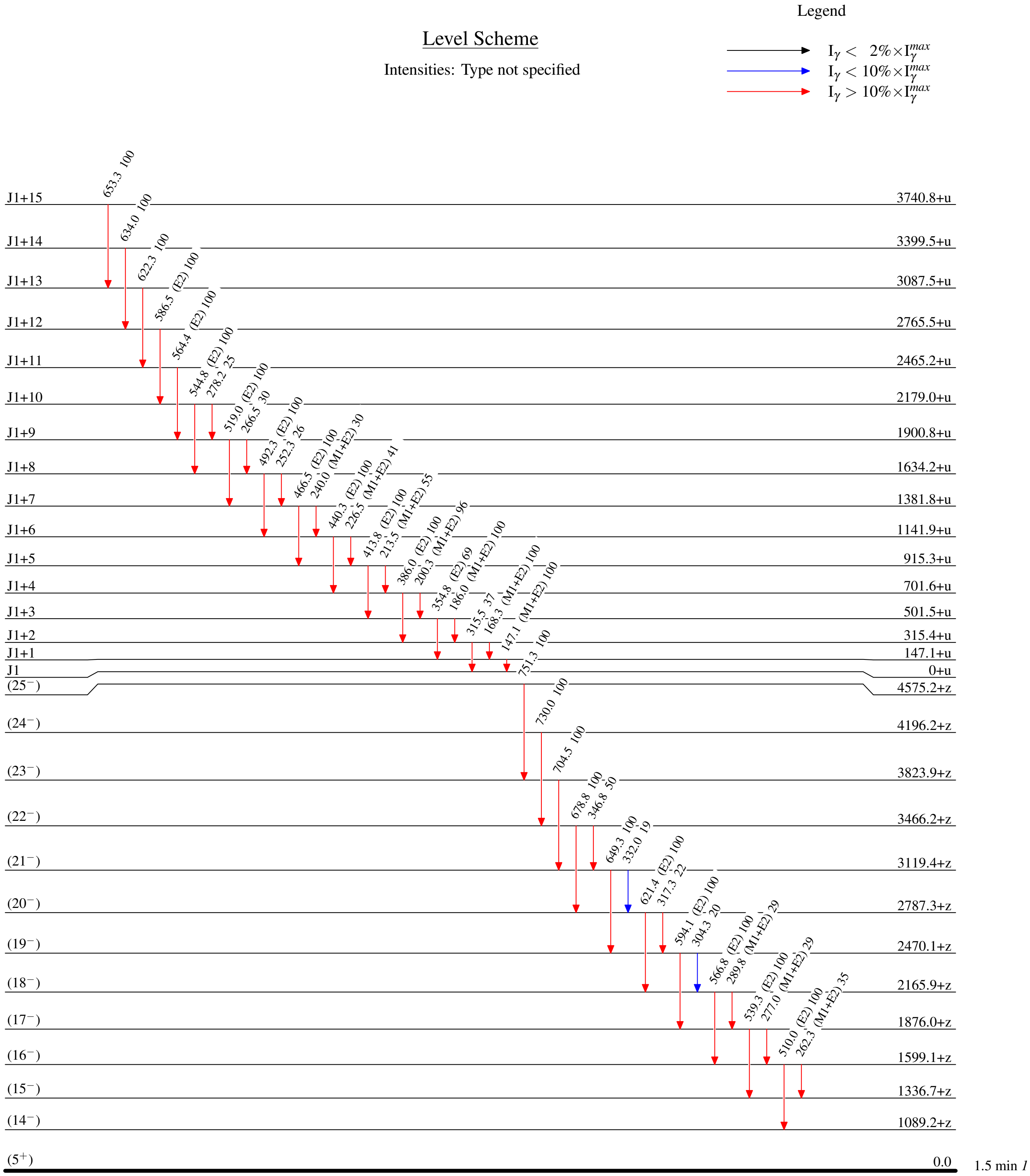
From ^{184}Au α decay (47.6 s).

@ From α(exp) in $^{154}Sm(^{31}P,5n\gamma)$.

