Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin, E. A. Mccutchan	NDS 151, 334 (2018)	30-Jun-2018

Q(β^-)=−8940 *80*; S(n)=11120 *SY*; S(p)=−230 *40*; Q(α)=5994 *SY* 2017Wa10
ΔS(n)=100; ΔQ(α)=13 (2017Wa10).
S(2n)=20460 *60*; S(2p)=2580 *40*; Q(εp)=5210 *40* (2017Wa10).
Identification: excitation functions for ^{162}Er(^{19}F,xn) and relative positions for α's from known Ir activities (1967Si02).
For discussion of expected proton decay, see 1983Al09, 1984Al36, 1987ScZH, 1987ScZL and 1988MeZY.

^{171}Ir Levels

Cross Reference (XREF) Flags

A ^{175}Au α decay (137 ms)
B ^{175}Au α decay (201 ms)
C ^{116}Sn(^{58}Ni,p2nγ)

E(level)†	Jπ‡	$T_{1/2}$	XREF	Comments
0.0#	(1/2$^+$)#	3.2 s *+13−7*	B	%ε+%β^+=85 *2*; %α=15 *2* (2013An10) %α: from 2013An10, from comparison of α decays of ^{175}Au(g.s.) and ^{171}Ir(g.s.). α decay was also observed by 2002Ro17. $T_{1/2}$: from 6412α(^{175}Au)−5717α(^{171}Ir) correlation data (2002Ro17). Jπ: by analogy with ^{167}Ir and ^{169}Ir.
0.0+x#a	(11/2$^-$)#	1.2@ s *1*	A C	%α=54 *5*; %ε+%β^+≤46 *5*; %p≤46 *5* %α: weighted average of 58 *11* (1996Pa01) and 53 *5* (2010An01). Other %α:≈100 (1978Sc26). %ε+%β^+: 1992Sc16 searched for evidence for ε decay, but observed no gammas in coincidence with Os K x ray. Jπ: by analogy with nearby odd-A Ir nuclides. E(level): energy of analogous state is 153 *24* In ^{169}Ir (1999Po09) and 175.3 *22* In ^{167}Ir (1997Da07).
436.04+x& *4*	(13/2$^-$)		C	
633.90+x*a* *4*	(15/2$^-$)		C	
997.82+x *16*			C	
1115.95+x& *5*	(17/2$^-$)		C	
1353.07+x*a* *7*	(19/2$^-$)		C	
1365.77+x*f* *8*	(17/2$^-$)		C	
1520.70+x *23*			C	
1609.30+x*f* *6*	(19/2$^-$)		C	
1823.44+x& *11*	(21/2$^-$)		C	
1884.61+x*f* *7*	(21/2$^-$)		C	
2008.47+x*c* *12*	(21/2)		C	
2106.40+x*a* *13*	(23/2$^-$)		C	
2326.71+x*b* *15*	(23/2$^-$)		C	
2334.14+x*c* *15*	(23/2)		C	
2335.5+x *10*			C	
2381.49+x*b* *10*	(25/2$^-$)		C	
2444.88+x& *16*	(25/2$^-$)		C	
2496.75+x*b* *11*	(27/2$^-$)		C	
2589.7+x*g* *3*			C	
2677.89+x*b* *12*	(29/2$^-$)		C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{171}Ir Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
2690.44+x *25*	(25/2)	C	
2705.16+x[c] *23*	(25/2)	C	
2730.87+x[a] *21*	(27/2$^-$)	C	
2796.9+x[g] *4*		C	
2945.56+x[b] *13*	(31/2$^-$)	C	
3096.0+x[g] *4*		C	
3284.17+x[b] *15*	(33/2$^-$)	C	
3631.70+x[b] *19*	(35/2$^-$)	C	
0.0+y[d]	(23/2)	C	E(level): Y>1116; level decays to 1353 (19/2$^-$) and 1116 (17/2$^-$) levels via unidentified linking transitions.
98.00+y[d] *15*	(25/2$^-$)	C	
223.00+y[d] *20*	(27/2)	C	
424.18+y[d] *22*	(29/2)	C	
670.97+y[d] *24*	(31/2)	C	
955.8+y[d] *3*	(33/2)	C	
1275.2+y[d] *3*	(35/2)	C	
1631.0+y[d] *5*	(37/2)	C	
0.0+z[e]	(9/2$^-$)	C	
300.59+z[e] *6*	(13/2$^-$)	C	
774.50+z[e] *10*	(17/2$^-$)	C	
1361.65+z[e] *15*	(21/2$^-$)	C	
1972.15+z[e] *21*	(25/2$^-$)	C	
2623.7+z[e] *3*	(29/2$^-$)	C	

