Adopted Levels, Gammas

History

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

Q(β^-)=−1980 *14*; S(n)=8176 *16*; S(p)=4601 *13*; Q(α)=2945 *13* 2017Wa10
S(2n)=15040 *30*, S(2p)=11811 *13* (2017Wa10).
^{189}Ir produced and identified by 1955Sm42 in Ir(p,xn),E=50-130 MeV; ^{189}Ir obtained as daughter of ^{189}Pt decay. Measured half-life of the activity. Later studies of this decay: 1959Ka09, 1960Po07, 1962Ha24, 1963Gr22, 1963Cr06, 1964Le07, 1965Qa01, 1966Sy01, 1969Gr10, 1970Ma37, 1971Be71, 1975Ba35. 1950Ch11 may have identified this activity with a half-life of 12.6 d, but assigned it to ^{190m}Ir (see 2012Ro36 compilation).

^{189}Ir Levels

Cross Reference (XREF) Flags

A	^{189}Ir IT decay (13.3 ms)	D	^{187}Re(α,2nγ)
B	^{189}Ir IT decay (3.7 ms)	E	^{191}Ir(p,t)
C	^{189}Pt ε decay (10.87 h)		

E(level)[†]	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0[&]	3/2$^+$	13.2 d *1*	ABCDE	%ε=100 μ=+0.147 *7* (2006Ve10,2014StZZ) Q=+0.82 *8* (2006Ve10,2016St14) RMS charge radius <r^2>$^{1/2}$=5.390 fm *106* (2013An02 evaluation). J$^\pi$: spin from atomic beam (1975Ru06,1978Ru04); parity from L(p,t)=0 from 3/2$^+$ target. T$_{1/2}$: weighted average of 13.1 d *1* (1975Ba35), 13.3 d *1* (1964Le07), 13.3 d *2* (1963Gr22), and 13.8 d *7* (1959Ka09). Other values: 10.5 d (1965Qa01), 12.5 d (1960Po07) and 11 d (1955Sm42). μ: laser spectroscopy measurements (2006Ve10, also 2000Ve10, 2000Sa58). Other: 0.13 *+3−4* (1980Be27, low-temperature nuclear orientation). Q: from 2016St14 evaluation. Measured values: +0.85 *7* (2006Ve10, resonant ionization mass spectrometry/laser spectroscopy, also earlier reports 2000Ve10 and 2000Sa58), +0.878 *10* (1996Se15, NMR on oriented nuclei), +0.79 6 (1992Ka49,1992Ka48), +1.0 *2* (1985Ha41, nuclear orientation), 1.0 *1* (1980Mu07, quadrupole interaction nuclear orientation).
94.34[a] *3*	1/2$^+$	11.4 ns *3*	CDE	J$^\pi$: M1+E2 γ to 3/2$^+$; E2 γ from 5/2$^+$; band assignment. T$_{1/2}$: weighted average of delayed coincidence measurements 11.3 ns *3* (1969Ha03), and 11.6 ns *6* (1972Ba21) from ^{189}Pt ε decay.
113.831[@] *23*	5/2$^+$[#]	76 ps *18*	ABCDE	T$_{1/2}$: from delayed coincidence (1972Ba21).
176.53[b] *3*	3/2$^+$	22 ps *10*	CDE	J$^\pi$: M1+E2 to 1/2$^+$ and 5/2$^+$. T$_{1/2}$: from delayed coincidence (1972Ba21).
300.50[&] *4*	7/2$^+$[#]	<20 ps	ABCDE	J$^\pi$: M1+E2 to 5/2$^+$; E2 to 3/2$^+$; band assignment. T$_{1/2}$: delayed coincidence (1972Ba21).
317.68[a] *3*	5/2$^+$		CDE	J$^\pi$: E2 to 1/2$^+$; band assignment.
372.17[c] *4*	11/2$^-$[#]	13.3 ms *3*	ABCDE	%IT=100 J$^\pi$: E3 to 5/2$^+$, M2(+E3) to 7/2$^+$, RUL. T$_{1/2}$: weighted average of 13.4 ms *2* (1973RoYQ), 12.3 ms *5* (1967Co20) and 14 ms *1* (1963Re13). Other values: 10.0 ms *6* (1960Mo19), 14 ms *3* (1968Io01).
453.95[@] *9*	9/2$^+$[‡]		B DE	
464.76[b] *13*	7/2$^+$		DE	J$^\pi$: M1 to 5/2$^+$, band assignment.
539.85? *9*			C	
563.74[e] *10*	(9/2)$^-$	0.54 ns *10*	D	J$^\pi$: E1 to 7/2$^+$, γ to 9/2$^+$, and 7/2 excluded by being fed by (13/2)$^-$ level at

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Adopted Levels, Gammas (continued)

^{189}Ir Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				742 keV in rotational band. $T_{1/2}$: measured by 2012MaZP from time difference between 178 feeding γ 263 depopulating transition.
607.50 *4*	$5/2^-$		C	Jπ: E1 to $3/2^+$ and $5/2^+$, γ to $7/2^+$.
615.58 *5*	$7/2^-$	0.18 ns *2*	CD	Jπ: M1+E2 from 1184 level, and E2 to $11/2^-$ uniquely establish $J^\pi(615)=7/2^-$ and $J^\pi(1184)=5/2^-$. $T_{1/2}$: delayed coincidence from 1970Ba56.
644.29 *6*	$(3/2,5/2)^+$		C E	Jπ: M1(+E2) to $3/2^+$ and $5/2^+$. 5/2 from tentatively assignment as $\pi 5/2[402]$ state (1978St09).
719.09[a] *17*	$9/2^+$		D	Jπ: γs to $5/2^+$ and $7/2^+$, band assignment.
721.41 *3*	$3/2^+$		C E	Jπ: L(p,t)=0 from $3/2^+$ target.
736.87[d] *10*	$13/2^-$		B D	Jπ: M1 to $11/2^-$, band assignment.
741.64[e] *15*	$(13/2)^-$		D	Jπ: stretched E2 to $(9/2)^-$.
745.89[&] *9*	$11/2^+$‡		B D	
753 *3*	$(1/2 \text{ to } 7/2)^{(+)}$		E	Jπ: L(p,t)=(2) from $3/2^+$ target.
792.71 *4*	$(1/2,3/2)^+$		C E	Jπ: M1(+E2) to $1/2^+$.
828.18 *5*	$3/2^-$		C e	Jπ: E1 to $1/2^+$ and $3/2^+$ and γ to $5/2^+$,$7/2^-$.
831.80 *16*	$(9/2,11/2)^-$		De	Jπ: M1 to $11/2^-$, γ to $7/2^-$.
837.89[c] *10*	$15/2^-$‡		B D	
850.07? *11*	$1/2,3/2,5/2^+$		C	Jπ: γ to $1/2^+$ and $3/2^+$.
899.40[b] *19*	$(11/2^+)$		D	XREF: D(899.31). Jπ: γ to $9/2^+$, (E2) to $7/2^+$, band assignment.
900.14 *11*	$(9/2)^-$		CD	Jπ: M1 to $7/2^-$, γ to $11/2^-$.
902.65 *6*	$(3/2)^+$		C	Jπ: M1 to $1/2^+$; (M1) to $5/2^+$.
912.21 *6*	$3/2^+$		C E	Jπ: L(p,t)=0 from $3/2^+$ target.
918.17[@] *16*	$13/2^+$		B D	Jπ: stretched E2 to $9/2^+$, γ to $11/2^+$.
924.76 *8*	$(3/2,5/2)^-$		C	Jπ: E1 to $3/2^+$ and $5/2^+$.
945.9 *4*	$(11/2^-)$		D	Jπ: ΔJ=1 γ to $(11/2^-)$.
948.74? *25*			D	
958.66 *7*	$(3/2^-,5/2^-)$		C E	Jπ: γs to $3/2^+$, $3/2^-$ and $7/2^-$; (M1+E2) γ to $5/2^-$.
1052 *3*	$(3/2^+)$		E	Jπ: L(p,t)=(0) from $3/2^+$ target.
1074.2? *4*			D	
1100.84[e] *18*	$(17/2^-)$		D	Jπ: ΔJ=2 γ to $(13/2)^-$, band assignment.
1106.38 *7*	$(3/2,5/2)^+$		C	Jπ: M1 to $5/2^+$, M1+E2 to $3/2^+$.
1114.52 *24*	$^-$		D	Jπ: M1 to $(9/2,11/2)^-$.
1137.27 *15*	$(15/2)^-$		D	Jπ: From M1 γ to $13/2^-$.
1184.41 *5*	$5/2^-$	<80 ps	C E	XREF: E(1175). Jπ: see comment on 615 level. $T_{1/2}$: delayed coincidence from 1970Ba56.
1203.26 *6*	$3/2^+$		C E	Jπ: L(p,t)=0 from $3/2^+$ target.
1221.14 *25*	$^-$		D	Jπ: M1+E2 to $(9/2,11/2)^-$.
1238.73? *12*	$(3/2^-,5/2,7/2^+)$		C	Jπ: log *ft*=8.8 from $3/2^-$, γ to $(7/2)^-$.
1248 *3*	$3/2^+$		E	Jπ: L(p,t)=0 from $3/2^+$ target.
1249.0[a] *3*	$(13/2^+)$		D	Jπ: band assignment.
1268.28[d] *13*	$17/2^-$‡		B D	Jπ: band assignment.
1288.0? *5*			D	
1296.21[&] *12*	$15/2^+$‡		B D	Jπ: band assignment.
1312.33 *10*	$(3/2^+,5/2,7/2^+)$		C	Jπ: γ to $3/2^+$, $5/2^+$ and $7/2^+$, log *ft*=8.4 from $3/2^-$.
1344.51 *5*	$(3/2^+,5/2^+)$		C E	Jπ: (E2) γ′s to $3/2^+$,$7/2^+$ and log *ft*=7.78 from $3/2^-$.
1383.60[c] *13*	$19/2^-$‡		B D	Jπ: band assignment.
1395.8? *7*			D	
1447.6? *4*			D	
1451.58? *10*	$(5/2)^-$		C	Jπ: M1+E2 to $7/2^-$, log *ft*=8.35 from $3/2^-$.