Adopted Levels, Gammas

Level Scheme

Intensities: Type not specified

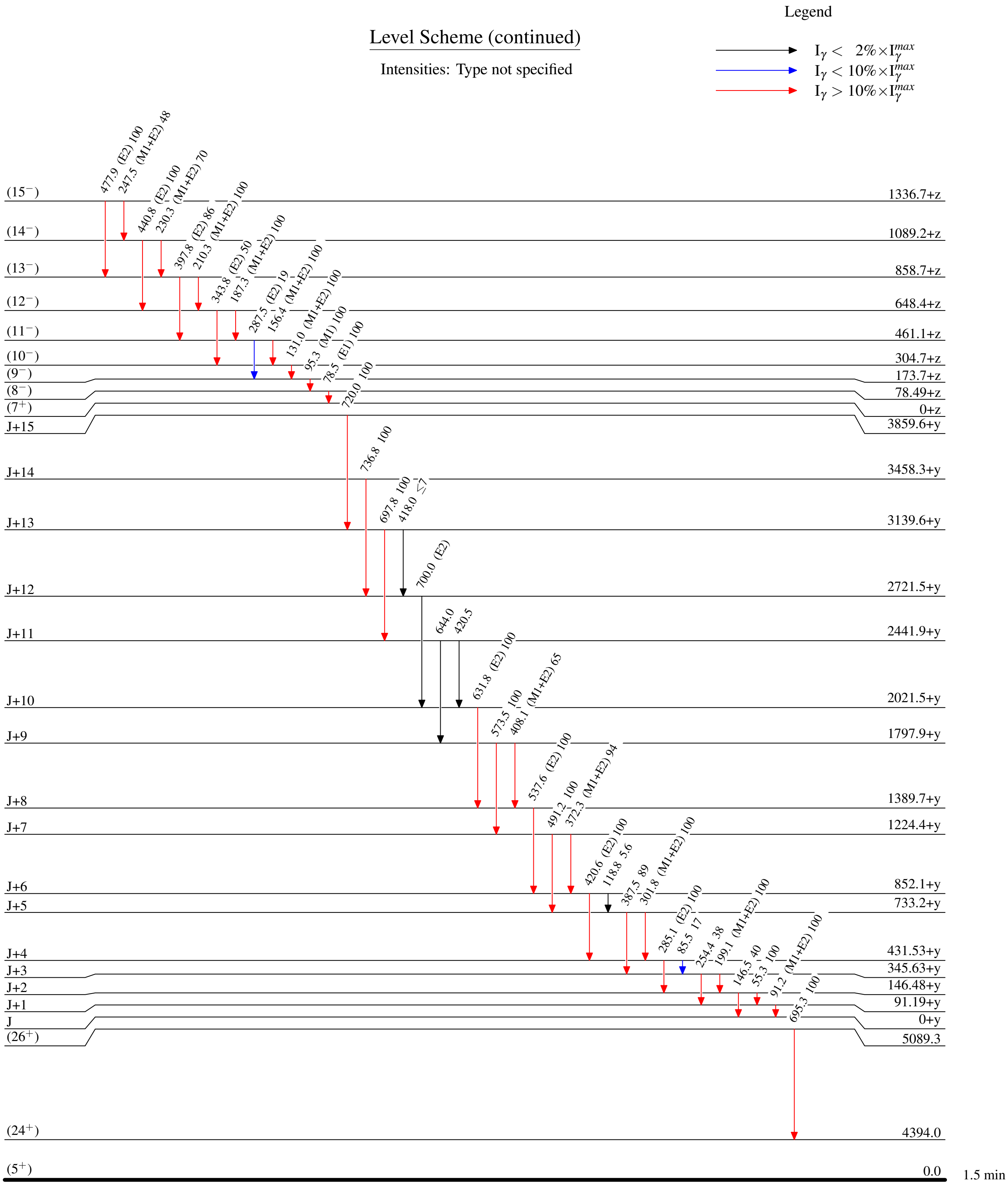


$^{180}_{77}Ir_{103}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified



$^{180}_{77}Ir_{103}$

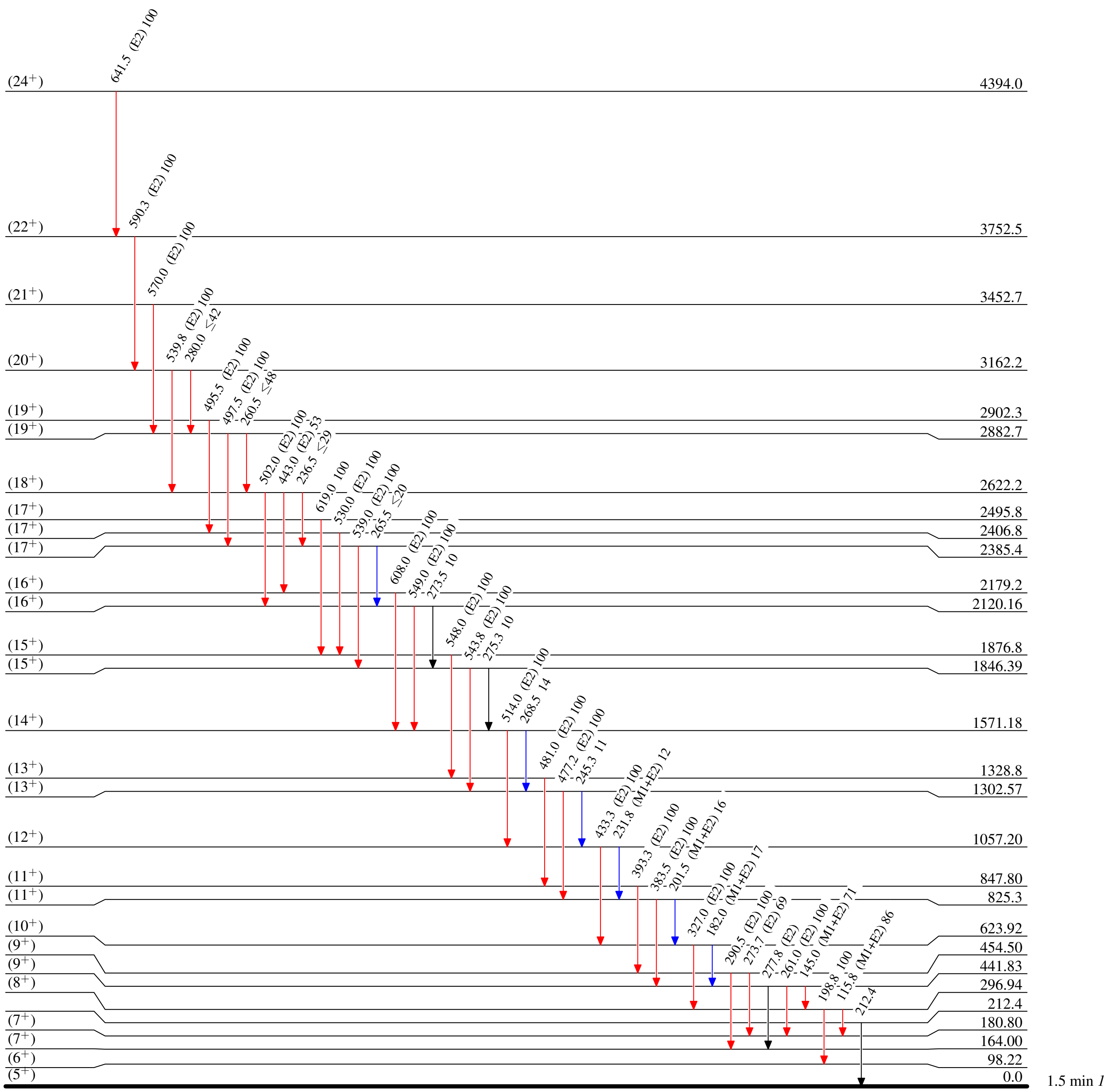
Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Type not specified

