^{189}Ir IT decay (3.7 ms) 1975Ke06,1975An08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	T. D. Johnson, Balraj Singh	NDS 142, 1 (2017)	15-Apr-2017

Parent: ^{189}Ir: E=2332.8 *3*; $J^{\pi}=(25/2^+)$; $T_{1/2}$=3.7 ms *2*; %IT decay=100.0

^{189}Ir Levels

E(level)†	J^{π}‡	$T_{1/2}$‡	Comments
0.0	$3/2^+$		
113.8 *8*	$5/2^+$		
300.4 *8*	$7/2^+$		
372.1 *12*	$11/2^-$	13.3 ms *3*	Total transition intensity feeding this isomer is 11 *5* in relative units.
453.9 *12*	$9/2^+$		
736.8 *15*	$13/2^-$		
745.8 *12*	$11/2^+$		
837.8 *14*	$15/2^-$		
918.1 *17*	$13/2^+$		
1268.2 *17*	$17/2^-$		
1296.2 *14*	$15/2^+$		
1383.5 *16*	$19/2^-$		
1481.6 *22*	$(17/2)^+$		
1875.48 *21*	$(21/2^-)$		
1910.2 *21*	$(19/2^+)$		
1919.8 *16*	$19/2^+$		
2059.8 *22*	$(21/2^-)$		
2085.0 *24*	$23/2^-$		
2108.8 *4*	$(21/2^-)$		841γ and a tentative 972γ placed by 1975An08 deexciting this level, but the intensity balance arguments for levels fed by these two transitions do not support these placements.
2127.8 *23*	$23/2^+$		
2248.5 *3*	$(23/2^-,25/2^-)$		
2332.8 *3*	$(25/2^+)$	3.7 ms *2*	$T_{1/2}$: weighted average of 3.8 ms *2* (1975Ke06) and 3.2 ms *4* (1975An08); from γ(t).

† From least-squares fit to Eγ values.
‡ From Adopted Levels.

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γ(^{189}Ir)

Iγ normalization: From I(γ+ce)(120.8γ+224γ+247.6γ)=100.

E_γ[‡]	I_γ[†][g]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	δ[c]	α[f]	$I_{(\gamma+ce)}$[g]	Comments
(68.1)	4.1 *25*	2127.8	23/2$^+$	2059.8	(21/2$^-$)	[E1]		0.220	5.0 *31*	α(L)=0.1693 *24*; α(M)=0.0393 *6* α(N)=0.00943 *14*; α(O)=0.001525 *22*; α(P)=6.81×10^{-5} *10* $I_{(\gamma+ce)}$: deduced from intensity balance at 2128 level. I_γ: from I(γ+ce) and α.
71.7 *1*	&	372.1	11/2$^-$	300.4	7/2$^+$	M2(+E3)	<0.1	76 *4*		α(L)=57 *3*; α(M)=14.6 *8* α(N)=3.63 *18*; α(O)=0.62 *3*; α(P)=0.0361 *6*
84.5 *3*	1.8 *6*	2332.8	(25/2$^+$)	2248.5	(23/2$^-$,25/2$^-$)	(E1+M2)	0.18 *+4−6*	3.7 *17*		α(K)=2.5 *12*; α(L)=0.9 *5*; α(M)=0.24 *12* α(N)=0.06 *3*; α(O)=0.010 *5*; α(P)=0.0006 *4* Mult.: from α(exp)=3.7 *17* (deduced from intensity balance at 2248 level).
101.0 *3*	0.2[b] *1*	837.8	15/2$^-$	736.8	13/2$^-$	(M1)		5.95		
113.8 *1*	0.9[#] *2*	113.8	5/2$^+$	0.0	3/2$^+$	M1+E2	0.55 *5*	3.88 *8*		α(K)=2.82 *11*; α(L)=0.81 *4*; α(M)=0.196 *10* α(N)=0.0479 *23*; α(O)=0.0079 *4*; α(P)=0.000347 *13*
115.2 *3*	0.31[@] *15*	1383.5	19/2$^-$	1268.2	17/2$^-$	[M1+E2]		3.3 *8*		
120.8 *3*	6.8 *23*	2248.5	(23/2$^-$,25/2$^-$)	2127.8	23/2$^+$	(E1)		0.246		%Iγ=34 *9*, using the deduced normalization factor.
140.1 *3*	2.8 *9*	2059.8	(21/2$^-$)	1919.8	19/2$^+$	(E1)[d]		0.169		
149.6 *3*	1.6[e] *5*	2059.8	(21/2$^-$)	1910.2	(19/2$^+$)	(E1)[d]		0.143		
153.6 *3*	0.2[@] *1*	453.9	9/2$^+$	300.4	7/2$^+$	[M1+E2]		1.3 *5*		
172.1 *3*	0.034[@] *21*	918.1	13/2$^+$	745.8	11/2$^+$	[M1+E2]		0.9 *4*		
186.7 *1*	1.1[#] *2*	300.4	7/2$^+$	113.8	5/2$^+$	M1+E2	−0.7 *2*	0.84 *8*		α(K)=0.64 *9*; α(L)=0.152 *6*; α(M)=0.0364 *18* α(N)=0.0089 *4*; α(O)=0.00150 *5*; α(P)=7.8×10^{-5} *11*
208.2 *3*	1.3 *6*	2127.8	23/2$^+$	1919.8	19/2$^+$	E2		0.301		α(K)=0.1530 *23*; α(L)=0.1117 *18*; α(M)=0.0283 *5* α(N)=0.00686 *11*; α(O)=0.001072 *18*; α(P)=1.554×10^{-5} *23*
209.3 *6*	0.9[@] *6*	2085.0	23/2$^-$	1875.48	(21/2$^-$)	[M1+E2]		0.53 *23*		
217.5 *4*	0.8 *4*	2127.8	23/2$^+$	1910.2	(19/2$^+$)	[E2]		0.261		

