^{194}Ir(n,γ) E=thermal 1987Co08

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Huang Xiaolong and Kang Mengxiao	NDS 121,395 (2014)	1-Mar-2014

Reaction: ^{193}Ir(n,γ)^{194}Ir(n,γ) E=thermal.

Measured Eγ, Iγ, and Ice with curved-crystal spectrometers, electron spectrometer and pair spectrometer (1987Co08); deduced levels, mult and δ; analyzed with perturbed spin(6), and U(6/4) supersymmetry (1987Ci01,1987Co08).

Measured neutron binding energy S(n)=7231.92 keV *6*; determined neutron capture cross-section σ(n,γ)=1500 *290* for ^{194}Ir(n,γ).

^{195}Ir Levels

All data are from 1987Co08, except as noted.

E(level)[†]	J$^\pi$[‡]	Comments
0.0[#]	3/2$^+$	
69.1808[@] *10*	1/2$^+$	
175.2215[#] *18*	5/2$^+$	
233.5099[@] *23*	3/2$^+$	
286.5208[&] *20*	3/2$^+$	
412.037 *4*	(5/2)$^+$	
428.628[&] *4*	1/2$^+$,3/2$^+$	
499.55[a] *3*	5/2$^+$	
539.207[b] *5*	3/2$^+$	
581.799[@] *7*	5/2$^+$	
760.39[@] *4*	5/2$^+$	
776.053[b] *14*	3/2$^+$,5/2$^+$	
860.94 *5*		
943.756 *16*	1/2$^+$,3/2$^+$,5/2$^+$	
1017.72 *12*	1/2$^+$	
5509.2? *3*		
5693.48? *20*		
5797.72? *20*		
5876.2? *4*		
6002.36? *14*		
6008.45? *23*		
(7231.92 *6*)	1/2$^-$,3/2$^-$	J$^\pi$: from s-wave neutron capture on 1$^-$ ground state of ^{194}Ir.

† From Eγ and level scheme by using least-square fit to data.

‡ From Adopted Levels, except as noted.

\# Band(A): K$^\pi$=3/2$^+$ band. configuration=3/2$^+$[402]. Members of the band: 3/2 to 5/2.

@ Band(B): K$^\pi$=1/2$^+$ band. configuration=1/2$^+$[400]. Members of the band: 1/2 to 5/2.

& Band(C): K$^\pi$=1/2$^+$ band. configuration=1/2$^+$[411]. Members of the band: 1/2 to 5/2.

a Band(D): K$^\pi$=5/2$^+$ band. Member of the band: 5/2.

b Band(E): K$^\pi$=3/2$^+$ band. Member of the band: 3/2 to 5/2.

γ(^{195}Ir)

All data are from 1987Co08.

Normalization of the internal conversion to the γ ray intensities was performed by determining the multipole mixing ratio of the 175.222-keV transition from the L1/L3 subshell ratio (1968Ha54). The resulting normalization factor has an uncertainty of 12%.