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Adopted Levels, Gammas (continued)

^{189}Ir Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
1468.99 *12*			C	
1476.46 *10*	$1/2^+,3/2^{(+)},5/2^+$		C	Jπ: gammas to $1/2^+$ and $5/2^+$; (E2+M1) γ to $3/2^+$.
1481.61[@] *21*	$(17/2)^+$		B D	Jπ: (E2) γ to $13/2^+$, band assignment.
1500.19 *7*	$(1/2,3/2)^-$		C E	Jπ: E1 to $3/2^+$, γ to $1/2^+$, $5/2^+$.
1501.35 *11*	$(3/2^-,5/2^-)$		C	Jπ: (E1) to $3/2^+$, γ to $5/2^+$.
1506 *3*	$3/2^+$		E	Jπ: L(p,t)=0 form $3/2^+$ target.
1536.88 *13*			C	
1558.20 *8*			C	
1571.67 *7*	$(3/2,5/2)^+$		C	Jπ: M1+E2 to $5/2^+$, γ to $1/2^+$.
1578.37 *25*	$(17/2^-)$		D	Jπ: From M1 γ to $(15/2^-)$.
1608.8[e] *4*	$(21/2^-)$		D	Jπ: band member.
1610.24? *7*	$(3/2,5/2)^-$		C	Jπ: M1,E2+E0 to $5/2^-$, γ to $3/2^+$.
1615.2 *4*			D	
1622.83 *11*	$1/2^+,3/2,5/2^+$		C	Jπ: γs to $1/2^+$, $5/2^+$.
1651.2 *4*			D	Jπ: γ to $(17/2^-)$.
1656.0 *4*	$(19/2^-)$		D	
1672.83 *11*			C	
1767.21 *14*	$3/2,5/2^+$		C	Jπ: γs to $1/2^+$, $5/2^+$ and $5/2^-$.
1790.9? *4*	$(21/2^-)$		D	Jπ: ΔJ=1 γ to $19/2^-$.
1802.24 *8*	$(5/2^-)$		C	Jπ: (E1) to $7/2^+$, log *ft*=6.57 from $3/2^-$.
1814.86? *12*	$(1/2,3/2)^-$		C	Jπ: M1 to $3/2^-$, γ to $1/2^+$.
1875.53[d] *18*	$(21/2^-)$		B D	Jπ: band assignment.
1910.28 *19*	$(19/2^+)$		B D	Jπ: ΔJ=(2) γ to $15/2^+$.
1919.81[&] *15*	$19/2^+$		B D	Jπ: ΔJ=2, E2 to $15/2^+$, band assignment.
2059.89 *21*	$(21/2^-)$		B D	Jπ: ΔJ=1 γ to $19/2^+$, γ from $23/2^+$.
2085.04[c] *22*	$23/2^-$		B D	Jπ: E2 to $19/2^-$, band assignment.
2108.9 *4*	$(21/2^-)$		B D	Jπ: γ from $(25/2^+)$; see also J^π comment on 2333 level.
2109.7[@] *4*	$(21/2^+)$		D	Jπ: band assignment.
2127.89 *21*	$23/2^+$		B D	Jπ: stretched E2 to $19/2^+$.
2248.4 *4*	$(23/2^-,25/2^-)$		B D	Jπ: (E1) γ to $23/2^+$.
2332.8 *3*	$(25/2^+)$	3.7 ms *2*	B D	%IT=100 Jπ: E1+M2 to $(23/2^-,25/2^-)$, (D) to $23/2^-$, no γs to levels of $J^\pi \leq 21/2^-$ with the possible exception of the 2109.5 level. The transition to the 2109.5 level is weak and the 223.8γ is consistent with M2 leading to a tentative assignment of $J^\pi(2109.5)=(21/2^-)$. $T_{1/2}$: weighted average of 3.8 ms *2* (1975Ke06) and 3.2 ms *4* (1975An08); from γ(t).

[†] From least-squares fit to Eγ values.
[‡] Level deexcited by M1 γ and stretched E2 γ to lower rotational band members.
[#] J^π for the 113.8, 300.5 and 372.2 levels are determined to be $5/2^+$, $7/2^+$, and $11/2^-$ respectively based on E3-M1 and M2-E2, M2-M1-M1 γ cascades to the $3/2^+$ ground state assuming the 113.8 level is the $5/2^+$ member of the 3/2[402] rotational band.
[@] Band(a): π3/2[402],α=+1/2.
[&] Band(A): π3/2[402],α=−1/2.
[a] Band(B): π1/2[400],α=+1/2.
[b] Band(b): π1/2[400],α=−1/2.
[c] Band(C): π11/2[505],α=+1/2.
[d] Band(c): π11/2[505],α=−1/2.
[e] Band(D): ROTATIONAL BAND.

Adopted Levels, Gammas (continued)

