^{192}Ir(n,γ) E=th 1997Dr04

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 143, 1 (2017)	31-Mar-2017

Target: From thermal neutron capture of ^{191}Ir. Measured Eγ, Iγ, γγ (curved-crystal spectrometer, resolution 220 eV at 900 keV, calibrated with Ir K x ray and some ^{192}Ir γ′s); Ice (magnetic spectrometer, resolution 100 eV at 35 keV, 230 eV at 300 keV, calibrated with ^{192}Ir electromagnetic transitions with known multipolarities). γ-spectra were analyzed up to E=700 keV.
The results are interpreted in the framework of the asymmetric rotor and the interacting boson models.

^{193}Ir Levels

E(level)†	Jπ†	Comments
0.0‡	3/2+	
73.057# *15*	1/2+	
80.242@ *10*	11/2−	
138.939‡ *15*	5/2+	
180.077# *10*	3/2+	
299.401& *10*	7/2−	
357.767‡ *8*	7/2+	
361.863# *8*	5/2+	
460.540a *8*	3/2+	
469.387@ *15*	13/2−	
478.992@ *20*	15/2−	
516.421# *10*	7/2+	
521.924‡ *10*	9/2+	
557.447a *20*	1/2+,3/2+	Jπ: Adopted (1/2)+.
559.303 *10*	5/2+	Possibly 5/2[402] + K+2 γ-vibration on 1/2[400]. Jπ: From Adopted Levels. 3/2+,5/2+ in 1997Dr04.
563.407& *10*	9/2−	
598.228b *10*	3/2−	
620.988c *10*	7/2+	Probably influenced by K+2 γ-vibration on 3/2[402].
695.137a *10*	5/2+	
712.176 *25*	3/2+,5/2+	Jπ: Adopted 3/2+.
740.387b *10*	5/2−	
806.901 *13*	5/2+	
832.897& *15*	11/2−	
838.923# *15*	9/2+	
849.088 *20*	3/2(+),5/2(+)	Jπ: From Adopted Levels.
857.025‡ *10*	11/2+	
874.28 *3*	3/2+,5/2+	
892.268c *20*	9/2+,11/2+	Jπ: Adopted (9/2+).
918.368b *15*	7/2−	
930.43@ *3*		
972.874 *15*	3/2+,5/2,7/2	Jπ: Adopted (5/2+).
975.333 *25*	11/2−	
1009.361 *15*	11/2+	
1019.595# *15*	11/2+	
1035.463‡ *15*	13/2+	
1035.86 *3*		
1038.055 *20*	5/2+,7/2,9/2+	Jπ: Adopted (5/2+,7/2+).

Continued on next page (footnotes at end of table)

^{192}Ir(n,γ) E=th 1997Dr04 (continued)

^{193}Ir Levels (continued)

E(level)[†]	Jπ[†]	Comments
1145.619[b] *20*	7/2⁻,9/2⁻	Jπ: Adopted (9/2)⁻.
1169.17[c] *11*	11/2⁺	
1432.407[#] *25*		
1459.965[‡] *20*		
1511.725 *25*		

[†] E(level), Jπ and band assignments are from 1997Dr04.
[‡] Band(A): 3/2[402] band.
[#] Band(B): 1/2[400] band.
[@] Band(C): 11/2[505] band.
[&] Band(D): 7/2[523] band.
[a] Band(E): 1/2[411] band.
[b] Band(F): 3/2[532] band.
[c] Band(G): 7/2[404] band.

^{192}Ir(n,γ) E=th 1997Dr04 (continued)