E_γ	I_γ[‡]	E_i(level)	J^π_i	E_f	J^π_f	Mult.[#]	δ[#]	α[@]	Comments
^{x}54.404 *1*	70 *4*								
^{x}56.844 *2*	43 *5*								
69.181 *1*	130 *6*	69.1808	1/2$^+$	0.0	3/2$^+$				
^{x}88.771 *4*	39 *4*								
111.300 *2*	22 *2*	286.5208	3/2$^+$	175.2215	5/2$^+$				
^{x}127.326 *3*	39 *2*								
^{x}147.695 *2*	39 *2*								
164.333 *3*	118 *6*	233.5099	3/2$^+$	69.1808	1/2$^+$	E2+M1	1.6 *3*	0.91 *8*	α(L1)exp=0.079 *13* α(K)=0.54 *9*; α(L)=0.277 *11*; α(M)=0.069 *3*; α(N+..)=0.0196 *9*
175.222 *2*	228 *6*	175.2215	5/2$^+$	0.0	3/2$^+$	M1+E2	0.47 *3*	1.117 *21*	α(M1)exp=0.032 *6*; α(L1)exp=0.127 *17*; α(L2)exp=0.018 *3*; α(L3)exp=0.015 *3* α(K)=0.883 *20*; α(L)=0.179 *3*; α(M)=0.0422 *8*; α(N+..)=0.01223 *20*
178.529 *4*	44 *3*	412.037	(5/2)$^+$	233.5099	3/2$^+$	M1+E2	0.47 *+25−33*	1.06 *11*	α(L1)exp=0.125 *19* α(K)=0.84 *13*; α(L)=0.169 *10*; α(M)=0.040 *3*; α(N+..)=0.0115 *8*
^{x}181.480 *3*	27 *2*								
^{x}185.222 *4*	31 *2*								
^{x}201.819 *2*	55 *3*								
^{x}206.714 *2*	35 *2*								
217.340 *4*	24 *2*	286.5208	3/2$^+$	69.1808	1/2$^+$				
^{x}224.689 *3*	32 *2*								
^{x}229.962 *4*	42 *2*								
233.512 *4*	61 *3*	233.5099	3/2$^+$	0.0	3/2$^+$	M1+E2	0.26 *55*	0.54 *12*	α(L1)exp=0.067 *17* α(K)=0.44 *12*; α(L)=0.0745 *20*; α(M)=0.0172 *3*; α(N+..)=0.00504 *8*
^{x}238.321 *4*	40 *2*								
^{x}239.038 *3*	42 *2*								
^{x}239.787 *4*	29 *2*					E2		0.190	α(K)exp=0.089 *22* α(K)=0.1065 *15*; α(L)=0.0628 *9*; α(M)=0.01582 *23*; α(N+..)=0.00446 *7*
^{x}241.600 *4*	13 *3*					M1+E2	0.53 *53*	0.44 *10*	α(K)exp=0.340 *93* α(K)=0.35 *10*; α(L)=0.0665 *24*; α(M)=0.01560 *24*; α(N+..)=0.00453 *11*
^{x}249.144 *4*	53 *2*								
252.685 *4*	38 *2*	539.207	3/2$^+$	286.5208	3/2$^+$	M1+E2	1.5 *13*	0.25 *19*	α(L1)exp=0.032 *18* α(K)=0.18 *19*; α(L)=0.054 *6*; α(M)=0.0131 *7*; α(N+..)=0.0037 *3*

γ(^{195}Ir) (continued)

E_γ	I_γ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.#	δ#	α@	Comments
x265.861 3	43 2								α(L1)exp=0.159 37
x278.725 6	95 8					M1+E2	0.62 60	0.28 8	α(L1)exp=0.030 12 α(K)=0.23 7; α(L)=0.043 4; α(M)=0.0100 7; α(N+..)=0.00291 21
286.516 4	164 6	286.5208	3/2+	0.0	3/2+	M1+E2	0.43 5	0.286 8	α(K)exp=0.215 29 α(K)=0.233 7; α(L)=0.0408 7; α(M)=0.00948 15; α(N+..)=0.00276 5
x300.261 3	308 6					E2		0.0946	α(K)exp=0.050 8 α(K)=0.0599 9; α(L)=0.0263 4; α(M)=0.00654 10; α(N+..)=0.00185 3
x302.211 3	48 2								
x307.378 3	49 2								
x308.480 5	146 10					E1		0.0236	α(K)exp=0.027 5 α(K)=0.0196 3; α(L)=0.00311 5; α(M)=0.000714 10; α(N+..)=0.000206 3
x308.693 3	94 6					E1		0.0236	α(K)exp=0.026 11 α(K)=0.0196 3; α(L)=0.00311 5; α(M)=0.000713 10; α(N+..)=0.000206 3
x314.221 3	95 3					E2		0.0827	α(K)exp=0.046 13 α(K)=0.0535 8; α(L)=0.0222 4; α(M)=0.00551 8; α(N+..)=0.001559 22
x335.346 8	33 3					E2+M1	3.8 86	0.08 13	α(K)exp=0.055 20 α(K)=0.05 12; α(L)=0.018 10; α(M)=0.0045 19; α(N+..)=0.0013 6
342.854 7	52 2	412.037	(5/2)+	69.1808	1/2+				α(K)exp=0.062 13; α(L1)exp=0.061 19; α(L2)exp=0.027 14 δ: E2+(16 11)%M1 from α(K)exp value, but not consistent with α(L1)exp or α(L2)exp.
347.446 26	15 2	776.053	3/2+,5/2+	428.628	1/2+,3/2+				
359.445 4	86 3	428.628	1/2+,3/2+	69.1808	1/2+	M1+(E2)	<0.39	0.165 8	α(K)exp=0.152 23 α(K)=0.136 8; α(L)=0.0223 7; α(M)=0.00514 15; α(N+..)=0.00150 5
x386.575 8	88 5					E2+M1	1.80 70	0.069 21	α(K)exp=0.059 11 α(K)=0.052 19; α(L)=0.0126 18; α(M)=0.0030 4; α(N+..)=0.00087 12
x393.358 4	70 7								
x403.894 4	83 2								
406.574 7	47 3	581.799	5/2+	175.2215	5/2+	M1		0.1241	α(K)exp=0.148 29 α(K)=0.1028 15; α(L)=0.01645 23; α(M)=0.00378 6; α(N+..)=0.001107 16
x410.089 5	42 2					E2+(M1)	>1.83	0.049 10	α(K)exp=0.026 24