$\gamma(^{189}Ir)$

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
94.34	$1/2^+$	94.34 *4*	100	0.0	$3/2^+$	M1+E2	3.2 *3*	5.99	α(K)=1.26 *10*; α(L)=3.56 *7*; α(M)=0.914 *19* α(N)=0.221 *5*; α(O)=0.0338 *7*; α(P)=0.000162 *12* B(M1)(W.u.)=2.9×10^{-5} *5*; B(E2)(W.u.)=13.4 *5*
113.831	$5/2^+$	113.82 *4*	100	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* B(M1)(W.u.)=0.031 *8*; B(E2)(W.u.)=290 *+90−55*
176.53	$3/2^+$	62.65 *6*	3.3 *7*	113.831	$5/2^+$	M1+E2	<1.8	16 *12*	α(L)=12.3 *91*; α(M)=3.1 *24* α(N)=0.75 *57*; α(O)=0.116 *84*; α(P)=0.00164 *81* B(M1)(W.u.)=0.011 *9* B(E2)↓: Strength derived from $T_{1/2}$ exceeds RUL.
		82.22 *4*	100 *9*	94.34	$1/2^+$	M1+E2	0.17 *+3−4*	10.71	α(K)=8.59 *16*; α(L)=1.63 *7*; α(M)=0.381 *19* α(N)=0.093 *5*; α(O)=0.0162 *7*; α(P)=0.001079 *19* B(M1)(W.u.)=0.14 *+12−4*; B(E2)(W.u.)=2.3×10^2 *+19−7*
		176.53 *7*	33.8 *16*	0.0	$3/2^+$	M1+E2	0.7 *2*	0.99 *9*	α(K)=0.75 *10*; α(L)=0.184 *9*; α(M)=0.044 *3* α(N)=0.0108 *7*; α(O)=0.00181 *7*; α(P)=9.1×10^{-5} *13* B(M1)(W.u.)=0.0032 *+27−10*; B(E2)(W.u.)=20 *+33−6*
300.50	$7/2^+$	186.70 *6*	59.7 *18*	113.831	$5/2^+$	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* B(M1)(W.u.)>0.024; B(E2)(W.u.)>100 δ: negative sign from parametric plots of A_2 from ce(θ) and and $\gamma(\theta)$ (1983Fa11).
		300.48 *6*	100 *4*	0.0	$3/2^+$	E2		0.0943	α(K)=0.0598 *9*; α(L)=0.0262 *4*; α(M)=0.00652 *10* α(N)=0.001583 *23*; α(O)=0.000253 *4*; α(P)=6.43×10^{-6} *9* B(E2)(W.u.)>82
317.68	$5/2^+$	141.18 *4*	100 *5*	176.53	$3/2^+$	M1+E2	<0.17	2.27	α(K)=1.87 *4*; α(L)=0.313 *6*; α(M)=0.0723 *16* α(N)=0.0178 *4*; α(O)=0.00313 *6*; α(P)=0.000230 *5*
		203.78 *8*	11.5 *11*	113.831	$5/2^+$	M1+E2	<0.7	0.73 *9*	α(K)=0.59 *9*; α(L)=0.112 *3*; α(M)=0.0262 *11* α(N)=0.00641 *24*; α(O)=0.001110 *20*; α(P)=7.2×10^{-5} *11* E_γ: Observed only in ε decay.
		223.35 *10*	35.6 *23*	94.34	$1/2^+$	E2		0.239	α(K)=0.1279 *18*; α(L)=0.0838 *12*; α(M)=0.0212 *3* α(N)=0.00513 *8*; α(O)=0.000806 *12*; α(P)=1.312×10^{-5} *19*
		317.65 *6*	78 *5*	0.0	$3/2^+$	M1+E2	0.5 *2*	0.209 *21*	α(K)=0.170 *19*; α(L)=0.0299 *15*; α(M)=0.0070 *3* α(N)=0.00171 *8*; α(O)=0.000298 *16*; α(P)=2.06×10^{-5} *25*
372.17	$11/2^-$	71.69 *4*	30 *5*	300.50	$7/2^+$	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* B(M2)(W.u.)=0.00034 *6*; B(E3)(W.u.)<0.65
		258.37 *6*	100 *8*	113.831	$5/2^+$	E3		0.876	α(K)=0.248 *4*; α(L)=0.470 *7*; α(M)=0.1235 *18* α(N)=0.0301 *5*; α(O)=0.00468 *7*; α(P)=4.26×10^{-5} *6* B(E3)(W.u.)=0.022 *4*
453.95	$9/2^+$	153.6 *3* 340.2 *1*	7.5 *16* 100 *5*	300.50 113.831	$7/2^+$ $5/2^+$	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*

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

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
464.76	7/2+	147.2 *3*	34 *7*	317.68	5/2+	(D)			
		288.1 *3*	59 *12*	176.53	3/2+	(E2)			
		350.9 *2*	100 *15*	113.831	5/2+	M1		0.184	α(K)=0.1522 *22*; α(L)=0.0245 *4*; α(M)=0.00562 *8* α(N)=0.001382 *20*; α(O)=0.000245 *4*; α(P)=1.86×10^{-5} *3*
539.85?		539.85[c] *15*	100	0.0	3/2+	(E1,E2)		0.013 *7*	
563.74	(9/2)−	110.1 *3*	13 *3*	453.95	9/2+	[E1]		0.312 *6*	α(K)=0.253 *5*; α(L)=0.0456 *8*; α(M)=0.01054 *19* α(N)=0.00255 *5*; α(O)=0.000423 *8*; α(P)=2.20×10^{-5} *4* B(E1)(W.u.)=3.1×10^{-5} *9*
		263.2 *1*	100 *7*	300.50	7/2+	E1		0.0346	α(K)=0.0286 *4*; α(L)=0.00461 *7*; α(M)=0.001058 *15* α(N)=0.000258 *4*; α(O)=4.42×10^{-5} *7*; α(P)=2.80×10^{-6} *4* B(E1)(W.u.)=1.7×10^{-5} *+4−3*
607.50	5/2−	306.80 *15*	1.1 *2*	300.50	7/2+				
		430.84 *15*	6.1 *11*	176.53	3/2+	E1		0.01100	α(K)=0.00917 *13*; α(L)=0.001416 *20*; α(M)=0.000324 *5* α(N)=7.90×10^{-5} *11*; α(O)=1.373×10^{-5} *20*; α(P)=9.37×10^{-7} *14*
		493.30 *10*	12.1 *11*	113.831	5/2+	E1		0.00819	α(K)=0.00684 *10*; α(L)=0.001045 *15*; α(M)=0.000239 *4* α(N)=5.83×10^{-5} *9*; α(O)=1.016×10^{-5} *15*; α(P)=7.05×10^{-7} *10* E_γ: somewhat poor fit, level-energy difference=493.67.
		607.60 *5*	100 *39*	0.0	3/2+	(E1)		0.00530	α(K)=0.00444 *7*; α(L)=0.000667 *10*; α(M)=0.0001521 *22* α(N)=3.72×10^{-5} *6*; α(O)=6.51×10^{-6} *10*; α(P)=4.63×10^{-7} *7*
615.58	7/2−	243.47 *6*	100	372.17	11/2−	E2		0.181	B(E2)(W.u.)=48 *6* α(K)=0.1024 *15*; α(L)=0.0591 *9*; α(M)=0.01487 *21* α(N)=0.00361 *5*; α(O)=0.000569 *8*; α(P)=1.065×10^{-5} *15*
644.29	(3/2,5/2)+	343.80 *20*	19 *4*	300.50	7/2+	(M1)		0.194	
		530.42 *10*	37 *3*	113.831	5/2+	M1(+E2)	<0.8	0.054 *8*	α(K)=0.044 *7*; α(L)=0.0073 *9*; α(M)=0.00168 *19* α(N)=0.00041 *5*; α(O)=7.3×10^{-5} *9*; α(P)=5.3×10^{-6} *9*
		644.30 *8*	100 *7*	0.0	3/2+	M1(+E2)	<0.9	0.032 *6*	α(K)=0.026 *5*; α(L)=0.0043 *6*; α(M)=0.00099 *14* α(N)=0.00024 *4*; α(O)=4.3×10^{-5} *6*; α(P)=3.1×10^{-6} *6*
719.09	9/2+	254.3 *3*	96 *18*	464.76	7/2+				
		401.2 *3*	100 *24*	317.68	5/2+				
		419.0 *3*	48 *26*	300.50	7/2+				
721.41	3/2+	403.90 *15*	15.2 *8*	317.68	5/2+	M1(+E2)	<0.03	0.1263	α(K)=0.1046 *15*; α(L)=0.01675 *24*; α(M)=0.00385 *6* α(N)=0.000946 *14*; α(O)=0.0001677 *24*; α(P)=1.272×10^{-5} *18*
		544.91 *5*	62.0 *25*	176.53	3/2+	M1+E2	+0.15 *10*	0.0566 *17*	α(K)=0.0469 *14*; α(L)=0.00747 *18*; α(M)=0.00171 *4* α(N)=0.000421 *10*; α(O)=7.47×10^{-5} *19*; α(P)=5.67×10^{-6} *17*
		607.60 *5*	59 *11*	113.831	5/2+	M1+E2	+0.23 *+9−7*	0.0420 *14*	α(K)=0.0348 *12*; α(L)=0.00555 *16*; α(M)=0.00127 *4* α(N)=0.000313 *9*; α(O)=5.55×10^{-5} *16*; α(P)=4.20×10^{-6} *15*