$\gamma(^{193}Ir)$

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ	Comments
41.219[‡] *13*		180.077	$3/2^+$	138.939	$5/2^+$			E_γ: energy fit very poor in least-squares fit of Eγ. From calculated E(level) Eγ=41.126 *4*.
73.050[‡] *22*		73.057	$1/2^+$	0.0	$3/2^+$	M1+E2	0.655 *31*	δ: deduced from L and M subshell ratios.
80.236[‡] *7*		80.242	$11/2^-$	0.0	$3/2^+$	M4		
107.022 *5*	3.57 *14*	180.077	$3/2^+$	73.057	$1/2^+$	M1		
135.88 *3*	0.12 *2*	695.137	$5/2^+$	559.303	$5/2^+$			
138.938 *5*	19.1 *15*	138.939	$5/2^+$	0.0	$3/2^+$	M1		
142.159 *3*	3.6 *3*	740.387	$5/2^-$	598.228	$3/2^-$	M1		
154.554 *7*	2.7 *3*	516.421	$7/2^+$	361.863	$5/2^+$	M1		
154.721 *4*	0.09 *4*	712.176	$3/2^+$,$5/2^+$	557.447	$1/2^+$,$3/2^+$			
164.158 *4*	2.53 *23*	521.924	$9/2^+$	357.767	$7/2^+$	M1		
177.986 *7*	3.8 *3*	918.368	$7/2^-$	740.387	$5/2^-$	M1		
178.441 *4*	0.59 *12*	1035.463	$13/2^+$	857.025	$11/2^+$	M1		
180.071 *7*	1.02 *5*	180.077	$3/2^+$	0.0	$3/2^+$	M1+E2		
181.792 *7*	5.6 *3*	361.863	$5/2^+$	180.077	$3/2^+$	M1		
201.535 *7*	0.06 *2*	559.303	$5/2^+$	357.767	$7/2^+$			
218.826 *2*	20.0 *10*	357.767	$7/2^+$	138.939	$5/2^+$	M1+E2	0.37[#] *12*	
219.158 *7*	74 *4*	299.401	$7/2^-$	80.242	$11/2^-$	E2		
227.252 *7*	1.31 *12*	1145.619	$7/2^-$,$9/2^-$	918.368	$7/2^-$			
232.507 *19*	0.20 *2*	972.874	$3/2^+$,5/2,7/2	740.387	$5/2^-$			
234.608 *7*	2.26 *11*	695.137	$5/2^+$	460.540	$3/2^+$	M1		
251.635 *7*	0.59 *3*	712.176	$3/2^+$,$5/2^+$	460.540	$3/2^+$	M1		
263.218 *8*	1.40 *7*	620.988	$7/2^+$	357.767	$7/2^+$	M1		
264.005 *5*	19.7 *10*	563.407	$9/2^-$	299.401	$7/2^-$	M1		
269.490 *7*	5.9 *3*	832.897	$11/2^-$	563.407	$9/2^-$	M1		
271.282 *12*	0.73 *7*	892.268	$9/2^+$,$11/2^+$	620.988	$7/2^+$			
276.890 *20*	0.55 *8*	1169.17	$11/2^+$	892.268	$9/2^+$,$11/2^+$	M1		
279.611 *18*	0.25 *4*	838.923	$9/2^+$	559.303	$5/2^+$			
280.465 *3*	2.35 *19*	460.540	$3/2^+$	180.077	$3/2^+$	M1		
288.807 *9*	3.46 *17*	361.863	$5/2^+$	73.057	$1/2^+$	E2		
298.828 *10*	12.8 *12*	598.228	$3/2^-$	299.401	$7/2^-$	E2		
312.125 *9*	0.37 *9*	1169.17	$11/2^+$	857.025	$11/2^+$			
320.142 *17*	0.45 *7*	918.368	$7/2^-$	598.228	$3/2^-$	E2		
321.604 *7*	2.22 *20*	460.540	$3/2^+$	138.939	$5/2^+$	M1+E2		
322.505 *21*	3.61 *22*	838.923	$9/2^+$	516.421	$7/2^+$	M1		
333.28 *4*	0.25 *7*	695.137	$5/2^+$	361.863	$5/2^+$	M1		
335.101 *11*	3.1 *3*	857.025	$11/2^+$	521.924	$9/2^+$	M1		
336.343 *9*	10.9 *10*	516.421	$7/2^+$	180.077	$3/2^+$	E2		
337.33[a] *3*	4.1[@] *4*	695.137	$5/2^+$	357.767	$7/2^+$			Expected intensity from adopted branching ratio≈0.05.
350.325[a] *9*	0.41[@] *6*	712.176	$3/2^+$,$5/2^+$	361.863	$5/2^+$			Expected intensity from adopted branching ratio≈0.02.
351.864 *14*	0.83 *7*	972.874	$3/2^+$,5/2,7/2	620.988	$7/2^+$			

$^{193}_{77}Ir_{116}$-3

^{192}Ir(n,γ) E=th 1997Dr04 (continued)