$^{195}_{77}$Ir$_{118}$-3

γ(^{195}Ir) (continued)

E_γ	I_γ‡	E_i(level)	J^π_i	E_f	J^π_f	Mult.#	δ#	α@	Comments
									α(K)=0.036 9; α(L)=0.0095 9; α(M)=0.00231 19; α(N+..)=0.00066 6
412.033 6	53 2	412.037	(5/2)$^+$	0.0	3/2$^+$	M1+(E2)	0.22 58	0.12 3	α(K)= 0.10 3; α(L)= 0.016 3; α(M)= 0.0037 6; α(N+..)=0.00113 18 α(K)exp=0.096 22
^{x}415.925 8	76 5					E2+M1	1.8 16	0.06 6	α(K)= 0.04 6; α(L)= 0.010 6; α(M)= 0.0024 12; α(N+..)= 0.0007 4 α(K)exp=0.048 19
428.629 7	46 2	428.628	1/2$^+$,3/2$^+$	0.0	3/2$^+$	M1+(E2)	<0.72	0.095 13	α(K)exp=0.101 45 α(K)=0.078 11; α(L)=0.0131 12; α(M)=0.0030 3; α(N+..)=0.00089 8
^{x}449.103 14	28 3					M1		0.0954	α(K)exp=0.134 35 α(K)=0.0790 11; α(L)=0.01261 18; α(M)=0.00290 4; α(N+..)=0.000848 12
^{x}453.81 3	31 10					M1+(E2)	<0.71	0.082 11	α(K)exp=0.103 53 α(K)=0.068 10; α(L)=0.0113 11; α(M)=0.00260 22; α(N+..)=0.00076 7
^{x}454.31 3	82 5					E2,E1			
^{x}459.192 4	175 7					E1		0.00956	α(K)=0.00798 12; α(L)=0.001226 18; α(M)=0.000280 4; α(N+..)=8.11×10^{-5} 12
^{x}486.899 7	144 7					E1		0.00843	α(K)=0.00703 10; α(L)=0.001076 15; α(M)=0.000246 4; α(N+..)=7.12×10^{-5} 10
489.50 3	22 2	776.053	3/2$^+$,5/2$^+$	286.5208	3/2$^+$				
^{x}494.207 7	91 5					E2+(M1)	>1.9	0.030 6	α(K)exp=0.017 13 α(K)=0.023 5; α(L)=0.0053 6; α(M)=0.00128 12; α(N+..)=0.00037 4
^{x}495.757 8	114 6					E2+(M1)	3.0 93	0.03 5	α(K)exp=0.023 15 α(K)=0.02 4; α(L)=0.005 5; α(M)=0.0013 10; α(N+..)=0.0004 3
499.50† 3		499.55	5/2$^+$	0.0	3/2$^+$				
^{x}506.044 12	72 3					M1+E2	0.57 71	0.058 18	α(K)exp=0.045 21 α(K)=0.048 16; α(L)=0.0080 18; α(M)=0.0019 4; α(N+..)=0.00054 12
^{x}508.018 16	65 5					E2+M1	2.0 26	0.03 4	α(K)exp=0.028 14 α(K)=0.03 4; α(L)=0.005 4; α(M)=0.0013 9; α(N+..)=0.00037 25
^{x}513.996 8	116 9					M1+E2	0.69 77	0.052 16	α(K)exp=0.038 24 α(K)=0.043 14; α(L)=0.0073 17; α(M)=0.0017 4; α(N+..)=0.00050 11
515.114 17	33 4	943.756	1/2$^+$,3/2$^+$,5/2$^+$	428.628	1/2$^+$,3/2$^+$				
^{x}518.600 20	109 8					M1		0.0653	α(K)exp=0.074 17