$^{189}_{77}Ir_{112}$-5

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
721.41	3/2+	627.08 *8*	25.3 *10*	94.34	1/2+	M1+E2	−0.7 *4*	0.031 *7*	α(K)=0.026 *6*; α(L)=0.0043 *7*; α(M)=0.00099 *16* α(N)=0.00024 *4*; α(O)=4.3×10^{-5} *8*; α(P)=3.1×10^{-6} *7*
		721.38 *5*	100 *4*	0.0	3/2+	M1+E2	−0.87 *+23−43*	0.020 *4*	
736.87	13/2−	364.7 *1*	100	372.17	11/2−	D			
741.64	(13/2)−	177.9 *1*	100	563.74	(9/2)−	E2		0.516	α(K)=0.228 *4*; α(L)=0.217 *4*; α(M)=0.0553 *9* α(N)=0.01339 *20*; α(O)=0.00208 *3*; α(P)=2.28×10^{-5} *4*
745.89	11/2+	292.1 *2*	24 *8*	453.95	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*
		445.3[a] *1*	100 *12*	300.50	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*
792.71	(1/2,3/2)+	616.10 *15*	3.3 *5*	176.53	3/2+				
		678.95 *10*	3.3 *5*	113.831	5/2+				
		698.33 *8*	15.9 *16*	94.34	1/2+	M1(+E2)	<1	0.025 *5*	α(K)=0.021 *5*; α(L)=0.0034 *6*; α(M)=0.00079 *12* α(N)=0.00019 *3*; α(O)=3.4×10^{-5} *6*; α(P)=2.5×10^{-6} *6*
		792.67 *5*	100 *6*	0.0	3/2+	M1+E2	0.9 *+4−3*	0.0158 *25*	α(K)=0.0130 *21*; α(L)=0.0022 *3*; α(M)=0.00050 *7* α(N)=0.000122 *16*; α(O)=2.1×10^{-5} *3*; α(P)=1.5×10^{-6} *3*
828.18	3/2−	212.72 *10*	29 *8*	615.58	7/2−				
		288.34 *10*	18 *3*	539.85?					
		651.61 *8*	30 *3*	176.53	3/2+	(E1)		0.00460	α(K)=0.00386 *6*; α(L)=0.000577 *8*; α(M)=0.0001314 *19* α(N)=3.21×10^{-5} *5*; α(O)=5.63×10^{-6} *8*; α(P)=4.04×10^{-7} *6*
		714.90 *15*	20 *6*	113.831	5/2+				E_γ: somewhat poor fit, level-energy difference=714.35.
		733.73 *15*	100 *16*	94.34	1/2+	E1		0.00364	α(K)=0.00305 *5*; α(L)=0.000453 *7*; α(M)=0.0001031 *15* α(N)=2.52×10^{-5} *4*; α(O)=4.43×10^{-6} *7*; α(P)=3.21×10^{-7} *5*
		828.06 *8*	84 *13*	0.0	3/2+	E1+M2	0.19 *+9−15*	0.0045 *18*	α(K)=0.0038 *15*; α(L)=6.0×10^{-4} *26*; α(M)=1.37×10^{-4} *61* α(N)=3.4×10^{-5} *15*; α(O)=5.9×10^{-6} *27*; α(P)=4.4×10^{-7} *20*
831.80	(9/2,11/2)−	216.3 *3*	18 *6*	615.58	7/2−				I_γ: other: 50 from (p,nγ) in 1975Ke06 seems discrepant.
		459.5 *2*	100 *18*	372.17	11/2−	M1		0.0898	α(K)=0.0744 *11*; α(L)=0.01186 *17*; α(M)=0.00273 *4* α(N)=0.000670 *10*; α(O)=0.0001188 *17*; α(P)=9.03×10^{-6} *13*
837.89	15/2−	101.0 *3*	5 *1*	736.87	13/2−	(M1)		5.95	
		465.7 *1*	100 *12*	372.17	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*

$^{189}_{77}Ir_{112}$-6

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
850.07?	1/2,3/2,5/2$^+$	673.31 *15*	63 *9*	176.53	3/2$^+$				
		755.95 *15*	100 *15*	94.34	1/2$^+$				
899.40	(11/2$^+$)	180.4 *3*	9 *4*	719.09	9/2$^+$				
		434.6 *3*	100 *11*	464.76	7/2$^+$	(E2)			
		445.3[a] *3*		453.95	9/2$^+$				
900.14	(9/2)$^-$	284.58 *10*	100 *11*	615.58	7/2$^-$	M1		0.324	α(K)=0.268 *4*; α(L)=0.0433 *6*; α(M)=0.00997 *14* α(N)=0.00245 *4*; α(O)=0.000434 *6*; α(P)=3.28×10^{-5} *5*
		528.0 *3*	16 *11*	372.17	11/2$^-$				E$_\gamma$: only from (α,2nγ).
902.65	(3/2)$^+$	181.30 *10*	100 *15*	721.41	3/2$^+$				
		584.95 *10*	63 *9*	317.68	5/2$^+$				
		788.45[b] *20*	67[b] *33*	113.831	5/2$^+$	(M1)		0.0222	α(K)=0.0184 *25*; α(L)=0.0029 *4*; α(M)=0.00066; α(N)=0.00016
		809.00 *25*	48 *10*	94.34	1/2$^+$	M1		0.0208	α(K)=0.01725 *25*; α(L)=0.00270 *4*; α(M)=0.000619 *9* α(N)=0.0001521 *22*; α(O)=2.70×10^{-5} *4*; α(P)=2.07×10^{-6} *3*
		902.60 *25*	28 *6*	0.0	3/2$^+$				
912.21	3/2$^+$	190.83 *10*	30 *8*	721.41	3/2$^+$	M1		0.978	α(K)=0.808 *12*; α(L)=0.1316 *19*; α(M)=0.0303 *5* α(N)=0.00745 *11*; α(O)=0.001319 *19*; α(P)=9.95×10^{-5} *14*
		594.60 *10*	29 *3*	317.68	5/2$^+$	M1		0.0458	α(K)=0.0380 *6*; α(L)=0.00601 *9*; α(M)=0.001378 *20* α(N)=0.000339 *5*; α(O)=6.01×10^{-5} *9*; α(P)=4.58×10^{-6} *7*
		735.78 *15*	100 *20*	176.53	3/2$^+$	M1(+E2)	<1.0	0.022 *5*	α(K)=0.018 *4*; α(L)=0.0030 *5*; α(M)=0.00069 *11* α(N)=0.00017 *3*; α(O)=3.0×10^{-5} *5*; α(P)=2.2×10^{-6} *5*
		798.20 *10*	51 *5*	113.831	5/2$^+$	M1		0.0215	α(K)=0.01785 *25*; α(L)=0.00280 *4*; α(M)=0.000641 *9* α(N)=0.0001575 *22*; α(O)=2.80×10^{-5} *4*; α(P)=2.14×10^{-6} *3*
		912.30 *20*	11 *2*	0.0	3/2$^+$				
918.17	13/2$^+$	172.1 *3*	1.7 *6*	745.89	11/2$^+$				
		464.4 *2*	100 *17*	453.95	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*
924.76	(3/2,5/2)$^-$	384.80 *30*	18 *4*	539.85?					
		811.05 *20*	45 *7*	113.831	5/2$^+$	E1		0.00300	α(K)=0.00252 *4*; α(L)=0.000372 *6*; α(M)=8.45×10^{-5} *12* α(N)=2.07×10^{-5} *3*; α(O)=3.63×10^{-6} *5*; α(P)=2.66×10^{-7} *4*
		924.75 *8*	100 *8*	0.0	3/2$^+$	E1		0.00235	α(K)=0.00197 *3*; α(L)=0.000288 *4*; α(M)=6.55×10^{-5} *10* α(N)=1.603×10^{-5} *23*; α(O)=2.82×10^{-6} *4*; α(P)=2.09×10^{-7} *3*
945.9	(11/2$^-$)	204[c]		741.64	(13/2)$^-$				
		382.2 *3*	100 *16*	563.74	(9/2)$^-$	D			
948.74?		110.1[c] *6*		837.89	15/2$^-$				
		333.3[c] *3*		615.58	7/2$^-$				
		576.8[c] *6*	100 *60*	372.17	11/2$^-$				
958.66	(3/2$^-$,5/2$^-$)	130.54 *10*	57 *17*	828.18	3/2$^-$				
		343.20 *20*	93 *21*	615.58	7/2$^-$				
		351.10 *25*	100 *21*	607.50	5/2$^-$	(M1+E2)		0.12 *7*	
		640.50 *40*	43 *13*	317.68	5/2$^+$				
		782.09 *15*	46 *7*	176.53	3/2$^+$				