γ(^{193}Ir) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	δ	Comments
354.960 *7*	0.67 *10*	918.368	7/2$^-$	563.407	9/2$^-$	M1		
357.77 *5*	23.0 *18*	357.767	7/2$^+$	0.0	3/2$^+$	E2		
361.860 *15*	7.1 *6*	361.863	5/2$^+$	0.0	3/2$^+$	M1		
377.477 *7*	11.0 *10*	516.421	7/2$^+$	138.939	5/2$^+$	M1(+E2)		
378.533 *8*	0.10 *2*	740.387	5/2$^-$	361.863	5/2$^+$			
379.230 *11*	0.22 *3*	559.303	5/2$^+$	180.077	3/2$^+$			
382.989 *7*	26.0 *21*	521.924	9/2$^+$	138.939	5/2$^+$	E2		
387.520 *18*	1.9 *3*	460.540	3/2$^+$	73.057	1/2$^+$	M1		
388.60 *4*	1.9 *4*	849.088	3/2$^{(+)}$,5/2$^{(+)}$	460.540	3/2$^+$	M1		
389.140 *10*	17.9 *14*	469.387	13/2$^-$	80.242	11/2$^-$	M1		
398.775 *23*	7.8 *6*	478.992	15/2$^-$	80.242	11/2$^-$	E2		
413.756 *8*	1.82 *11*	874.28	3/2$^+$,5/2$^+$	460.540	3/2$^+$	M1+E2		
418.48 *4*	0.17 *3*	557.447	1/2$^+$,3/2$^+$	138.939	5/2$^+$			
420.351 *8*	2.34 *12*	559.303	5/2$^+$	138.939	5/2$^+$	M1		
440.37 *5*	0.52 *8*	1459.965		1019.595	11/2$^+$			
440.980 *13*	5.0 *5*	740.387	5/2$^-$	299.401	7/2$^-$	M1		
445.023 *14*	0.23 *3*	806.901	5/2$^+$	361.863	5/2$^+$			
449.149 *18*	2.17 *20*	806.901	5/2$^+$	357.767	7/2$^+$	M1		
451.441 *8*	1.64 *10*	930.43		478.992	15/2$^-$			
460.547 *7*	6.7 *5*	460.540	3/2$^+$	0.0	3/2$^+$	M1+E2	0.61[#] *23*	
477.062 *8*	10.8 *5*	838.923	9/2$^+$	361.863	5/2$^+$	E2		
482.048 *8*	10.3 *5*	620.988	7/2$^+$	138.939	5/2$^+$	M1+E2	0.92[#] *22*	
483.160 *8*	12.4 *9*	563.407	9/2$^-$	80.242	11/2$^-$	M1		
484.323 *12*	0.27 *5*	557.447	1/2$^+$,3/2$^+$	73.057	1/2$^+$	M1		E_γ: energy fit poor in least-squares fit of Eγ. From calculated E(level) Eγ=484.397 *8*.
486.274 *11*	0.19 *3*	559.303	5/2$^+$	73.057	1/2$^+$			
487.217 *13*	1.21 *11*	849.088	3/2$^{(+)}$,5/2$^{(+)}$	361.863	5/2$^+$	E2		
492.940 *8*	7.2 *7*	1009.361	11/2$^+$	516.421	7/2$^+$	E2		
496.345 *8*	6.0 *6*	975.333	11/2$^-$	478.992	15/2$^-$	E2		
499.254 *8*	10.0 *9*	857.025	11/2$^+$	357.767	7/2$^+$	E2		
503.174 *8*	9.8 *9*	1019.595	11/2$^+$	516.421	7/2$^+$	E2		
505.943 *8*	3.02 *24*	975.333	11/2$^-$	469.387	13/2$^-$	M1		
513.529 *8*	11.7 *10*	1035.463	13/2$^+$	521.924	9/2$^+$	E2		
515.064 *9*	1.28 *8*	695.137	5/2$^+$	180.077	3/2$^+$	M1+E2		
516.153 *23*	0.88 *7*	1038.055	5/2$^+$,7/2,9/2$^+$	521.924	9/2$^+$			
516.475[&] *15*	1.01[&] *12*	516.421	7/2$^+$	0.0	3/2$^+$			
516.475[&] *15*	1.01[&] *12*	874.28	3/2$^+$,5/2$^+$	357.767	7/2$^+$			
525.16 *5*	1.54 *15*	598.228	3/2$^-$	73.057	1/2$^+$			
532.127 *18*	0.24 *3*	712.176	3/2$^+$,5/2$^+$	180.077	3/2$^+$			
533.51 *3*	4.1 *4*	832.897	11/2$^-$	299.401	7/2$^-$	E2		
534.482 *21*	1.57 *10*	892.268	9/2$^+$,11/2$^+$	357.767	7/2$^+$			
538.845 *20*	1.72 *19*	1511.725		972.874	3/2$^+$,5/2,7/2	M1+E2		