^{189}Ir IT decay (3.7 ms) 1975Ke06,1975An08 (continued)

γ(^{189}Ir) (continued)

E_γ[‡]	I_γ[†][g]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[f]	Comments
224 *1*	0.5 *2*	2332.8	(25/2$^+$)	2108.8	(21/2$^-$)	(M2)	2.93	α(K)=2.22 *5*; α(L)=0.545 *12*; α(M)=0.133 *3* α(N)=0.0328 *8*; α(O)=0.00573 *13*; α(P)=0.000390 *9* %Iγ=2.5 *11*, using the calculated normalization. Mult.: from α(exp)=2.2 *11* (deduced from intensity balance at 2108 level).
247.6 *3*	9 *3*	2332.8	(25/2$^+$)	2085.0	23/2$^-$	(E1)	0.0402	α(K)=0.0332 *5*; α(L)=0.00538 *8*; α(M)=0.001235 *18* α(N)=0.000300 *5*; α(O)=5.15×10^{-5} *8*; α(P)=3.22×10^{-6} *5* %Iγ=45 *11*, using the calculated normalization.
252.5 *3*	0.8 *4*	2127.8	23/2$^+$	1875.48	(21/2$^-$)	[E1]	0.038	
258.3 *2*	&	372.1	11/2$^-$	113.8	5/2$^+$	E3	0.876	α(K)=0.248 *4*; α(L)=0.470 *8*; α(M)=0.1235 *19* α(N)=0.0301 *5*; α(O)=0.00468 *7*; α(P)=4.26×10^{-5} *7*
292.1 *2*	1.4[b] *7*	745.8	11/2$^+$	453.9	9/2$^+$	M1	0.302	α(K)=0.250 *4*; α(L)=0.0403 *6*; α(M)=0.00927 *14* α(N)=0.00228 *4*; α(O)=0.000404 *6*; α(P)=3.06×10^{-5} *5*
300.4 *1*	1.9[#] *5*	300.4	7/2$^+$	0.0	3/2$^+$	E2	0.0943	α(K)=0.0598 *9*; α(L)=0.0262 *4*; α(M)=0.00652 *10* α(N)=0.001584 *23*; α(O)=0.000253 *4*; α(P)=6.43×10^{-6} *9*
340.2 *1*	2.2 *6*	453.9	9/2$^+$	113.8	5/2$^+$	E2	0.0657	α(K)=0.0439 *7*; α(L)=0.01659 *24*; α(M)=0.00410 *6* α(N)=0.000998 *15*; α(O)=0.0001610 *23*; α(P)=4.79×10^{-6} *7*
364.7 *1*	2.8 *7*	736.8	13/2$^-$	372.1	11/2$^-$	[M1+E2]	0.11 *6*	
378.1 *3*	0.9 *3*	1296.2	15/2$^+$	918.1	13/2$^+$	(M1+E2)	0.10 *5*	
[x]400.6 *2*								Eγ: observed only by 1975An08 in delayed γγ coincidence data.
429 *1*	0.5[@] *3*	1910.2	(19/2$^+$)	1481.6	(17/2)$^+$			
430.4 *1*	1.1 *6*	1268.2	17/2$^-$	837.8	15/2$^-$	M1	0.1067	α(K)=0.0884 *13*; α(L)=0.01412 *20*; α(M)=0.00324 *5* α(N)=0.000797 *12*; α(O)=0.0001414 *20*; α(P)=1.073×10^{-5} *15* Iγ: from Iγ(429+430)=1.5 *5* and Iγ(429)=0.44 from adopted γ branching ratios.
438.3 *3*	0.63 *21*	1919.8	19/2$^+$	1481.6	(17/2)$^+$	M1	0.1016	α(K)=0.0842 *12*; α(L)=0.01344 *20*; α(M)=0.00309 *5* α(N)=0.000759 *11*; α(O)=0.0001346 *20*; α(P)=1.022×10^{-5} *15*
445.3 *1*	3.5 *9*	745.8	11/2$^+$	300.4	7/2$^+$	E2	0.0318	α(K)=0.0230 *4*; α(L)=0.00665 *10*; α(M)=0.001616 *23* α(N)=0.000394 *6*; α(O)=6.49×10^{-5} *10*; α(P)=2.58×10^{-6} *4*
464.4 *2*	2[a] *1*	918.1	13/2$^+$	453.9	9/2$^+$	E2	0.0285	α(K)=0.0209 *3*; α(L)=0.00580 *9*; α(M)=0.001407 *20* α(N)=0.000343 *5*; α(O)=5.67×10^{-5} *8*; α(P)=2.35×10^{-6} *4*
465.7 *1*	8[a] *4*	837.8	15/2$^-$	372.1	11/2$^-$	E2	0.0283	α(K)=0.0207 *3*; α(L)=0.00575 *8*; α(M)=0.001395 *20* α(N)=0.000340 *5*; α(O)=5.62×10^{-5} *8*; α(P)=2.33×10^{-6} *4*
491.9 *2*	1.2 *3*	1875.48	(21/2$^-$)	1383.5	19/2$^-$	[M1+E2]	0.05 *3*	
531.4 *3*	0.6[b] *3*	1268.2	17/2$^-$	736.8	13/2$^-$	[E2]	0.0205	
545.7 *1*	9.6 *24*	1383.5	19/2$^-$	837.8	15/2$^-$	E2	0.0192	α(K)=0.01456 *21*; α(L)=0.00356 *5*; α(M)=0.000854 *12* α(N)=0.000208 *3*; α(O)=3.49×10^{-5} *5*; α(P)=1.652×10^{-6} *24*
550.3 *1*	4.4 *11*	1296.2	15/2$^+$	745.8	11/2$^+$	E2	0.0188	α(K)=0.01430 *20*; α(L)=0.00347 *5*; α(M)=0.000833 *12* α(N)=0.000203 *3*; α(O)=3.40×10^{-5} *5*; α(P)=1.622×10^{-6} *23*
563.5 *2*	1.2 *6*	1481.6	(17/2)$^+$	918.1	13/2$^+$	(E2)	0.0178	Iγ: from intensity balance at 1481 level.
607.4 *3*	0.8[@] *4*	1875.48	(21/2$^-$)	1268.2	17/2$^-$	[E2]	0.015	
614.0 *2*	2.0 *7*	1910.2	(19/2$^+$)	1296.2	15/2$^+$	(E2)	0.0146	