$^{189}_{77}Ir_{112}$-7

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
1074.2?		242.4[c] *3*	100	831.80	(9/2,11/2)$^-$				
1100.84	(17/2$^-$)	359.2 *1*	100	741.64	(13/2)$^-$	(E2)		0.0564	
1106.38	(3/2,5/2)$^+$	384.80 *30*	28 *6*	721.41	3/2$^+$				
		788.45[b] *20*	32[b] *21*	317.68	5/2$^+$	(M1)		0.0222	α(K)=0.0184 *25*; α(L)=0.0029 *4*; α(M)=0.00066; α(N)=0.00016
		929.71 *18*	22 *6*	176.53	3/2$^+$				
		992.76 *10*	45 *7*	113.831	5/2$^+$	M1		0.01236	α(K)=0.01028 *15*; α(L)=0.001600 *23*; α(M)=0.000366 *6* α(N)=9.00×10^{-5} *13*; α(O)=1.599×10^{-5} *23*; α(P)=1.228×10^{-6} *18*
		1011.85 *20*	27 *5*	94.34	1/2$^+$				
		1106.30 *15*	100 *10*	0.0	3/2$^+$	M1+E2	<0.9	0.0083 *12*	α(K)=0.0069 *10*; α(L)=0.00108 *14*; α(M)=0.00025 *4* α(N)=6.1×10^{-5} *8*; α(O)=1.07×10^{-5} *14*; α(P)=8.1×10^{-7} *12*; α(IPF)=3.3×10^{-7} *3*
1114.52	$^-$	214.6 *3*	57 *15*	900.14	(9/2)$^-$				
		282.5 *3*	100 *26*	831.80	(9/2,11/2)$^-$	M1		0.331	α(K)=0.274 *4*; α(L)=0.0442 *7*; α(M)=0.01017 *15* α(N)=0.00250 *4*; α(O)=0.000443 *7*; α(P)=3.35×10^{-5} *5*
		498.9[c] *3*	30 *15*	615.58	7/2$^-$				
		743.9[c] *3*	85 *22*	372.17	11/2$^-$				
1137.27	(15/2)$^-$	400.4 *1*	100	736.87	13/2$^-$	M1		0.129	
1184.41	5/2$^-$	568.85 *5*	100 *4*	615.58	7/2$^-$	M1+E2	−0.214 *28*	0.0499 *16*	B(M1)(W.u.)>0.0013; B(E2)(W.u.)>0.056
		576.85 *15*	0.63 *13*	607.50	5/2$^-$				
		1007.80 *10*	1.36 *20*	176.53	3/2$^+$	E1		0.00200	α(K)=0.001685 *24*; α(L)=0.000245 *4*; α(M)=5.57×10^{-5} *8* α(N)=1.362×10^{-5} *19*; α(O)=2.40×10^{-6} *4*; α(P)=1.79×10^{-7} *3* B(E1)(W.u.)>3.2×10^{-8}
		1070.65[b] *10*	0.5[b] *3*	113.831	5/2$^+$	(E1)			
		1184.15 *20*	0.50 *8*	0.0	3/2$^+$				
1203.26	3/2$^+$	885.60 *10*	66 *7*	317.68	5/2$^+$	M1+E2	0.9 +*11*−*6*	0.0121 *36*	α(K)=0.0100 *31*; α(L)=0.00163 *42*; α(M)=3.75×10^{-4} *95* α(N)=9.2×10^{-5} *24*; α(O)=1.62×10^{-5} *43*; α(P)=1.18×10^{-6} *38*
		1026.73 *7*	100 *17*	176.53	3/2$^+$	(M1+E2)		0.008 *4*	
		1089.55 *15*	10 *2*	113.831	5/2$^+$				
		1108.73 *15*	34 *3*	94.34	1/2$^+$	E2(+M1)	>0.6	0.0061 *19*	α(K)=0.0051 *16*; α(L)=8.2×10^{-4} *23*; α(M)=1.89×10^{-4} *51* α(N)=4.6×10^{-5} *13*; α(O)=8.2×10^{-6} *23*; α(P)=5.9×10^{-7} *20*; α(IPF)=3.1×10^{-7} *6*

$^{189}_{77}Ir_{112}$-8

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
1221.14	–	275.4[c] *3*	<39	945.9	(11/2⁻)				I_γ: includes contribution from (α,nγ) channel.
		479.5 *2*	100 *11*	741.64	(13/2)⁻	M1+E2	1.1 *+7−4*	0.051 *12*	δ: from conversion electron measurement (1975Ke06).
1238.73?	(3/2⁻,5/2,7/2⁺)	623.15 *10*	100	615.58	7/2⁻				
1249.0	(13/2⁺)	349.5 *3*	25 *15*	899.40	(11/2⁺)	(M1)		0.186	
		502.6[c] *3*	43 *13*	745.89	11/2⁺				
		530.0 *3*	100 *25*	719.09	9/2⁺				
1268.28	17/2⁻	430.4 *1*	100 *13*	837.89	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*
		531.4 *3*	19 *5*	736.87	13/2⁻				I_γ: other: 7.3 from 1975Ke06 seems too low.
1288.0?		342.1 *3*	100	945.9	(11/2⁻)				
1296.21	15/2⁺	378.1 *3*	14 *2*	918.17	13/2⁺	(M1+E2)			Mult.: D+Q from γ(θ), ΔJ^π suggests (M1+E2). δ: negative sign from parametric plots of A_2 from ce(θ) and γ(θ) (1983Fa11). Value not given.
		550.3 *1*	100 *13*	745.89	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*
1312.33	(3/2⁺,5/2,7/2⁺)	1011.85 *20*	76 *15*	300.50	7/2⁺				
		1198.50 *15*	28 *6*	113.831	5/2⁺				
		1312.30 *15*	100 *15*	0.0	3/2⁺	(E1,M1+E2)		0.0033 *21*	
1344.51	(3/2⁺,5/2⁺)	623.15 *16*	100 *35*	721.41	3/2⁺	(M1+E2)		0.027 *14*	
		1026.73 *7*	47 *24*	317.68	5/2⁺				
		1044.11 *10*	46 *7*	300.50	7/2⁺	(E2)		0.00479	α(K)=0.00390 *6*; α(L)=0.000681 *10*; α(M)=0.0001581 *23* α(N)=3.87×10⁻⁵ *6*; α(O)=6.72×10⁻⁶ *10*; α(P)=4.43×10⁻⁷ *7*
		1167.96 *20*	24 *4*	176.53	3/2⁺				
		1230.70 *15*	47 *7*	113.831	5/2⁺	(E2)		0.00349	α(K)=0.00286 *4*; α(L)=0.000476 *7*; α(M)=0.0001099 *16* α(N)=2.69×10⁻⁵ *4*; α(O)=4.70×10⁻⁶ *7*; α(P)=3.24×10⁻⁷ *5*; α(IPF)=7.41×10⁻⁶ *11*
		1344.62 *15*	41 *6*	0.0	3/2⁺	(E2)		0.00297	α(K)=0.00243 *4*; α(L)=0.000395 *6*; α(M)=9.10×10⁻⁵ *13* α(N)=2.23×10⁻⁵ *4*; α(O)=3.91×10⁻⁶ *6*; α(P)=2.75×10⁻⁷ *4*; α(IPF)=2.51×10⁻⁵ *4*
1383.60	19/2⁻	115.2 *3*	2.9 *10*	1268.28	17/2⁻	[M1+E2]		3.3 *8*	
		246.2[c]	<0.7	1137.27	(15/2)⁻				

$^{189}_{77}Ir_{112}$-9

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
1383.60	19/2⁻	545.7 *1*	100 *14*	837.89	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*
1395.8?		281.6 *3*	100	1114.52	−				
1447.6?		333.1[c] *3*	100	1114.52	−				
1451.58?	(5/2)⁻	836.00 *8*	100	615.58	7/2⁻	M1+E2	1.0 *+20−7*	0.0133 *49*	α(K)=0.0109 *42*; α(L)=0.00181 *56*; α(M)=4.2×10^{-4} *13* α(N)=1.03×10^{-4} *31*; α(O)=1.80×10^{-5} *57*; α(P)=1.29×10^{-6} *51*
1468.99		284.58 *10*	100	1184.41	5/2⁻				
1476.46	1/2⁺,3/2$^{(+)}$,5/2⁺	1300.25 *30*	6 *2*	176.53	3/2⁺				
		1362.56 *15*	25 *4*	113.831	5/2⁺	(E1,E2)		0.0021 *8*	
		1381.64 *20*	13 *7*	94.34	1/2⁺				
		1476.91 *20*	100 *23*	0.0	3/2⁺	(E2+M1)	>0.8		
1481.61	(17/2)⁺	563.5 *2*	100	918.17	13/2⁺	(E2)		0.0178	
1500.19	(1/2,3/2)⁻	855.73 *20*	9 *2*	644.29	(3/2,5/2)⁺				
		1323.66 *7*	100 *7*	176.53	3/2⁺	E1		1.30×10^{-3}	α(K)=0.001041 *15*; α(L)=0.0001494 *21*; α(M)=3.38×10^{-5} *5* α(N)=8.29×10^{-6} *12*; α(O)=1.466×10^{-6} *21*; α(P)=1.113×10^{-7} *16*; α(IPF)=6.91×10^{-5} *10*
		1405.95 *25*	22 *3*	94.34	1/2⁺				
1501.35	(3/2⁻,5/2⁻)	708.35 *15*	35 *7*	792.71	(1/2,3/2)⁺				
		1387.75 *25*	65 *10*	113.831	5/2⁺				
		1501.70 *20*	100 *15*	0.0	3/2⁺	(E1)		1.17×10^{-3}	α(K)=0.000839 *12*; α(L)=0.0001199 *17*; α(M)=2.71×10^{-5} *4* α(N)=6.65×10^{-6} *10*; α(O)=1.177×10^{-6} *17*; α(P)=8.99×10^{-8} *13*; α(IPF)=0.000181 *3*
1536.88		744.30 *20*	100 *16*	792.71	(1/2,3/2)⁺				
		1423.00 *20*	98 *20*	113.831	5/2⁺				
		1536.70 *30*	29 *7*	0.0	3/2⁺				
1558.20		655.61 *10*	100 *16*	902.65	(3/2)⁺				
		765.40 *15*	76 *16*	792.71	(1/2,3/2)⁺				
		914.25 *60*	30 *10*	644.29	(3/2,5/2)⁺				
		1240.66 *35*	42 *12*	317.68	5/2⁺				
		1381.64 *20*	40 *40*	176.53	3/2⁺				
		1443.67 *40*	50 *18*	113.831	5/2⁺				
		1558.26[a] *25*	40 *20*	0.0	3/2⁺				