$^{193}_{77}Ir_{116}$-4

^{192}Ir(n,γ) E=th 1997Dr04 (continued)

γ(^{193}Ir) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	Comments
539.92 *8*	1.24 *19*	1009.361	$11/2^+$	469.387	$13/2^-$		
548.19 *3*	2.86 *14*	1169.17	$11/2^+$	620.988	$7/2^+$	E2	
556.175 *9*	0.25 *2*	695.137	$5/2^+$	138.939	$5/2^+$	E2(+M1)	
557.429 *21*	1.96 *20*	557.447	$1/2^+,3/2^+$	0.0	$3/2^+$	M1	
559.29 *4*	6.4 *5*	559.303	$5/2^+$	0.0	$3/2^+$	M1	
560.33[a] *3*	1.53[@] *21*	740.387	$5/2^-$	180.077	$3/2^+$		Expected intensity from adopted branching ratio≈0.15.
573.21 *6*	0.10 *3*	712.176	$3/2^+,5/2^+$	138.939	$5/2^+$		
582.201 *20*	0.25 *5*	1145.619	$7/2^-,9/2^-$	563.407	$9/2^-$		
599.510 *7*	7.4 *9*	1432.407		832.897	$11/2^-$		
601.45 *5*	0.82 *15*	740.387	$5/2^-$	138.939	$5/2^+$		
602.940 *8*	3.3 *4*	1459.965		857.025	$11/2^+$		
611.037 *21*	1.37 *24*	972.874	$3/2^+,5/2,7/2$	361.863	$5/2^+$		
615.09 *5*	1.29 *18*	972.874	$3/2^+,5/2,7/2$	357.767	$7/2^+$		
618.94 *3*	2.07 *17*	918.368	$7/2^-$	299.401	$7/2^-$		
620.98 *3*	7.7 *6*	620.988	$7/2^+$	0.0	$3/2^+$		
626.88 *8*	0.33 *4*	806.901	$5/2^+$	180.077	$3/2^+$		
637.46 *3*	5.1 *3*	1511.725		874.28	$3/2^+,5/2^+$		
647.257 *8*	3.8 *4*	1169.17	$11/2^+$	521.924	$9/2^+$		
662.636 *15*	5.1 *17*	1511.725		849.088	$3/2^{(+)},5/2^{(+)}$		
667.963 *9*	4.1 *3*	806.901	$5/2^+$	138.939	$5/2^+$		
676.192 *13*	2.9 *5*	1038.055	$5/2^+,7/2,9/2^+$	361.863	$5/2^+$		
678.090 *25*	5.9 *3*	1035.86		357.767	$7/2^+$		
680.280 *15*	2.0 *4*	1038.055	$5/2^+,7/2,9/2^+$	357.767	$7/2^+$		

[†] Deduced from conversion coefficients and ce-ratios (data not given by 1997Dr04).
[‡] Observed in ce-spectra only.
[#] Deduced from α(K)exp and α(L1)exp.
[@] γ is either influenced by an impurity, or is placed incorrectly. A γ of this intensity was not seen in ^{193}Os β^- decay.
[&] Multiply placed with undivided intensity.
[a] Placement of transition in the level scheme is uncertain.