[†] From least-squares to Eγ, by evaluators.

[‡] From (^{58}Ni,p2nγ), except as noted. The values are based on transition multipolarities, deduced band structure, population strengths and comparison with band structure in heavier Ir isotopes.

[#] The low-spin isomeric state of ^{171}Ir is shown here As the g.s., As suggested In 2002Ro17 and 2013An10 and supported by the observation In ^{167}Ir and ^{169}Ir of 1/2$^+$ ground states and 11/2$^-$ isomers At 175.3 *22* (1997Da07) and 153 *24* (1999Po09), respectively. These systematics suggest E>0 but <200 for the 11/2$^-$ level In ^{171}Ir. 2013An10 deduce an excitation energy of 168 keV from systematics. However, 1999Ba84, In their (^{58}Ni,p2nγ) study, nominate their strongly populated $h_{11/2}$ band to be the g.s. band; also, macroscopic-microscopic shell correction model calculations (1999Mu05) predict that the 11/2[505] bandhead is the g.s. In both ^{171}Ir and ^{173}Ir.

[@] Weighted average of 1.14 s *5* (2014Pe02), 1.4 s *1* (2010An01), 1.15 s *+13−11* (2002Ro17), 1.3 s *2* (1996Pa01), 1.0 s *3* (1967Si02), and 1.4 s *2* (1978Ca11). Others: 1.7 s *4* (1978Ca11), 1.6 s *1* (1978Sc26), 1.6 s *2* (1992Sc16).

[&] Band(A): (π $h_{11/2}$), α=+1/2 band. Proton probably coupled to triaxially deformed core; band probably crossed at high spin by prolate 3-quasiparticle structure.

[a] Band(a): (π $h_{11/2}$), α=−1/2 band. See comment on signature partner of this band.

[b] Band(B): π=−, ΔJ=1 band. Lowest-energy level feeds (21/2$^-$) state. Possible configuration=(π $h_{11/2}$)(ν $i_{13/2}$)^2.

[c] Band(C): ΔJ=1, 3 quasi-particle band. Lowest-energy level feeds (19/2$^-$) g.s. band member.

[d] Band(D): ΔJ=1, 3 quasi-particle band. Lowest-energy level feeds (17/2$^-$) and (19/2$^-$) g.s. band members. Possible configuration=(π $h_{11/2}$)(ν^2).

[e] Band(E): Possible (π $h_{9/2}$), α=+1/2 band. Assignment of band to ^{171}Ir is tentative because α tagging spectrum is ambiguous; 301γ and 610γ may be strongly contaminated in that spectrum.

[f] Band(F): π=− band fragment. Lowest-energy level feeds (13/2$^-$) g.s. band member.

[g] Band(G): Band fragment. Lowest-energy level feeds (21/2$^-$) state.