$^{195}_{77}$Ir$_{118}$-4

γ(^{195}Ir) (continued)

E_γ	I_γ‡	E_i(level)	J_i^π	E_f	J_f^π	Mult.#	δ#	α@	Comments
									α(K)=0.0542 8; α(L)=0.00861 12; α(M)=0.00198 3; α(N+..)=0.000578 8
539.212 23	26 4	539.207	3/2$^+$	0.0	3/2$^+$	M1+(E2)	<0.56	0.054 5	α(K)exp=0.053 14 α(K)=0.045 5; α(L)=0.0073 5; α(M)=0.00168 11; α(N+..)=0.00049 4
542.521 21	23 3	776.053	3/2$^+$,5/2$^+$	233.5099	3/2$^+$	M1+(E2)	<0.51	0.054 4	α(K)exp=0.053 13 α(K)=0.045 4; α(L)=0.0072 5; α(M)=0.00166 10; α(N+..)=0.00049 3
574.39 7	19 4	860.94		286.5208	3/2$^+$				
581.792 13	43 8	581.799	5/2$^+$	0.0	3/2$^+$	M1		0.0484	α(K)exp=0.058 14 α(K)=0.0402 6; α(L)=0.00636 9; α(M)=0.001459 21; α(N+..)=0.000427 6
^{x}588.904 15	116 7					E2,E1			α(K)exp=0.008 3
^{x}589.988 21	111 6					E2,E1			α(K)exp=0.010 3
600.86 4	47 9	776.053	3/2$^+$,5/2$^+$	175.2215	5/2$^+$	M1+E2	0.62 66	0.036 10	α(K)exp=0.028 11 α(K)=0.030 9; α(L)=0.0050 11; α(M)=0.00115 24; α(N+..)=0.00033 8
^{x}634.02 7	43 4					M1+E2	0.49 51	0.034 8	α(K)exp=0.027 6 α(K)=0.028 7; α(L)=0.0045 9; α(M)=0.00105 19; α(N+..)=0.00031 6
^{x}636.336 28	77 4					M1+(E2)	<0.42	0.0365 20	α(K)exp=0.054 26 α(K)=0.0303 17; α(L)=0.00483 22; α(M)=0.00111 5; α(N+..)=0.000324 15
657.24 5	49 5	943.756	1/2$^+$,3/2$^+$,5/2$^+$	286.5208	3/2$^+$	M1+E2	<0.42	0.0336 18	α(K)exp=0.054 26 α(K)=0.0279 16; α(L)=0.00443 20; α(M)=0.00102 5; α(N+..)=0.000298 14
^{x}661.18 3	78 7					E2+M1	2.3 36	0.016 19	α(K)exp=0.013 6 α(K)=0.013 17; α(L)=0.0025 21; α(M)=0.0006 5; α(N+..)=0.00017 14
^{x}682.755 15	99 9					E2+M1	2.3 27	0.015 18	α(K)exp=0.012 4 α(K)=0.012 15; α(L)=0.0023 20; α(M)=0.0005 5; α(N+..)=0.00015 13
710.265 54	23 6	943.756	1/2$^+$,3/2$^+$,5/2$^+$	233.5099	3/2$^+$				
760.36 4	67 5	760.39	5/2$^+$	0.0	3/2$^+$				
860.92 7	41 7	860.94		0.0	3/2$^+$				
874.54 22	25 6	943.756	1/2$^+$,3/2$^+$,5/2$^+$	69.1808	1/2$^+$				
1223.91 22	2.3 2	(7231.92)	1/2$^-$,3/2$^-$	6008.45?					
1230.00 13	5.6 2	(7231.92)	1/2$^-$,3/2$^-$	6002.36?					
1356.15 31	3.1 3	(7231.92)	1/2$^-$,3/2$^-$	5876.2?					
1434.64 19	4.4 13	(7231.92)	1/2$^-$,3/2$^-$	5797.72?					
1538.88 19	18.8 4	(7231.92)	1/2$^-$,3/2$^-$	5693.48?					
1723.18 26	33.9	(7231.92)	1/2$^-$,3/2$^-$	5509.2?					