$^{193}_{77}Ir_{116}$-5

^{192}Ir(n,γ) E=th 1997Dr04

Level Scheme

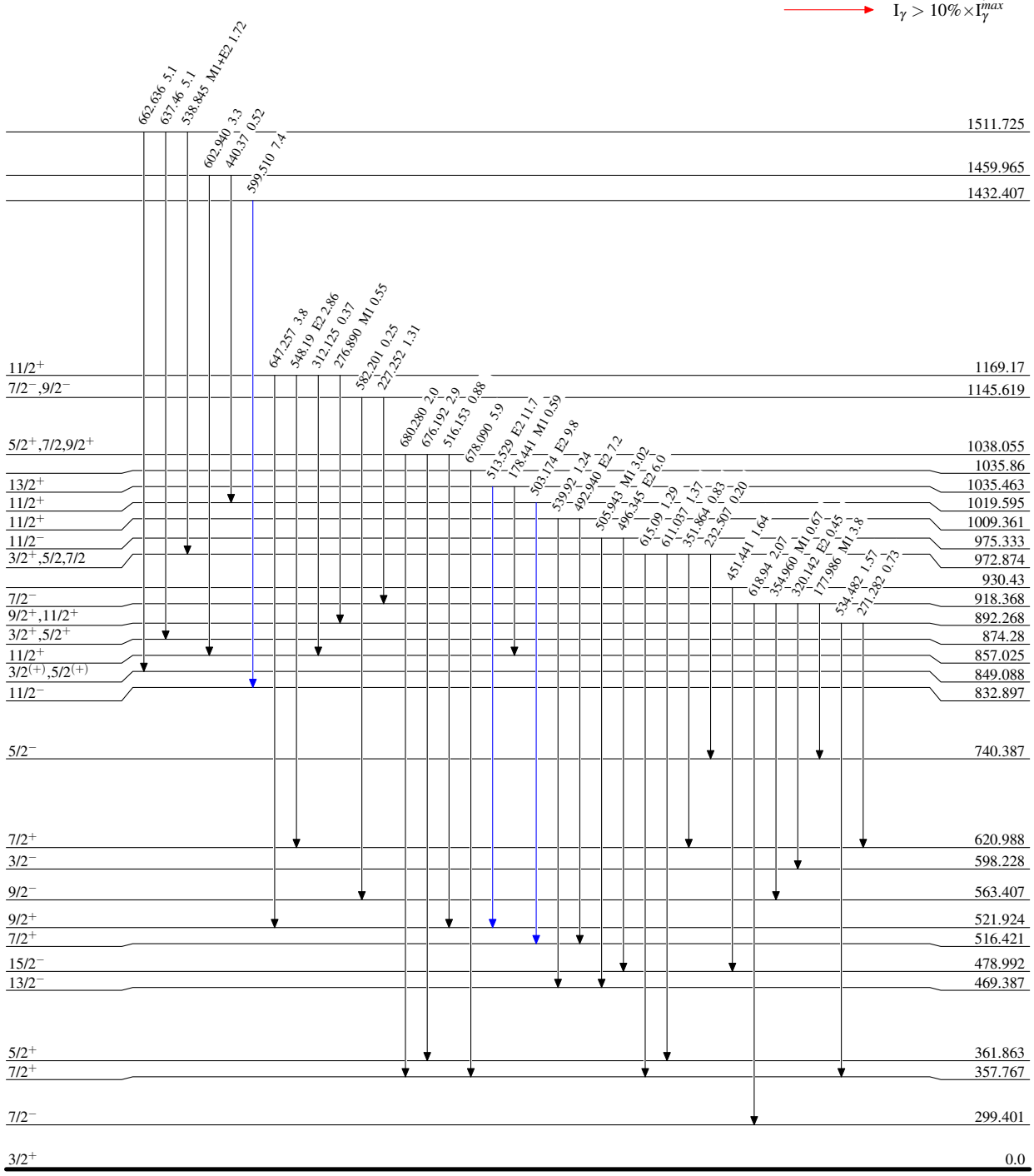
Intensities: Relative I_γ

Legend

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

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