$^{189}_{77}Ir_{112}$-10

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
1571.67	(3/2,5/2)$^+$	1254.03 *7*	100 *6*	317.68	5/2$^+$	M1+E2	<2.0	0.0055 *15*	α(K)=0.0045 *12*; α(L)=0.00071 *18*; α(M)=0.00016 *4* α(N)=4.0×10^{-5} *10*; α(O)=7.1×10^{-6} *18*; α(P)=5.3×10^{-7} *15*; α(IPF)=1.34×10^{-5} *22*
		1395.23 *30*	8 *2*	176.53	3/2$^+$				
		1457.85 *20*	58 *6*	113.831	5/2$^+$	E2		0.00258	α(K)=0.00209 *3*; α(L)=0.000335 *5*; α(M)=7.69×10^{-5} *11* α(N)=1.89×10^{-5} *3*; α(O)=3.31×10^{-6} *5*; α(P)=2.36×10^{-7} *4*; α(IPF)=5.40×10^{-5} *8*
		1476.91 *20*	25 *13*	94.34	1/2$^+$				
		1571.60 *20*	20 *2*	0.0	3/2$^+$				
1578.37	(17/2$^-$)	441.1 *2*	100 *15*	1137.27	(15/2)$^-$	M1		0.0325	α(K)=0.0235 *4*; α(L)=0.00685 *10*; α(M)=0.001666 *24* α(N)=0.000406 *6*; α(O)=6.68×10^{-5} *10*; α(P)=2.64×10^{-6} *4*
		840.9[c] *3*	46 *15*	736.87	13/2$^-$				
1608.8	(21/2$^-$)	508.0 *3*	100	1100.84	(17/2$^-$)				
1610.24?	(3/2,5/2)$^-$	651.61 *8*		958.66	(3/2$^-$,5/2$^-$)				
		782.09 *15*		828.18	3/2$^-$				
		1002.65 *10*	100 *20*	607.50	5/2$^-$	M1,E2+E0		0.029 *10*	
		1070.65[bc] *10*	73[b] *36*	539.85?					
		1292.35 *30*	22 *4*	317.68	5/2$^+$				
		1496.30[bc] *25*	36[b] *18*	113.831	5/2$^+$				
		1610.85 *40*	42 *5*	0.0	3/2$^+$				
1615.2		394.1 *3*	100	1221.14	$^-$				
1622.83	1/2$^+$,3/2,5/2$^+$	1305.25 *20*	21 *6*	317.68	5/2$^+$				
		1446.37 *25*	96 *15*	176.53	3/2$^+$				
		1508.25 *40*	27 *4*	113.831	5/2$^+$				
		1528.42 *20*	100 *19*	94.34	1/2$^+$				
		1623.05 *30*	22 *7*	0.0	3/2$^+$				
1651.2		550.4 *3*		1100.84	(17/2$^-$)				
1656.0	(19/2$^-$)	387.7 *3*	100	1268.28	17/2$^-$	(M1)		0.1407	α(K)=0.1165 *17*; α(L)=0.0187 *3*; α(M)=0.00429 *7* α(N)=0.001055 *15*; α(O)=0.000187 *3*; α(P)=1.418×10^{-5} *21*
1672.83		880.05 *15*	100 *16*	792.71	(1/2,3/2)$^+$	(E1,E2)		0.0047 *21*	
		952.00 *20*	24 *7*	721.41	3/2$^+$				
		1496.30[bc] *25*	67[b] *33*	176.53	3/2$^+$				
		1558.26[a] *25*	22 *11*	113.831	5/2$^+$				
		1672.80[ac] *40*		0.0	3/2$^+$				
1767.21	3/2,5/2$^+$	1159.60 *20*	35 *7*	607.50	5/2$^-$				
		1653.60 *25*	93 *13*	113.831	5/2$^+$				
		1672.8[a] *4*	33 *5*	94.34	1/2$^+$				

$^{189}_{77}Ir_{112}$-11

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[&]	Comments
1767.21	3/2,5/2$^+$	1767.08 *40*	100 *10*	0.0	3/2$^+$			
1790.9?	(21/2$^-$)	407.3[c] *3*	100	1383.60	19/2$^-$	D		
1802.24	(5/2$^-$)	1080.80 *10*	74 *11*	721.41	3/2$^+$	(E1,E2)	0.0031 *14*	
		1157.95 *20*	19 *4*	644.29	(3/2,5/2)$^+$			
		1195.11 *40*	13 *5*	607.50	5/2$^-$			
		1501.70 *20*	100 *15*	300.50	7/2$^+$	(E1)	1.17×10^{-3}	α(K)=0.000839 *12*; α(L)=0.0001199 *17*; α(M)=2.71×10^{-5} *4* α(N)=6.65×10^{-6} *10*; α(O)=1.177×10^{-6} *17*; α(P)=8.99×10^{-8} *13*; α(IPF)=0.000181 *3*
		1688.49 *30*	17 *4*	113.831	5/2$^+$			
		1802.35 *40*	22 *6*	0.0	3/2$^+$			
1814.86?	(1/2,3/2)$^-$	986.63 *12*	100 *16*	828.18	3/2$^-$	M1	0.01255	α(K)=0.01044 *15*; α(L)=0.001625 *23*; α(M)=0.000372 *6* α(N)=9.14×10^{-5} *13*; α(O)=1.624×10^{-5} *23*; α(P)=1.248×10^{-6} *18*
		1637.92 *40*	43 *10*	176.53	3/2$^+$			
		1720.92 *30*	31 *5*	94.34	1/2$^+$			
		1815.45 *80*	17 *9*	0.0	3/2$^+$			
1875.53	(21/2$^-$)	491.9 *2*	100 *14*	1383.60	19/2$^-$			
		607.4 *3*	69 *20*	1268.28	17/2$^-$			I_γ: other: 82 in 1975Ke06.
1910.28	(19/2$^+$)	429 *1*	25 *8*	1481.61	(17/2)$^+$			
		614.0 *2*	100 *19*	1296.21	15/2$^+$	(Q)		
1919.81	19/2$^+$	438.3 *3*	33 *5*	1481.61	(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* I_γ: other: 15 in 1975Ke06.
		623.6 *1*	100 *13*	1296.21	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*
2059.89	(21/2$^-$)	140.1 *3*	100 *30*	1919.81	19/2$^+$	(E1)	0.169	Mult.: from intensity balance arguments in 3.7-ms IT decay.
		149.6 *3*	60 *25*	1910.28	(19/2$^+$)	(E1)	0.143	Mult.: dipole from γ(θ), (E1) from ΔJ^π.
		676.3 *3*	60 *25*	1383.60	19/2$^-$			
2085.04	23/2$^-$	209.3 *6*	9 *6*	1875.53	(21/2$^-$)			
		701.4 *2*	100 *21*	1383.60	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*
2108.9	(21/2$^-$)	725.3 *3*	100	1383.60	19/2$^-$			
2109.7	(21/2$^+$)	628.1 *3*	100	1481.61	(17/2)$^+$			
2127.89	23/2$^+$	(68.1)	32×10^1 *24*	2059.89	(21/2$^-$)	[E1]	0.220	I_γ: from IT decay.
		208.2 *3*	100 *14*	1919.81	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*
		217.5 *3*	54 *11*	1910.28	(19/2$^+$)			
		252.5 *3*	59 *11*	1875.53	(21/2$^-$)			

$^{189}_{77}Ir_{112}$-12

Adopted Levels, Gammas (continued)

γ(^{189}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[@]	α[&]	Comments
2248.4	(23/2$^-$,25/2$^-$)	120.8 *3*	100	2127.89	23/2$^+$	(E1)		0.246	
2332.8	(25/2$^+$)	84.5 *3*	20 *7*	2248.4	(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* B(E1)(W.u.)=8×10^{-12} *6*; B(M2)(W.u.)=0.00017 *15* Mult.,δ: from α(exp) deduced from intensity balance argument in 3.7-ms IT decay.
		224 *1*	5.6 *23*	2108.9	(21/2$^-$)	(M2)		2.93	B(M2)(W.u.)=1.1×10^{-5} *6* 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*
		247.6 *3*	100 *33*	2085.04	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* B(E1)(W.u.)=1.6×10^{-12} *8*

[†] Weighted average of γ-ray energies from ^{189}Pt ε decay and ^{187}Re(α,2nγ) (1975An08) when applicable.
[‡] Weighted average of branching ratios from ^{189}Ir IT decay (3.7 ms), ^{189}Pt ε decay, ^{187}Re(α,2nγ) (1975An08) and ^{189}Os(p,nγ) (1975Ke06).
[#] From conversion electron measurements summarized in ^{189}Pt ε decay and ^{187}Re(α,2nγ), angular distribution measurements from ^{187}Re(α,2nγ), and level scheme branching intensities in ^{189}Ir IT decay (3.7 ms).
[@] Magnitudes of mixing ratios are from conversion electron data. Signs are from low temperature nuclear orientation γ(θ) data (1980Be27).
[&] Theoretical values from BrIcc code (2008Ki07) with "Frozen Orbitals" approximation, unless otherwise stated.
[a] Multiply placed.
[b] Multiply placed with intensity suitably divided.
[c] Placement of transition in the level scheme is uncertain.

$^{189}_{77}Ir_{112}$-13

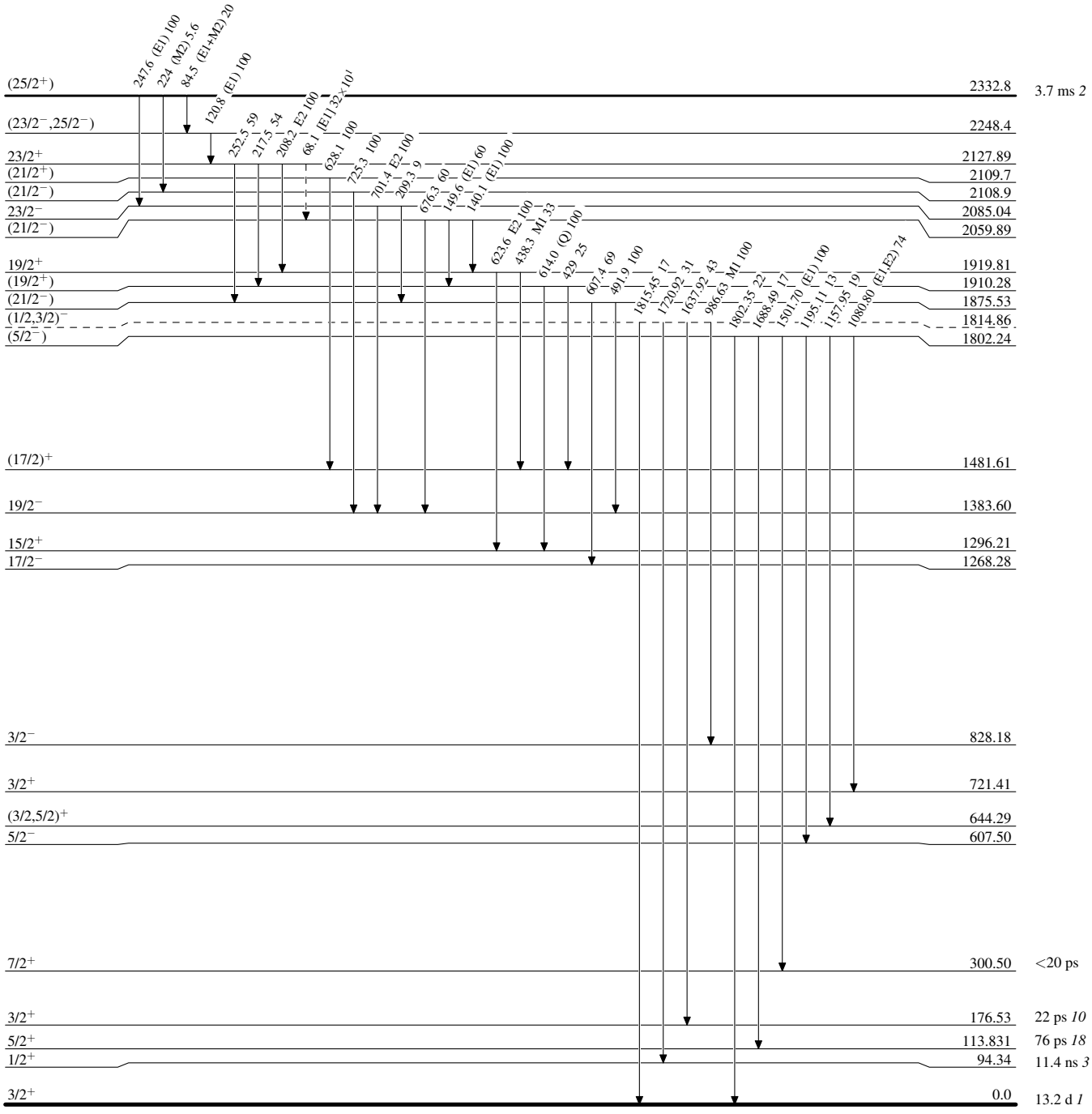
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



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

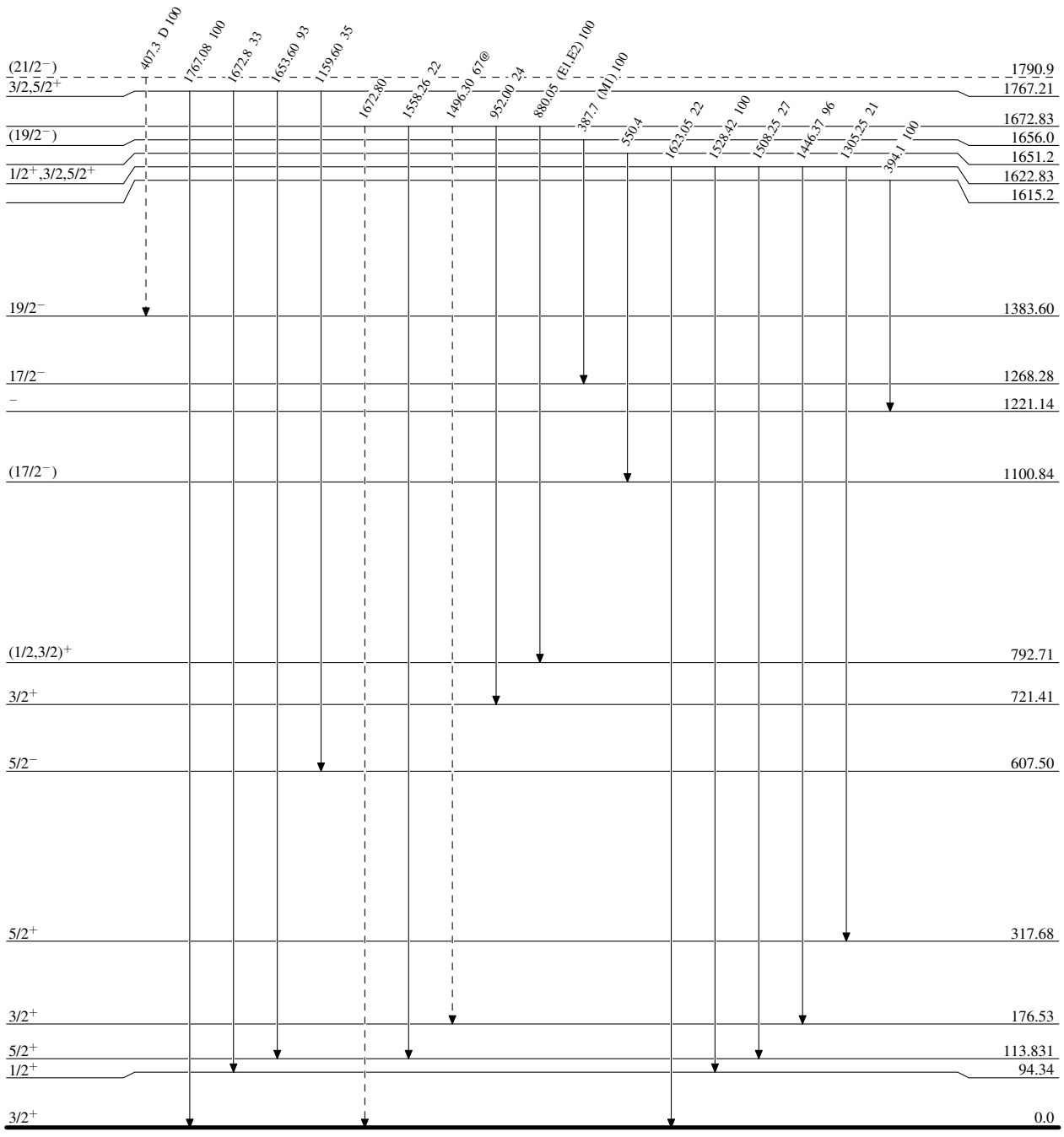
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