$^{189}_{77}Ir_{112}$-3

^{189}Ir IT decay (3.7 ms) 1975Ke06,1975An08 (continued)

γ(^{189}Ir) (continued)

E_γ[‡]	I_γ[†g]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[c]	α[f]	Comments
623.6 *1*	3.8 *13*	1919.8	19/2$^+$	1296.2	15/2$^+$	E2	0.01411	α(K)=0.01093 *16*; α(L)=0.00243 *4*; α(M)=0.000580 *9* α(N)=0.0001416 *20*; α(O)=2.39×10^{-5} *4*; α(P)=1.244×10^{-6} *18*
676.3 *3*	0.31[e] *15*	2059.8	(21/2$^-$)	1383.5	19/2$^-$			
701.4 *2*	8.7 *29*	2085.0	23/2$^-$	1383.5	19/2$^-$	E2	0.01087	α(K)=0.00855 *12*; α(L)=0.001775 *25*; α(M)=0.000420 *6* α(N)=0.0001027 *15*; α(O)=1.746×10^{-5} *25*; α(P)=9.75×10^{-7} *14*
725.3 *3*	1.6 *5*	2108.8	(21/2$^-$)	1383.5	19/2$^-$			

† Delayed intensities from 1975Ke06, except where noted. Uncertainties of ≈30% are assigned by the evaluators.
‡ From ^{187}Re(α,2nγ).
# Deduced from intensity balance, not including the feeding from 13.3-ms isomer.
@ Relative intensity calculated from prompt-γ data.
& Due to the long half-life of the isomer at 372 keV, the intensities of the gamma rays are time-dependent, thus cannot be deduced.
a Intensity of 464.7γ and 466.0γ divided by evaluators on the basis of the level scheme intensity balance. Iγ(465γ+466γ)=8.8.
b From branching ratios in Adopted Gammas.
c From Adopted Gammas, except for the assumed multipolarities, which are from ΔJ^π, and listed in square brackets here.
d From intensity balance arguments.
e The relative intensities of the 149γ and 676γ are equal in the prompt ^{187}Re(α,2nγ) data but differ by a factor of 5 in the delayed data.
f Theoretical values from BrIcc code (2008Ki07) with "Frozen Orbitals" approximation, unless otherwise stated.
g For absolute intensity per 100 decays, multiply by 5.0 *11*.
x γ ray not placed in level scheme.