Adopted Levels, Gammas (continued)

$\gamma(^{171}Ir)$

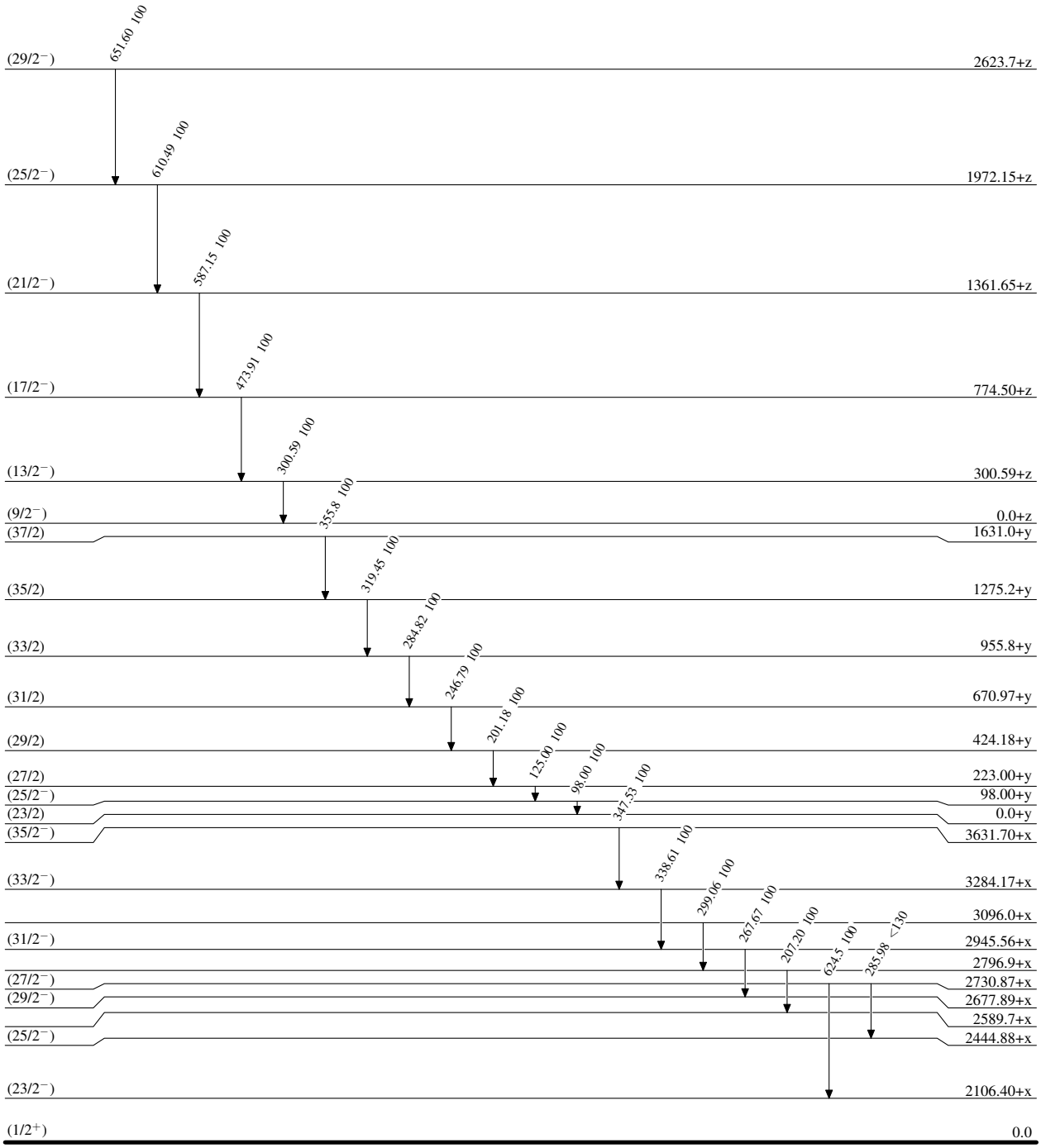
E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[†]	Comments
436.04+x	(13/2$^-$)	435.97 *4*	100	0.0+x	(11/2$^-$)		
633.90+x	(15/2$^-$)	197.65 *5*	15.6 *10*	436.04+x	(13/2$^-$)		Eγ fits this placement very poorly.
		634.00 *5*	100 *8*	0.0+x	(11/2$^-$)	Q	
997.82+x		561.78 *15*	100	436.04+x	(13/2$^-$)		
1115.95+x	(17/2$^-$)	481.94 *4*	100 *5*	633.90+x	(15/2$^-$)		
		680.09 *7*	55 *3*	436.04+x	(13/2$^-$)		
1353.07+x	(19/2$^-$)	236.96 *11*	10.9 *9*	1115.95+x	(17/2$^-$)		
		719.32 *7*	100 *5*	633.90+x	(15/2$^-$)	Q	
1365.77+x	(17/2$^-$)	929.83 *12*	100	436.04+x	(13/2$^-$)		
1520.70+x		522.88 *17*	100	997.82+x			
1609.30+x	(19/2$^-$)	243.55 *6*	19.5 *9*	1365.77+x	(17/2$^-$)		A_2 consistent with D+Q transition.
		256.31 *10*	11.9 *9*	1353.07+x	(19/2$^-$)		
		493.32 *4*	100 *4*	1115.95+x	(17/2$^-$)		A_2 consistent with D+Q transition.
1823.44+x	(21/2$^-$)	470.49 *14*	76 *7*	1353.07+x	(19/2$^-$)		
		707.24 *18*	100 *9*	1115.95+x	(17/2$^-$)		
1884.61+x	(21/2$^-$)	275.31 *4*	100 *3*	1609.30+x	(19/2$^-$)		A_2 consistent with D+Q transition.
		531 *3*	1.0 *13*	1353.07+x	(19/2$^-$)		
2008.47+x	(21/2)	655.39 *10*	100	1353.07+x	(19/2$^-$)		
2106.40+x	(23/2$^-$)	282.83 *16*	30 *3*	1823.44+x	(21/2$^-$)		
		753.35 *14*	100 *7*	1353.07+x	(19/2$^-$)		
2326.71+x	(23/2$^-$)	442.10 *13*	100	1884.61+x	(21/2$^-$)		
2334.14+x	(23/2)	325.67 *9*	100	2008.47+x	(21/2)		