^{194}Ir(n,γ) E=thermal 1987Co08 (continued)

γ(^{195}Ir) (continued)

E_γ	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π
6214.54 *11*	5.9 *3*	(7231.92)	$1/2^-,3/2^-$	1017.72	$1/2^+$
6288.10 *10*	10.7 *4*	(7231.92)	$1/2^-,3/2^-$	943.756	$1/2^+,3/2^+,5/2^+$
6370.89 *12*	20.8 *4*	(7231.92)	$1/2^-,3/2^-$	860.94	
6455.65 *13*	4.4 *2*	(7231.92)	$1/2^-,3/2^-$	776.053	$3/2^+,5/2^+$
6471.55 *12*	6.9 *3*	(7231.92)	$1/2^-,3/2^-$	760.39	$5/2^+$
6649.95 *7*	10.3 *3*	(7231.92)	$1/2^-,3/2^-$	581.799	$5/2^+$
6692.55 *10*	11.7 *3*	(7231.92)	$1/2^-,3/2^-$	539.207	$3/2^+$
6732.23 *10*	10.2 *2*	(7231.92)	$1/2^-,3/2^-$	499.55	$5/2^+$
6803.18 *10*	25.2 *4*	(7231.92)	$1/2^-,3/2^-$	428.628	$1/2^+,3/2^+$
6819.80 *9*	17.1 *3*	(7231.92)	$1/2^-,3/2^-$	412.037	$(5/2)^+$
6998.25 *13*	3.5 *2*	(7231.92)	$1/2^-,3/2^-$	233.5099	$3/2^+$
7162.60 *8*	94.17 *6*	(7231.92)	$1/2^-,3/2^-$	69.1808	$1/2^+$
7231.78 *6*	1.3 *2*	(7231.92)	$1/2^-,3/2^-$	0.0	$3/2^+$

