Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109,2033 (2008)	15-Jun-2008

Q(β^-)=−9.57×10^3 *syst*; S(n)=1.143×10^4 *8*; S(p)=−620 *23*; Q(α)=6141 *4* 2012Wa38
Note: Current evaluation has used the following Q record −9710 syst 11410 syst −621 24 *6140* 5 2003Au03,2005Sc22.
ΔQ(β)=200, ΔS(n)=150 (2003Au03).
Q(α): from Eα=5995 *5*, the weighted average of Eα=5993 *4* (2005Sc22) and Eα=6005 *8* (1999Po09), assuming a g.s. to g.s. transition. Q(α)=6151 *8* in 2003Au03 based on the datum from 1999Po09 alone.
Identification: excitation functions for ^{63}Cu bombardments of cadmium, silver, and palladium (1978Ca11); excitation functions for krypton bombardments of niobium and yttrium (1978Sc26).

^{169}Ir Levels

Cross Reference (XREF) Flags

- A ^{173}Au α decay (25 ms)
- B ^{173}Au α decay (14.0 ms)
- C ^{112}Sn(^{60}Ni,p2nγ)

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0	(1/2$^+$)	0.353 s *4*	A C	%α=45 *12*; %ε+%β^+=?; %p=? %α: weighted average of 42 *15* (2005Sc22) and 50 *18* (1999Po09). %p: see 1983Al09 and 1984Gr14 for discussions of expected proton decay; S(p) (=−621 *24* (2003Au03)) consistent with predictions. J$^\pi$: unhindered α decay from (1/2$^+$) ^{173}Au. T$_{1/2}$: from 5993α(t) (2005Sc22). Other: 0.64 s *+46−24* (1999Po09).
153 *24*	(11/2$^-$)	0.281 s *4*	BC	%α=72 *7*; %ε+%β^+=?; %p=? %α: Unweighted average of 59 *4* (2005Sc22), 84 *8* (1999Po09) and 72 *13* (1996Pa01). Other: 83 *+17−42* (1984ScZQ). E(level): from ^{173}Au α decay (14.0 ms). J$^\pi$: unhindered α decay from (11/2$^-$) ^{173}Au. T$_{1/2}$: weighted average of 0.308 s *22* from 6119α(t) (1996Pa01) and 0.280 s *3* from 6117α(t) (2005Sc22). Others: 0.32 s *+9−7* (1999Po09), 0.4 s *1* (1978Ca11), 0.4 s *2* (1978Sc26).
610.15[#] *18*	(13/2$^-$)		C	
811.20[@] *21*	(15/2$^-$)		C	
1243.2 *3*	(15/2$^-$)		C	
1330.98[#] *23*	(17/2$^-$)		C	
1547.0[&] *3*	(17/2$^-$)		C	
1572.75[@] *24*	(19/2$^-$)		C	
1724.64[&] *23*	(19/2$^-$)		C	J$^\pi$: D, ΔJ=1 393γ to (17/2$^-$) member of 11/2[505] band.
1803.1 *4*	(17/2$^-$)		C	
1803.45 *25*	(19/2$^-$)		C	
1997.8[&] *3*	(21/2$^-$)		C	
2045.0 *4*	(21/2$^-$)		C	
2115.69[#] *25*	(21/2$^-$)		C	
2221.4[&] *4*	(23/2$^-$)		C	
2261.23 *25*	(21/2$^-$)		C	
2263.84 *25*	(23/2$^-$)		C	
2318.4[a] *3*	(23/2$^-$)		C	
2406.3[@] *4*	(23/2$^-$)		C	
2448.9[a] *3*	(25/2$^-$)		C	

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Adopted Levels, Gammas (continued)

^{169}Ir Levels (continued)

E(level)†	Jπ‡	XREF	E(level)†	Jπ‡	XREF
2467.7 *3*	(23/2⁻)	C	2851.4 *4*	(25/2⁻)	C
2574.4 *4*	(25/2⁻)	C	2861.3[a] *7*	(29/2⁻)	C
2608.4[a] *4*	(27/2⁻)	C	3117.9[a] *8*	(31/2⁻)	C
			3441.5[a] *9*	(33/2⁻)	C

† From least-squares fit to Eγ, excluding the 317.6γ which fits its placement very poorly. Energies are given assuming E=153 for the $h_{11/2}$ isomeric state and do not include the 24 keV uncertainty in that energy.