2335.5+x		982.4 *10*	100	1353.07+x	(19/2$^-$)		
2381.49+x	(25/2$^-$)	496.88 *6*	100	1884.61+x	(21/2$^-$)		
2444.88+x	(25/2$^-$)	338.42 *12*	70 *6*	2106.40+x	(23/2$^-$)		
		621.63 *22*	100 *11*	1823.44+x	(21/2$^-$)		
2496.75+x	(27/2$^-$)	115.26 *6*	100	2381.49+x	(25/2$^-$)		
2589.7+x		705.1 *3*	100	1884.61+x	(21/2$^-$)		
2677.89+x	(29/2$^-$)	181.14 *5*	100	2496.75+x	(27/2$^-$)		
2690.44+x	(25/2)	356.30 *19*	100	2334.14+x	(23/2)		
2705.16+x	(25/2)	371.02 *17*	100	2334.14+x	(23/2)		
2730.87+x	(27/2$^-$)	285.98 *15*	<130	2444.88+x	(25/2$^-$)		
		624.5 *4*	100 *17*	2106.40+x	(23/2$^-$)		
2796.9+x		207.20 *11*	100	2589.7+x			
2945.56+x	(31/2$^-$)	267.67 *5*	100	2677.89+x	(29/2$^-$)		
3096.0+x		299.06 *16*	100	2796.9+x			
3284.17+x	(33/2$^-$)	338.61 *7*	100	2945.56+x	(31/2$^-$)		
3631.70+x	(35/2$^-$)	347.53 *11*	100	3284.17+x	(33/2$^-$)		
98.00+y	(25/2$^-$)	98.00 *15*	100	0.0+y	(23/2)		
223.00+y	(27/2)	125.00 *12*	100	98.00+y	(25/2$^-$)		
424.18+y	(29/2)	201.18 *10*	100	223.00+y	(27/2)		
670.97+y	(31/2)	246.79 *10*	100	424.18+y	(29/2)		
955.8+y	(33/2)	284.82 *13*	100	670.97+y	(31/2)		
1275.2+y	(35/2)	319.45 *14*	100	955.8+y	(33/2)		
1631.0+y	(37/2)	355.8 *3*	100	1275.2+y	(35/2)		
300.59+z	(13/2$^-$)	300.59 *6*	100	0.0+z	(9/2$^-$)		
774.50+z	(17/2$^-$)	473.91 *8*	100	300.59+z	(13/2$^-$)		
1361.65+z	(21/2$^-$)	587.15 *11*	100	774.50+z	(17/2$^-$)		
1972.15+z	(25/2$^-$)	610.49 *14*	100	1361.65+z	(21/2$^-$)		
2623.7+z	(29/2$^-$)	651.60 *19*	100	1972.15+z	(25/2$^-$)		