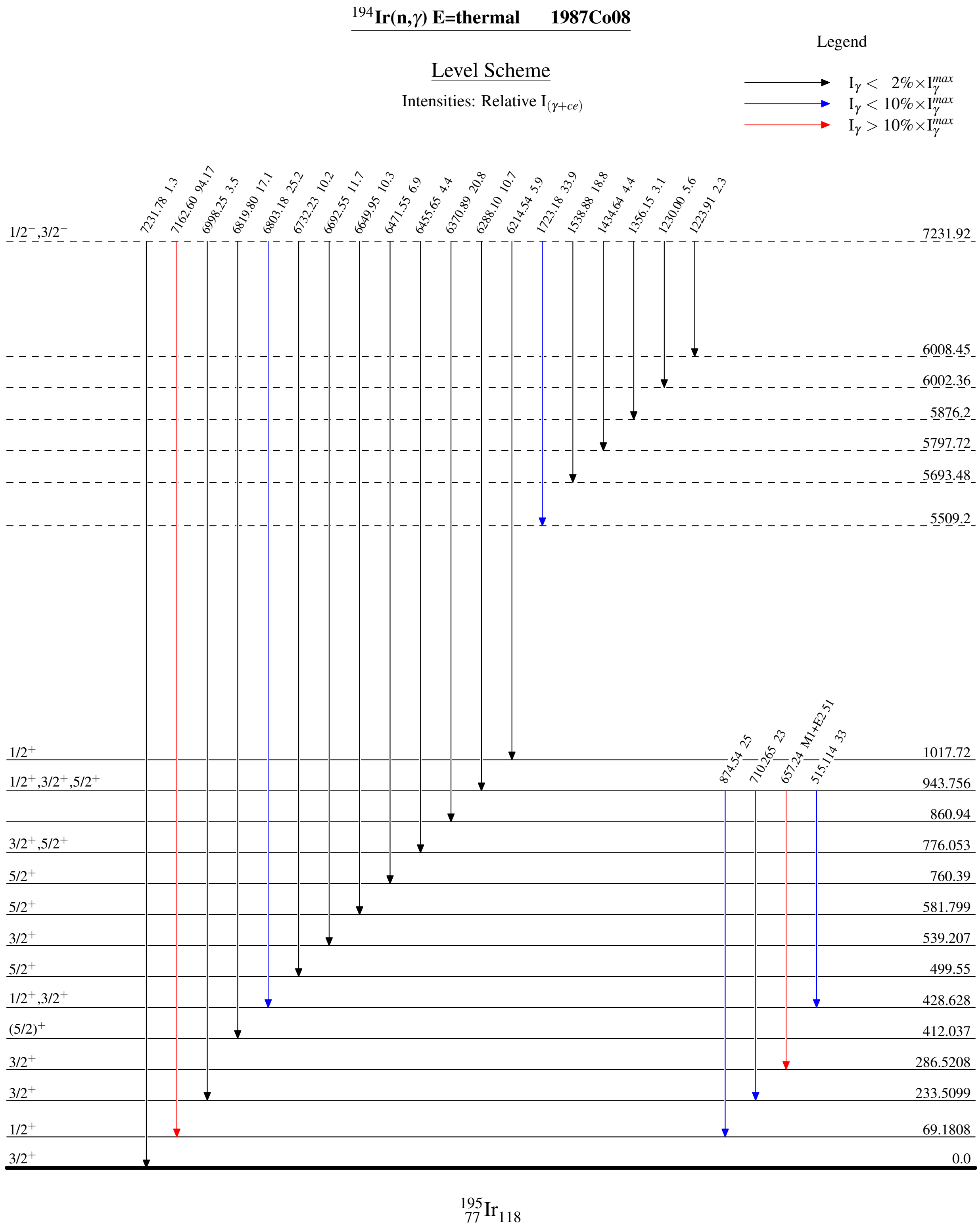
† No photos were observed, only electrons.

‡ Relative intensities normalized to Iγ(Eγ=175.2)=228 *6*.

\# From α(K)exp and intensity balance.

@ 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.

^{x} γ ray not placed in level scheme.