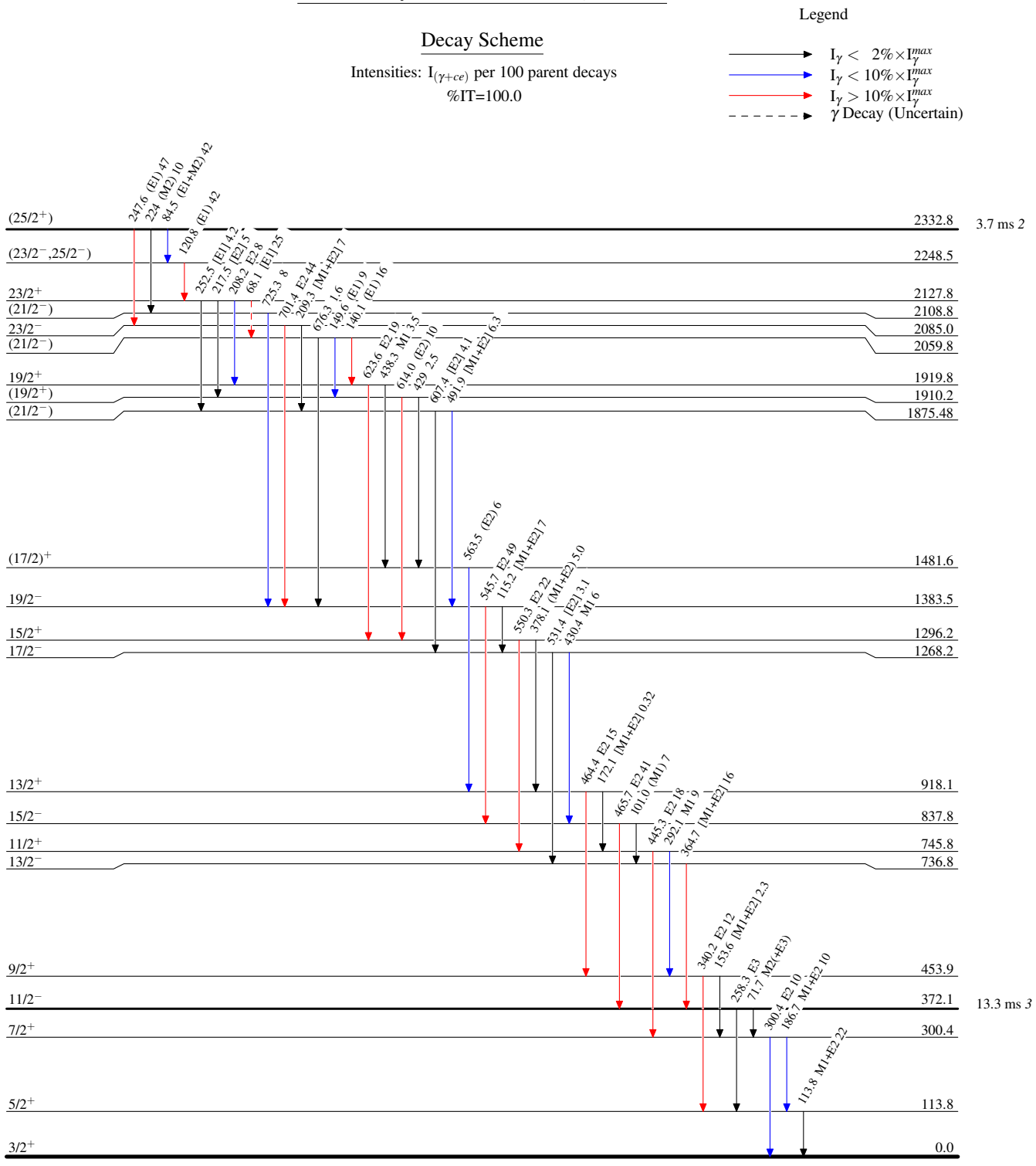
$^{189}_{77}Ir_{112}$-4

^{189}Ir IT decay (3.7 ms) 1975Ke06,1975An08

Decay Scheme

Intensities: $I_{(\gamma+ce)}$ per 100 parent decays

%IT=100.0



$^{189}_{77}Ir_{112}$