[†] From (^{58}Ni,p2nγ).

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

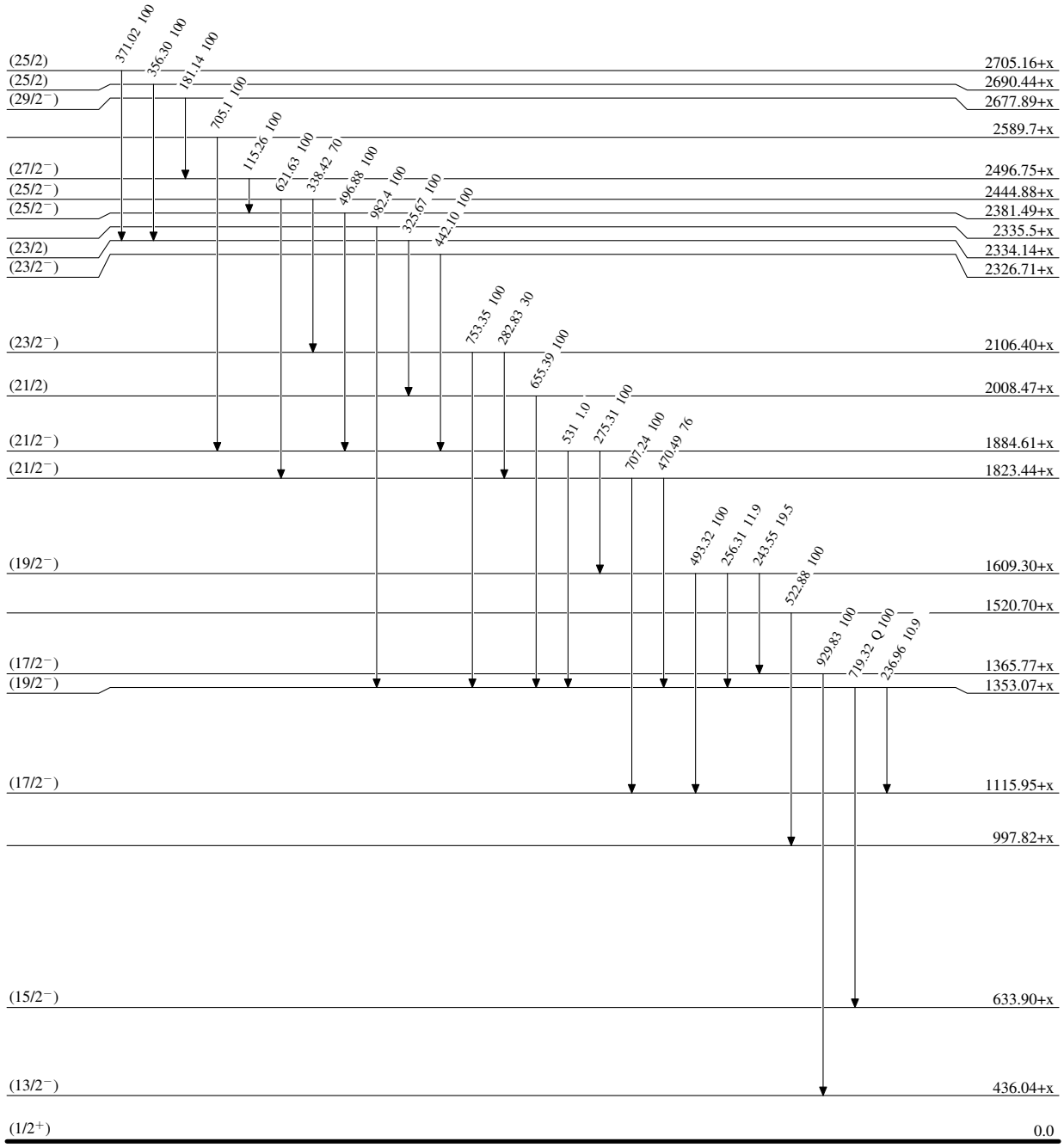


$^{171}_{77}Ir_{94}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