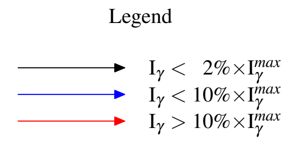


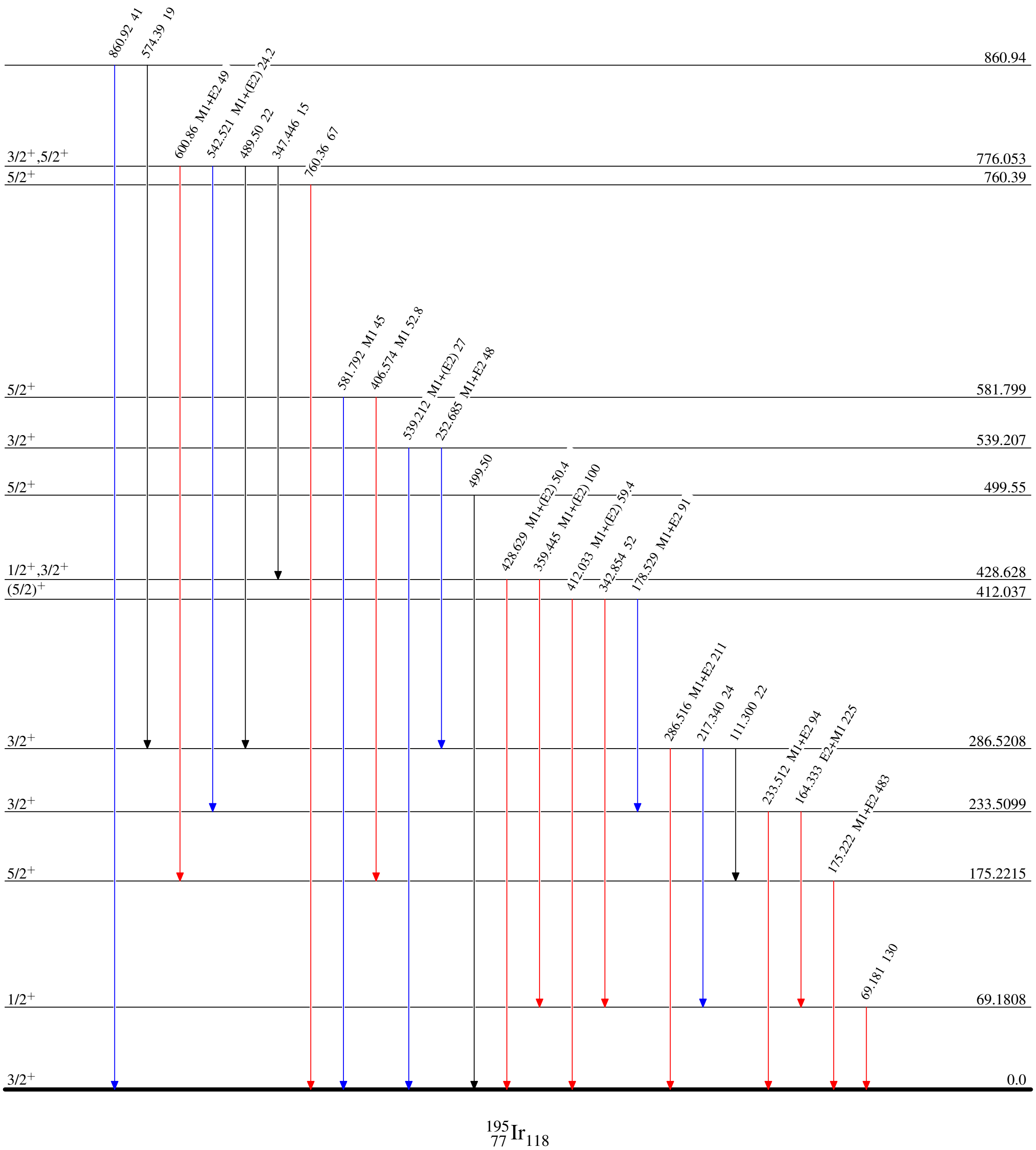
^{194}Ir(n,γ) E=thermal 1987Co08
Legend
Level Scheme
Intensities: Relative $I_{(\gamma+ce)}$
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
7231.78 1.3
7162.60 94.17
6998.25 3.5
6819.80 17.1
6803.18 25.2
6732.23 10.2
6692.55 11.7
6649.95 10.3
6471.55 6.9
6455.65 4.4
6370.89 20.8
6288.10 10.7
6214.54 5.9
1723.18 33.9
1538.88 18.8
1434.64 4.4
1356.15 3.1
1230.00 5.6
1223.91 2.3
874.54 25
710.265 23
657.24 M1+E2 51
515.114 33
1/2$^-$,3/2$^-$ 7231.92
6008.45
6002.36
5876.2
5797.72
5693.48
5509.2
1/2$^+$ 1017.72
1/2$^+$,3/2$^+$,5/2$^+$ 943.756
860.94
3/2$^+$,5/2$^+$ 776.053
5/2$^+$ 760.39
5/2$^+$ 581.799
3/2$^+$ 539.207
5/2$^+$ 499.55
1/2$^+$,3/2$^+$ 428.628
(5/2)$^+$ 412.037
3/2$^+$ 286.5208
3/2$^+$ 233.5099
1/2$^+$ 69.1808
3/2$^+$ 0.0
$^{195}_{77}Ir_{118}$

^{194}Ir(n,γ) E=thermal 1987Co08

Level Scheme (continued)