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

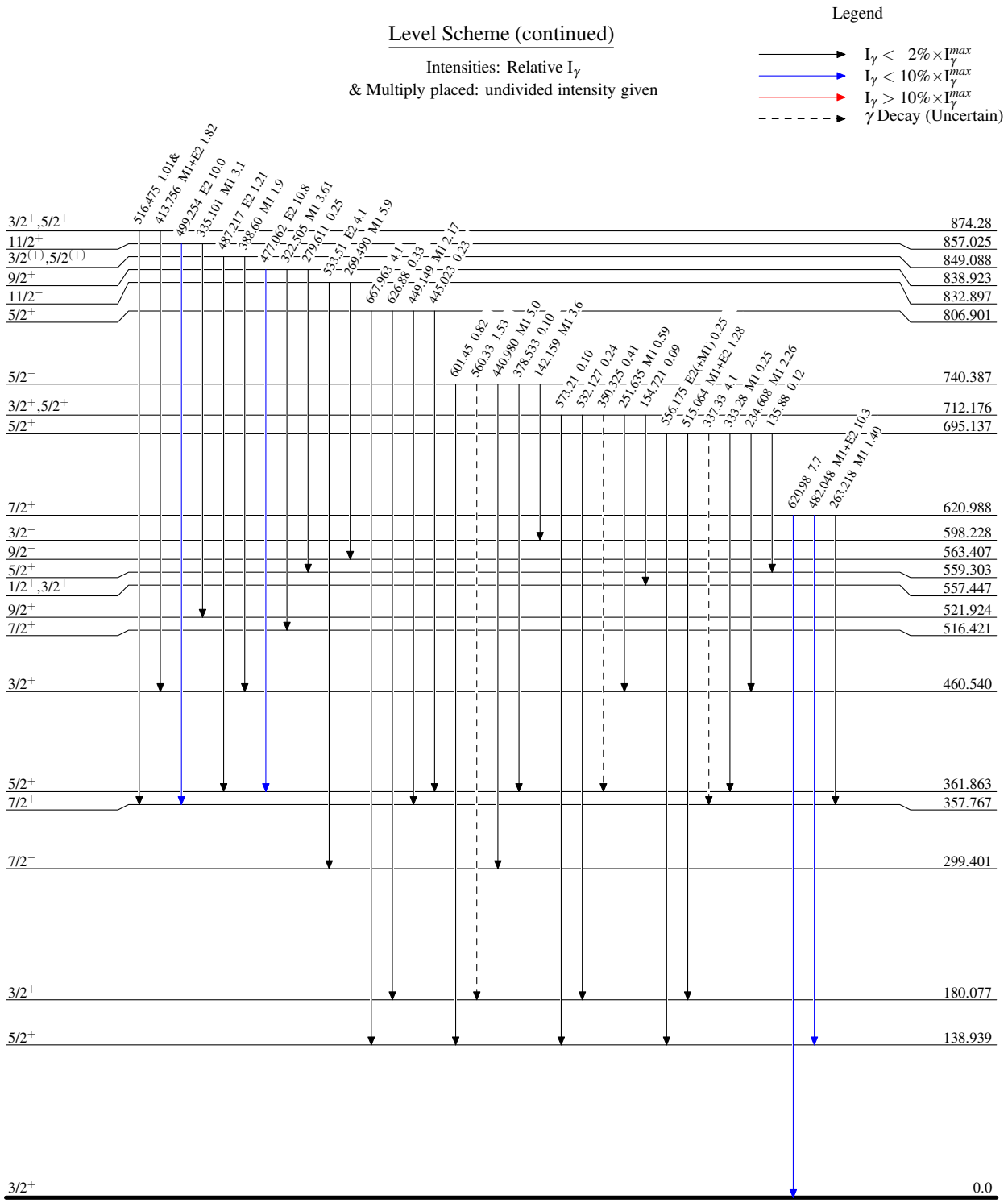


$^{193}_{77}Ir_{116}$

^{192}Ir(n,γ) E=th 1997Dr04

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given