Legend

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

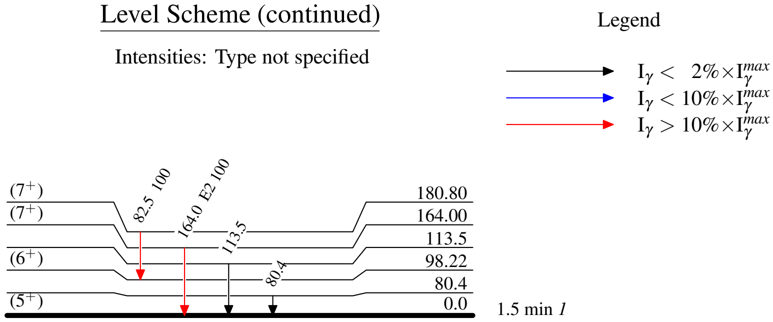


$^{180}_{77}Ir_{103}$

Adopted Levels, Gammas

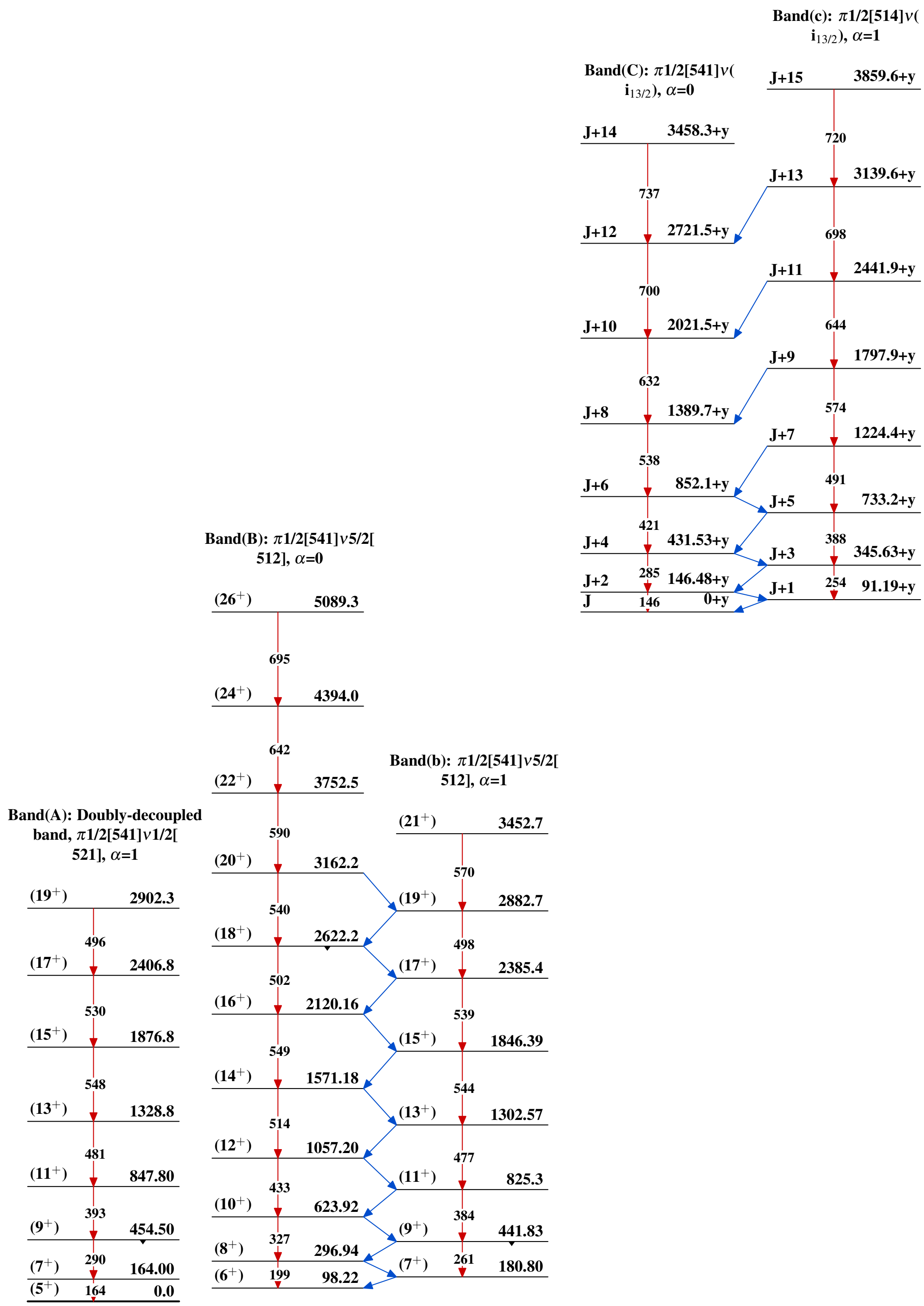
Level Scheme (continued)