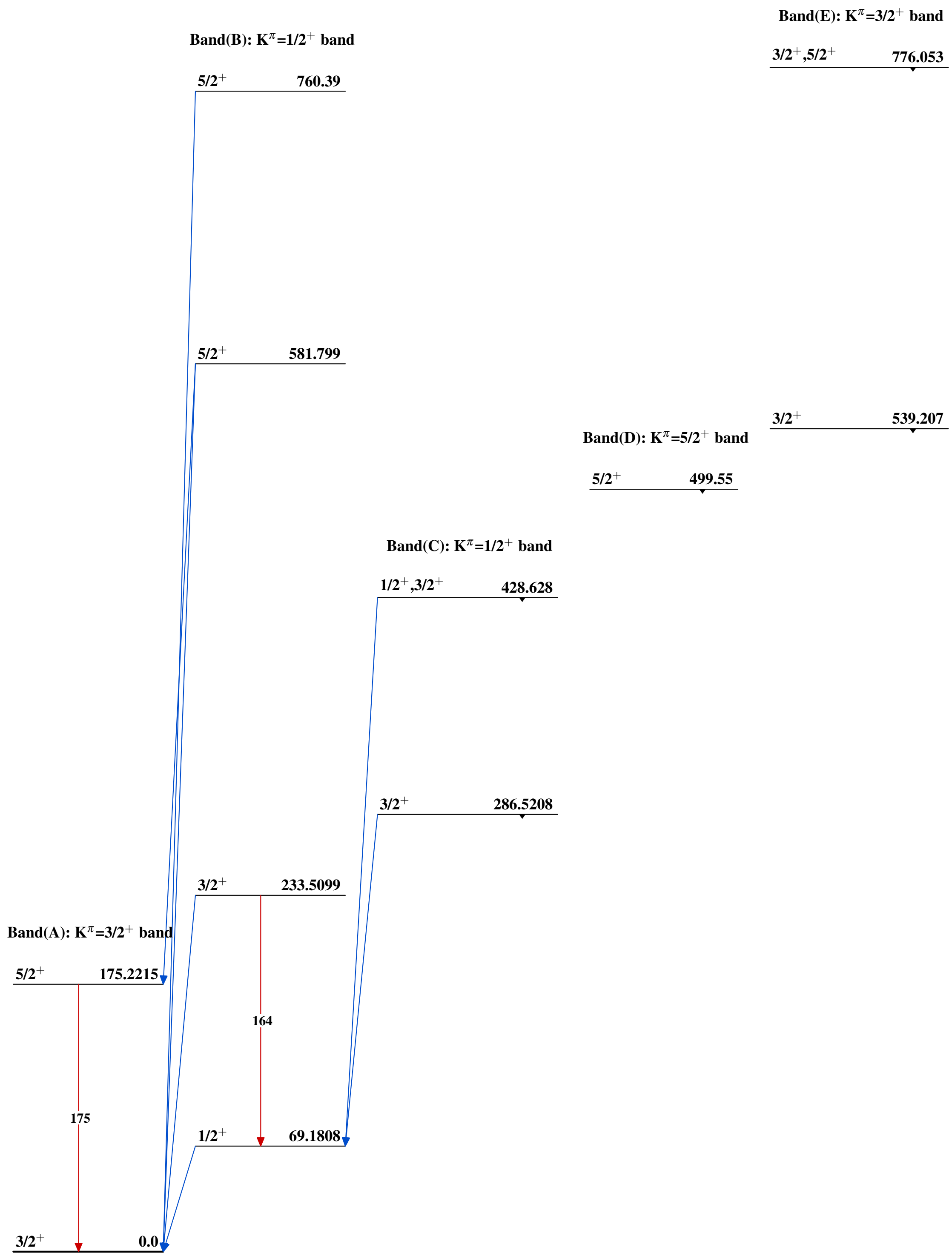
Intensities: Relative $I_{(\gamma+ce)}$





$^{195}_{77}Ir_{118}$

^{194}Ir(n,γ) E=thermal 1987Co08



$^{195}_{77}Ir_{118}$