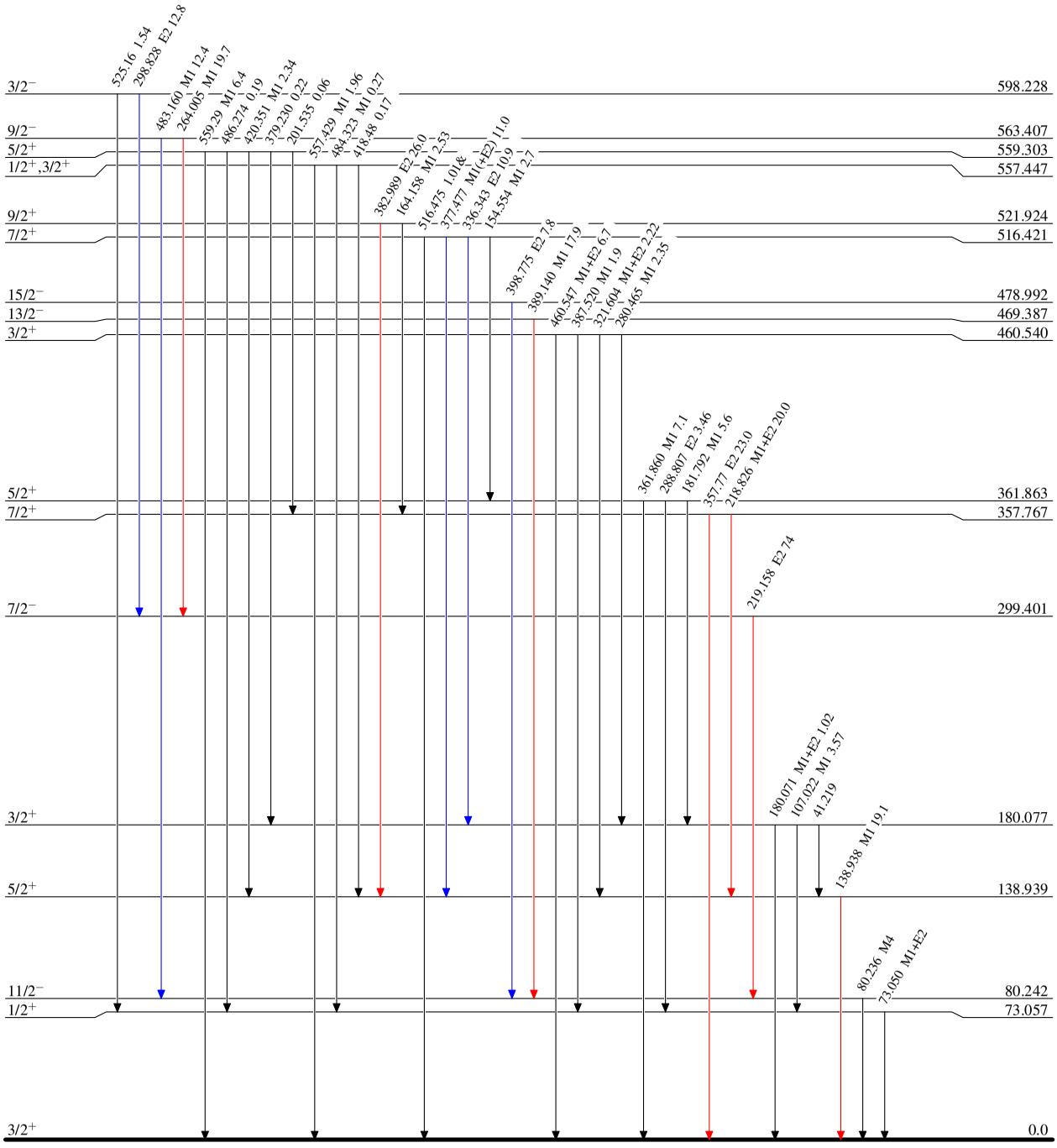
$^{193}_{77}Ir_{116}$

^{192}Ir(n,γ) E=th 1997Dr04

Level Scheme (continued)

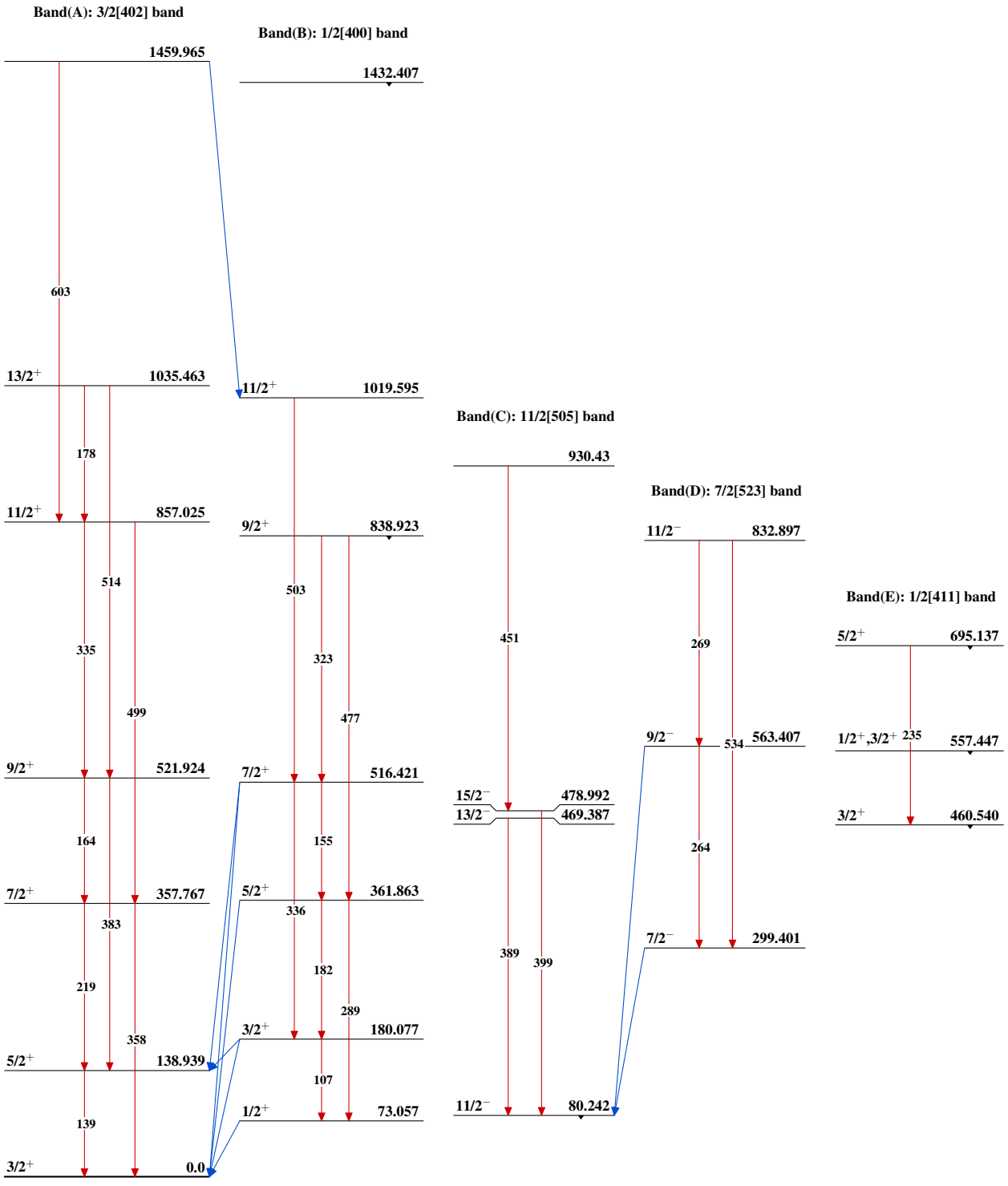
Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