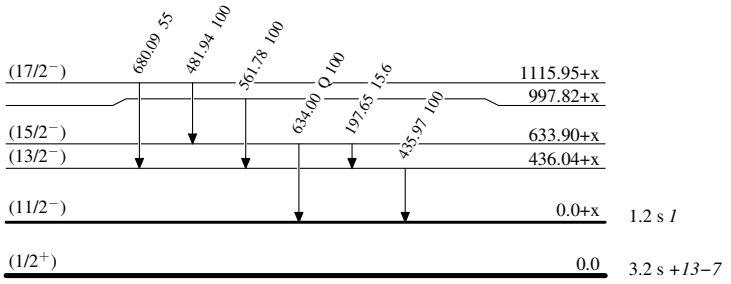


$^{171}_{77}Ir_{94}$

Adopted Levels, Gammas

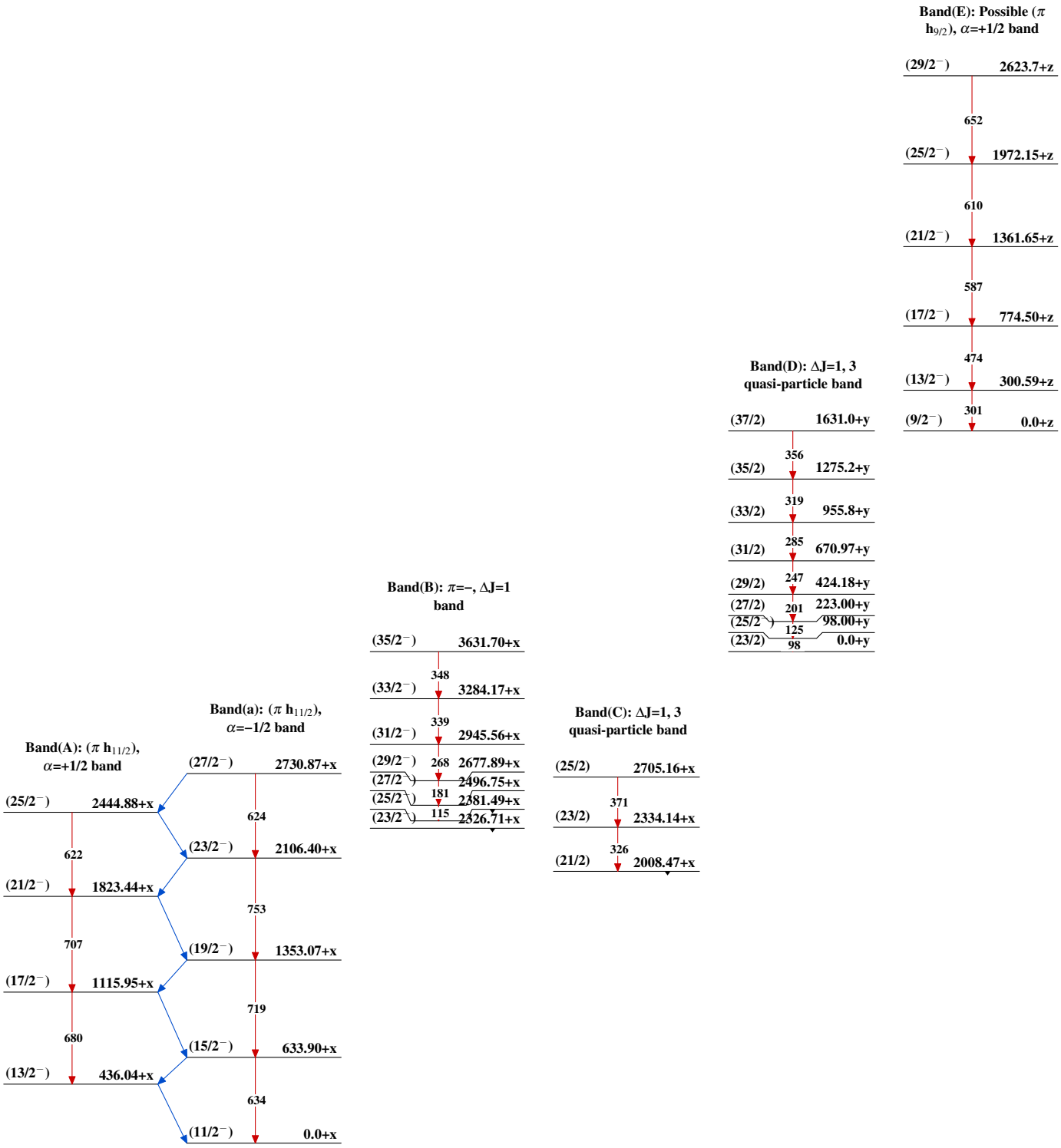
Level Scheme (continued)