‡ Based on band structure deduced in (^{60}Ni,92nγ), transition multipolarities and similarity of level scheme to that for ^{171}Ir, except as noted.

Band(A): π 11/2[505], α=+1/2 band. Configuration supported by measured B(M1) to B(E2) ratios for in−band transitions.

@ Band(a): π 11/2[505], α=−1/2 band. See comment on signature partner band.

& Band(B): π=(−) sideband 1.

a Band(C): π=(−) sideband 2.

γ(^{169}Ir)

E_i(level)	J_i^π	Eγ†	Iγ†	E_f	J_f^π	Mult.‡	α#	Comments
610.15	(13/2⁻)	457.1 *2*	100	153	(11/2⁻)	(M1)	0.0910	
811.20	(15/2⁻)	201.7 *3*	31.5 *8*	610.15	(13/2⁻)	(M1)	0.838	
		658.3 *3*	100.0 *13*	153	(11/2⁻)	(E2)	0.01250	
1243.2	(15/2⁻)	633.1 *2*	100	610.15	(13/2⁻)			
1330.98	(17/2⁻)	519.3 *4*	100.0 *21*	811.20	(15/2⁻)	(M1)	0.0651	
		720.3 *2*	63.5 *19*	610.15	(13/2⁻)	(E2)	0.01026	
1547.0	(17/2⁻)	937.3 *3*	100	610.15	(13/2⁻)			
1572.75	(19/2⁻)	242.5@ *4*	<58@	1330.98	(17/2⁻)			242γ+243γ doublet; Iγ shared between the two components. D multipolarity for one or both components of doublet.
		762.4 *4*	100.0 *21*	811.20	(15/2⁻)	(E2)	0.00909	
1724.64	(19/2⁻)	152.3 *1*	58.0 *17*	1572.75	(19/2⁻)			
		178.0 *3*	29.5 *12*	1547.0	(17/2⁻)			
		393.3 *1*	100.0 *22*	1330.98	(17/2⁻)	D		
1803.1	(17/2⁻)	559.9 *2*	100	1243.2	(15/2⁻)			
1803.45	(19/2⁻)	256.6@ *4*	100@ *3*	1547.0	(17/2⁻)			Transition is a self-coincident doublet.
		992.5 *2*	35.4 *21*	811.20	(15/2⁻)			
1997.8	(21/2⁻)	273.9@ *3*	100@	1724.64	(19/2⁻)			273γ+274γ doublet, dominated by the 274γ component.
2045.0	(21/2⁻)	242.5@ *4*	100@	1803.45	(19/2⁻)			Eγ,Iγ,Mult.: see comment on 243γ from 1420 level.
2115.69	(21/2⁻)	542.8 *1*	100 *10*	1572.75	(19/2⁻)			
		785.3 *2*	83 *6*	1330.98	(17/2⁻)	(E2)	0.00854	
2221.4	(23/2⁻)	223.6 *2*	100	1997.8	(21/2⁻)			
2261.23	(21/2⁻)	263.8 *2*	24.7 *26*	1997.8	(21/2⁻)			
		688.4 *1*	100 *3*	1572.75	(19/2⁻)			
2263.84	(23/2⁻)	539.2 *1*	100	1724.64	(19/2⁻)			
2318.4	(23/2⁻)	273.9@ *3*	<260@	2045.0	(21/2⁻)			Eγ,Iγ,Mult.: see comment on 274γ from 1846 level.
		317.6 *4*	100 *3*	1997.8	(21/2⁻)			Eγ: fits placement very poorly; Eγ is >5σ from expected value. Level energy difference is 320.7 *3*.
		515.1 *3*	24 *9*	1803.45	(19/2⁻)			
		745.4 *2*	51 *3*	1572.75	(19/2⁻)			

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Adopted Levels, Gammas (continued)

$\gamma(^{169}Ir)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Comments
2406.3	(23/2⁻)	290.6 *3*	<18	2115.69	(21/2⁻)	
		833.5 *4*	100 *5*	1572.75	(19/2⁻)	
2448.9	(25/2⁻)	130.5 *1*	100	2318.4	(23/2⁻)	
2467.7	(23/2⁻)	206.5 *1*	100	2261.23	(21/2⁻)	
2574.4	(25/2⁻)	310.6 *2*	100	2263.84	(23/2⁻)	
2608.4	(27/2⁻)	159.5 *2*	100	2448.9	(25/2⁻)	
2851.4	(25/2⁻)	383.7 *2*	100	2467.7	(23/2⁻)	
2861.3	(29/2⁻)	252.9 *6*	100	2608.4	(27/2⁻)	
3117.9	(31/2⁻)	256.6[@] *4*	100[@]	2861.3	(29/2⁻)	Transition is a self-coincident doublet.
3441.5	(33/2⁻)	323.6 *2*	100	3117.9	(31/2⁻)	

† From $^{112}Sn(^{60}Ni,p2n\gamma)$ (2007Sa33).