Intensities: Type not specified



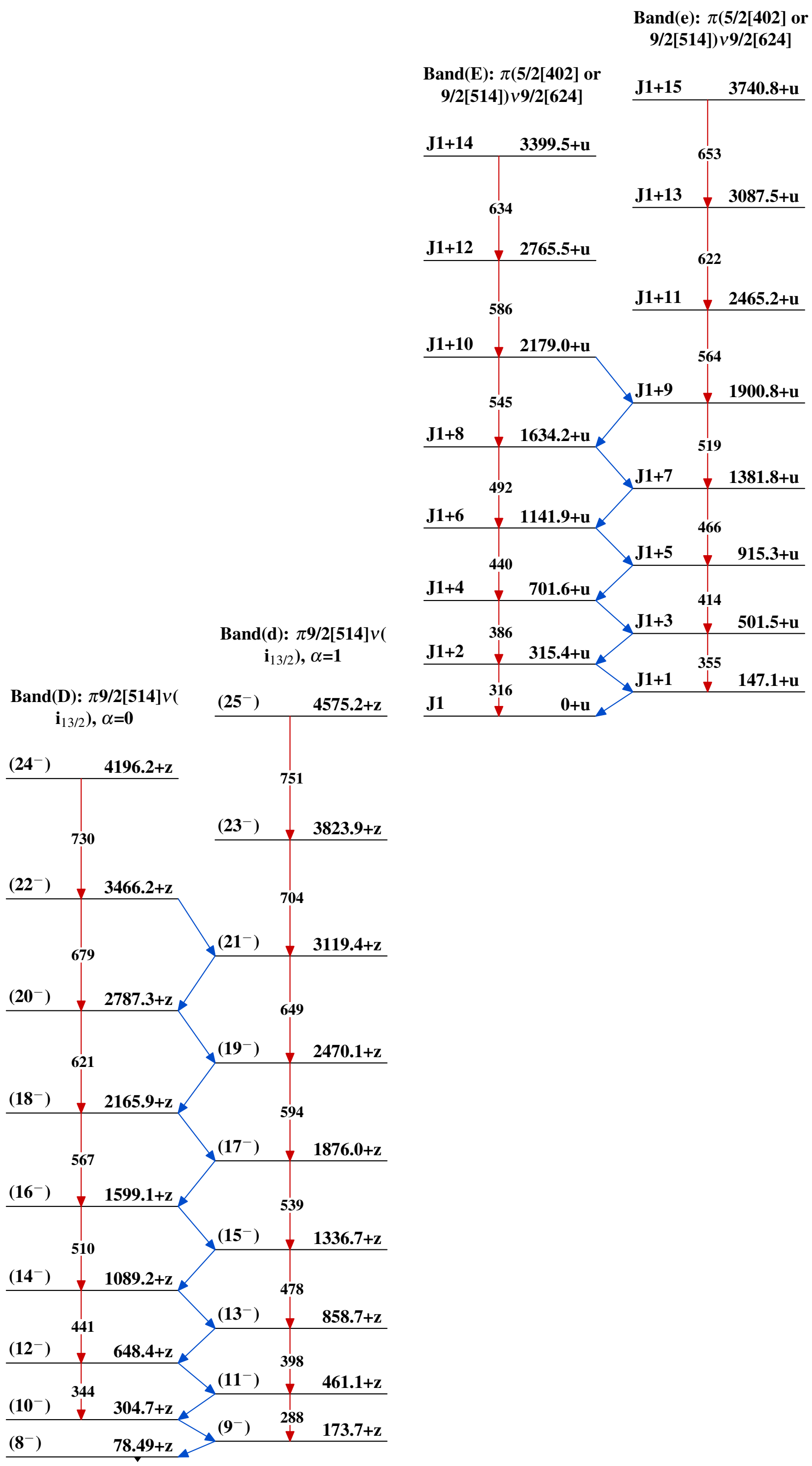
$^{180}_{77}Ir_{103}$

Adopted Levels, Gammas



$^{180}_{77}Ir_{103}$

Adopted Levels, Gammas (continued)



$^{180}_{77}Ir_{103}$