Intensities: Relative photon branching from each level

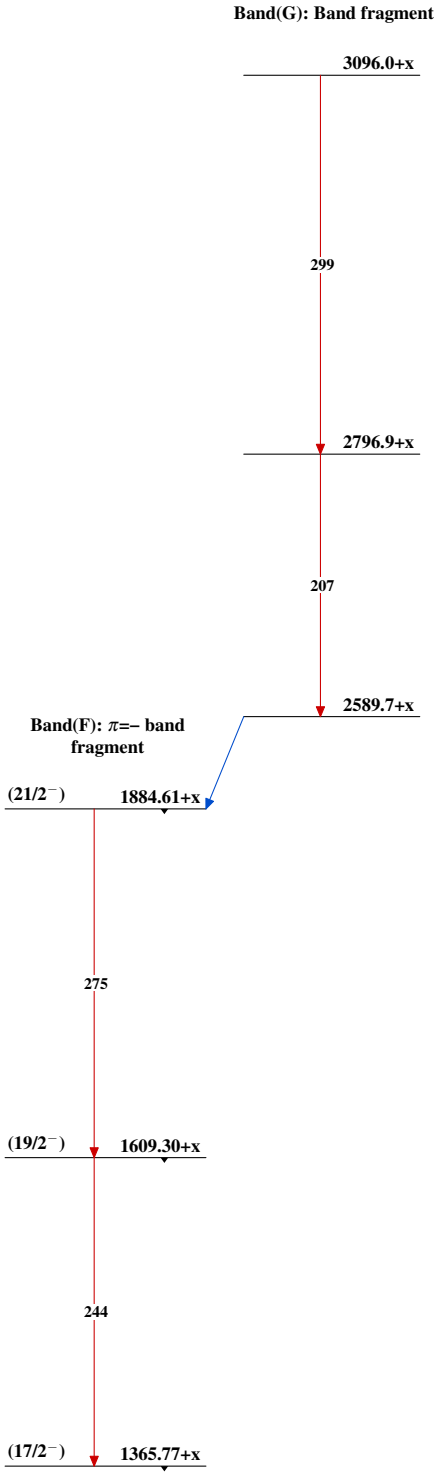


$^{171}_{77}Ir_{94}$

Adopted Levels, Gammas



Adopted Levels, Gammas (continued)



$^{171}_{77}Ir_{94}$