‡ From $^{112}Sn(^{60}Ni,p2n\gamma)$ based on measured (Iγ(158°)/((Iγ(86°)+Iγ(94°)) and assigning $\Delta\pi$=(no) to intraband transitions.

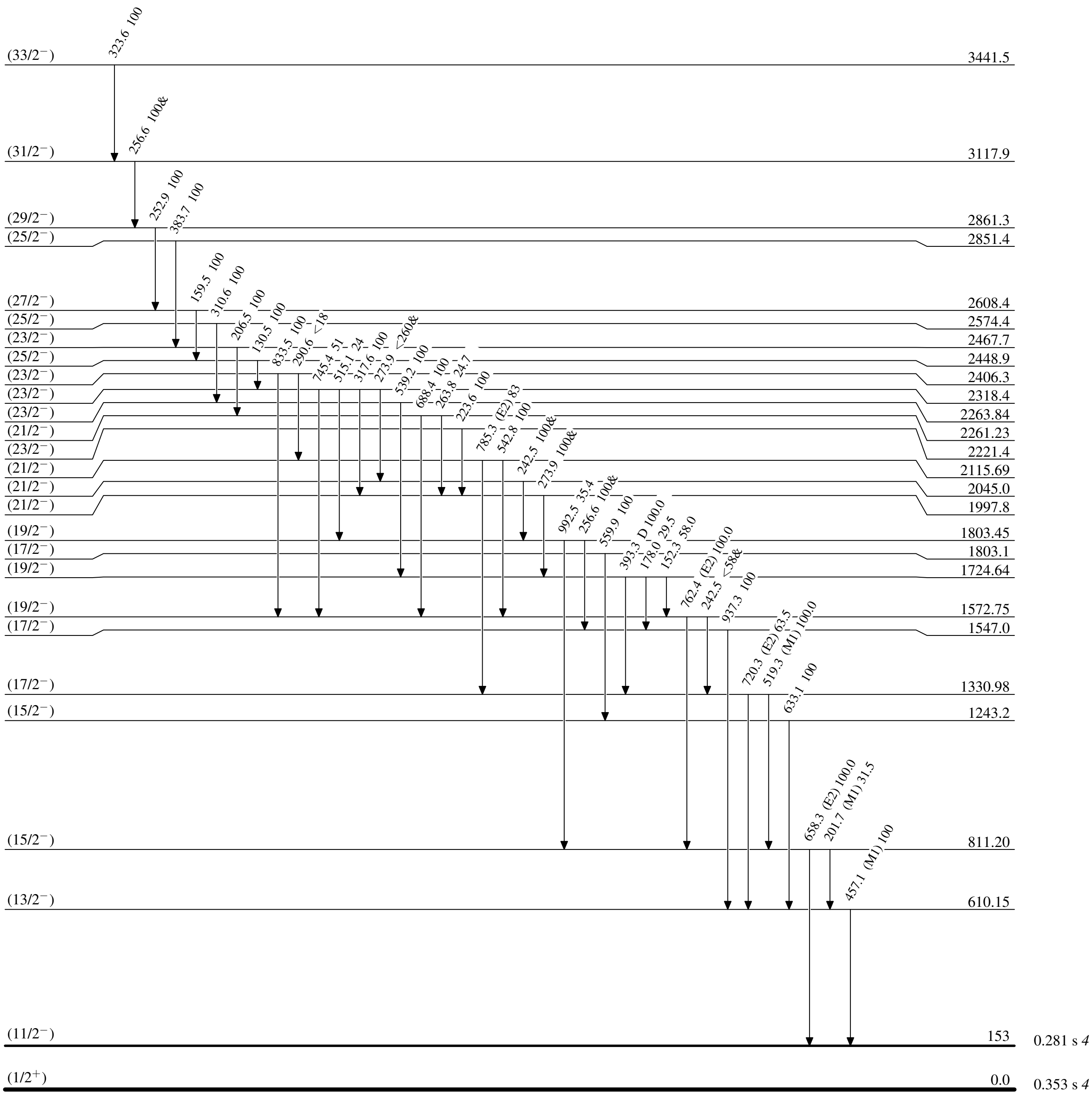
\# Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

@ Multiply placed with undivided intensity.