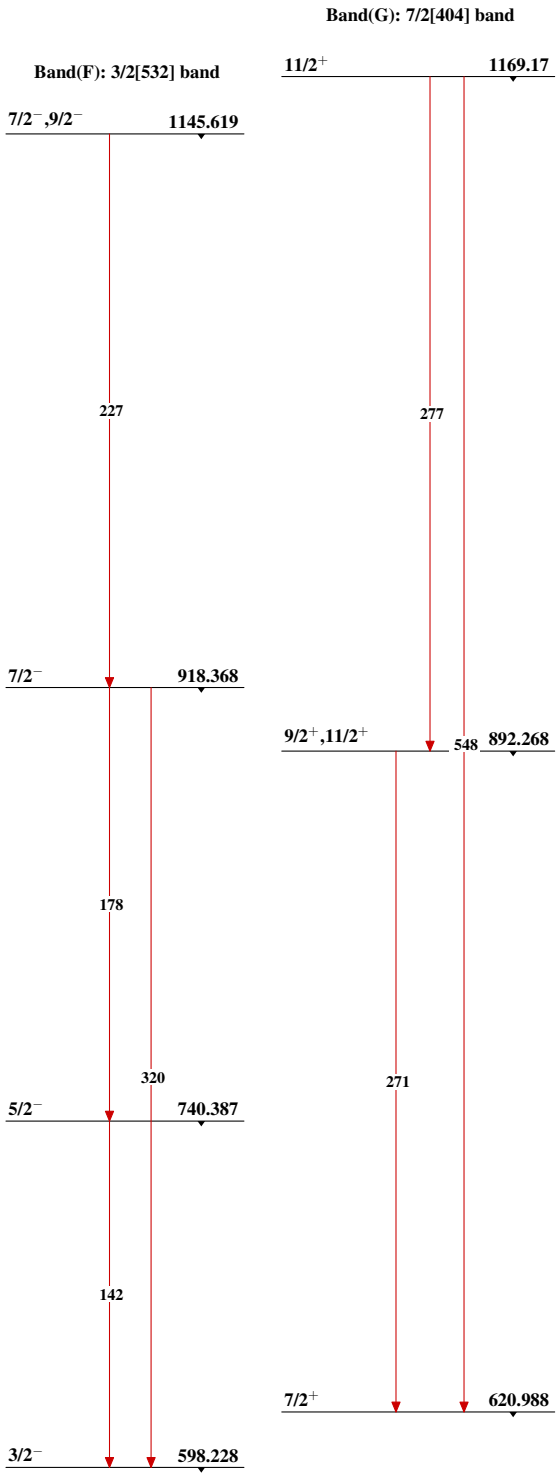
$^{193}_{77}Ir_{116}$

^{192}Ir(n,γ) E=th 1997Dr04



$^{193}_{77}Ir_{116}$

^{192}Ir(n,γ) E=th 1997Dr04 (continued)



$^{193}_{77}Ir_{116}$