Adopted Levels, Gammas

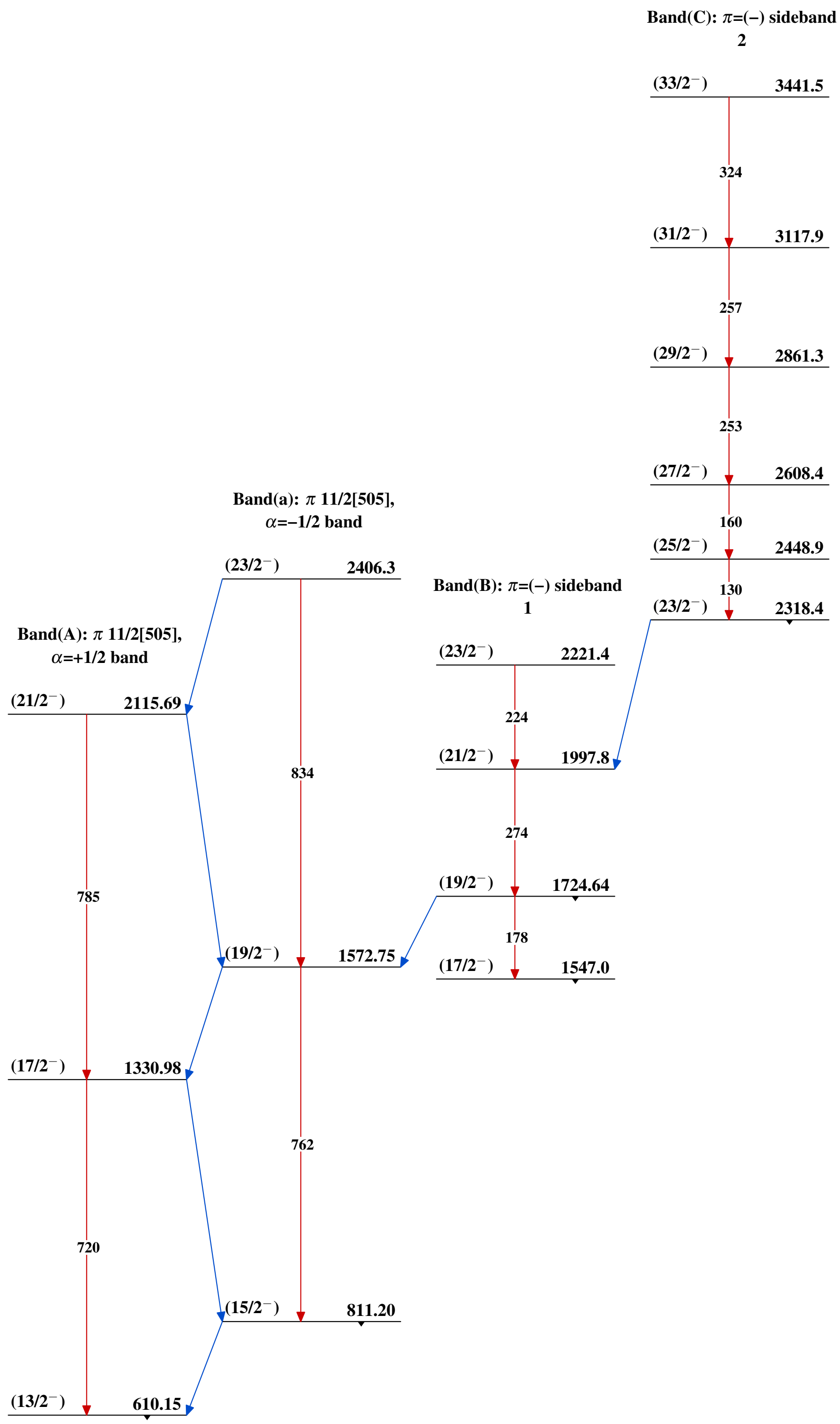
Level Scheme

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



$^{169}_{77}Ir_{92}$

Adopted Levels, Gammas



$^{169}_{77}Ir_{92}$