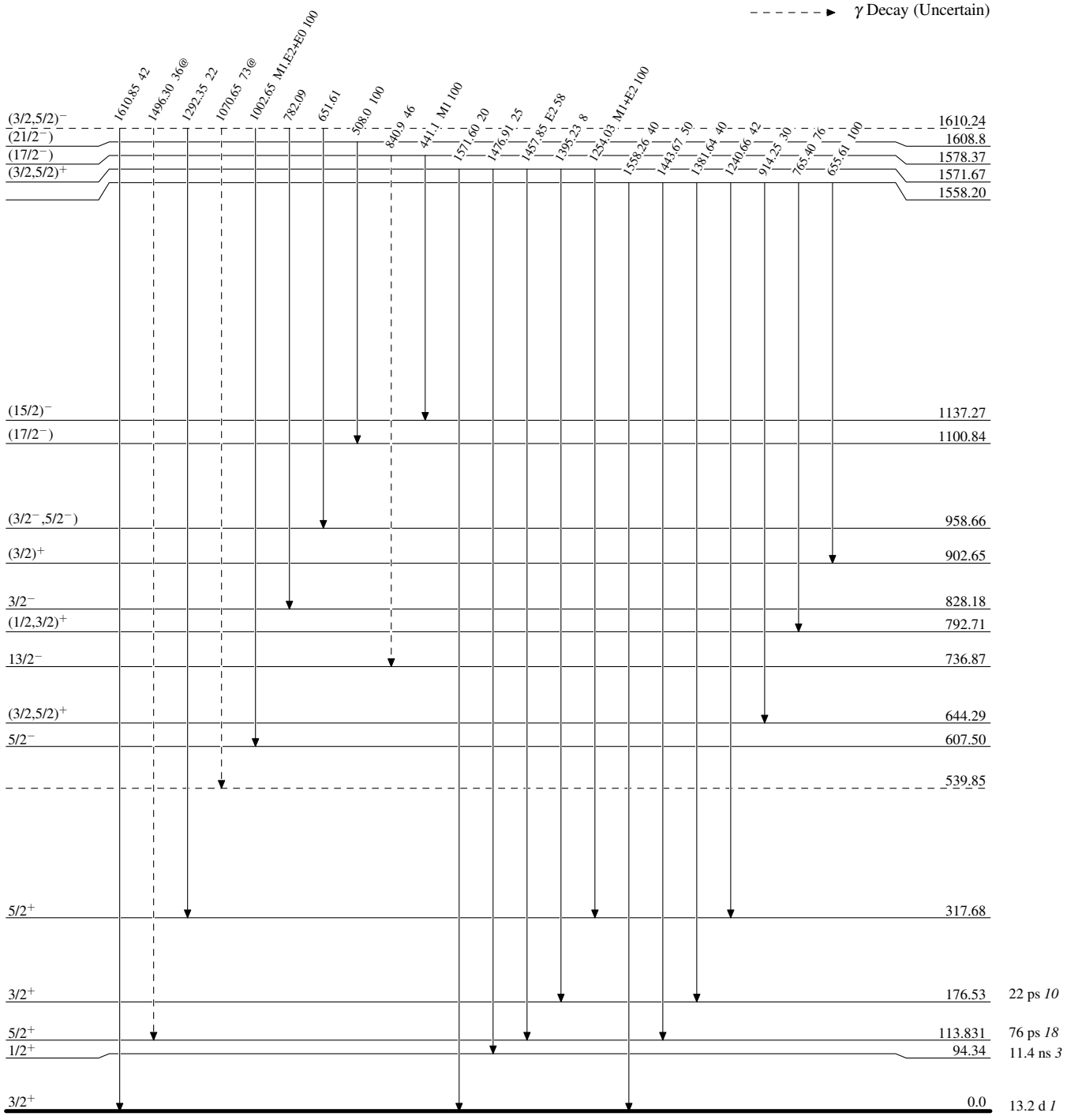
$^{189}_{77}Ir_{112}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided



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

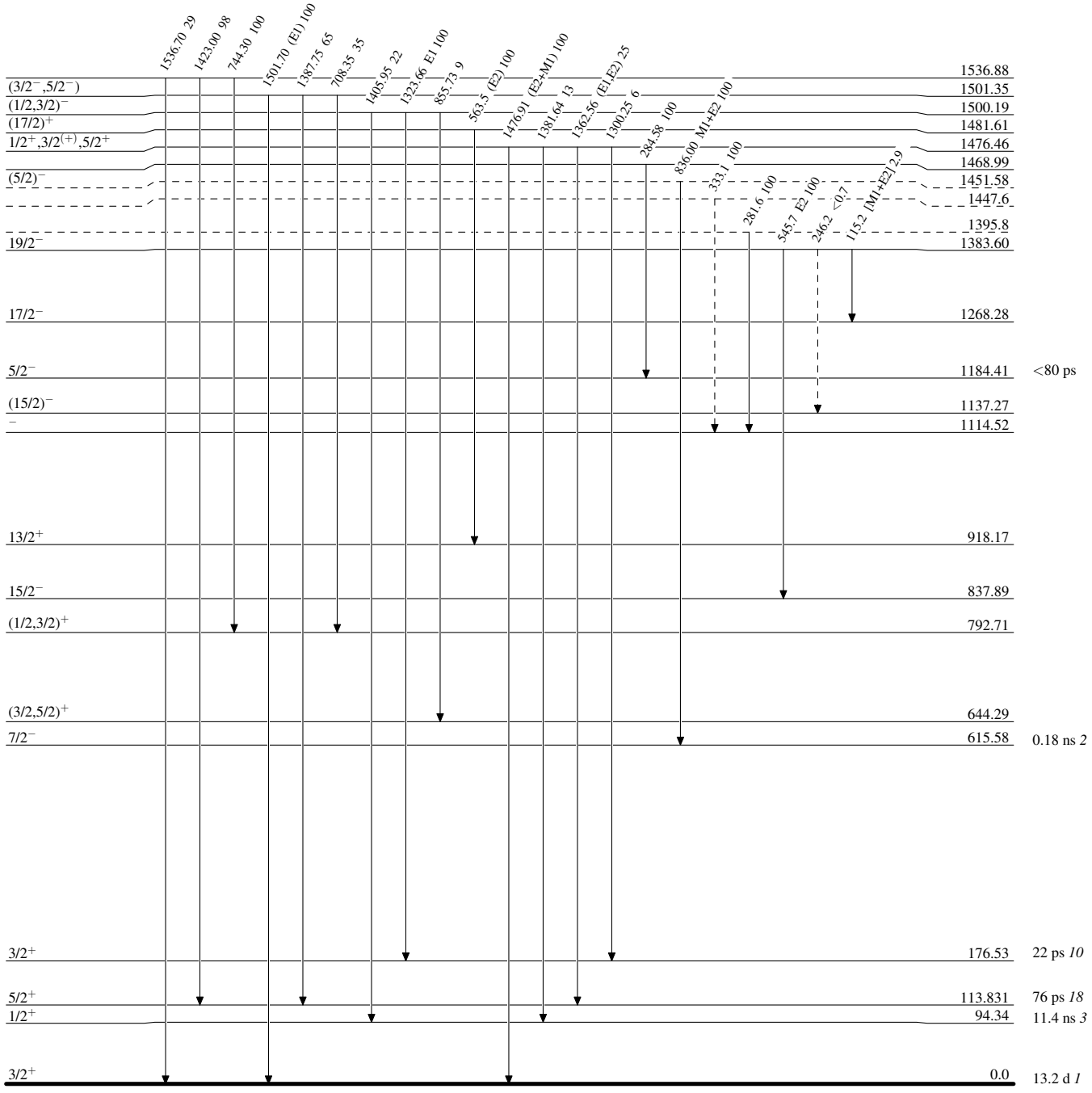
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



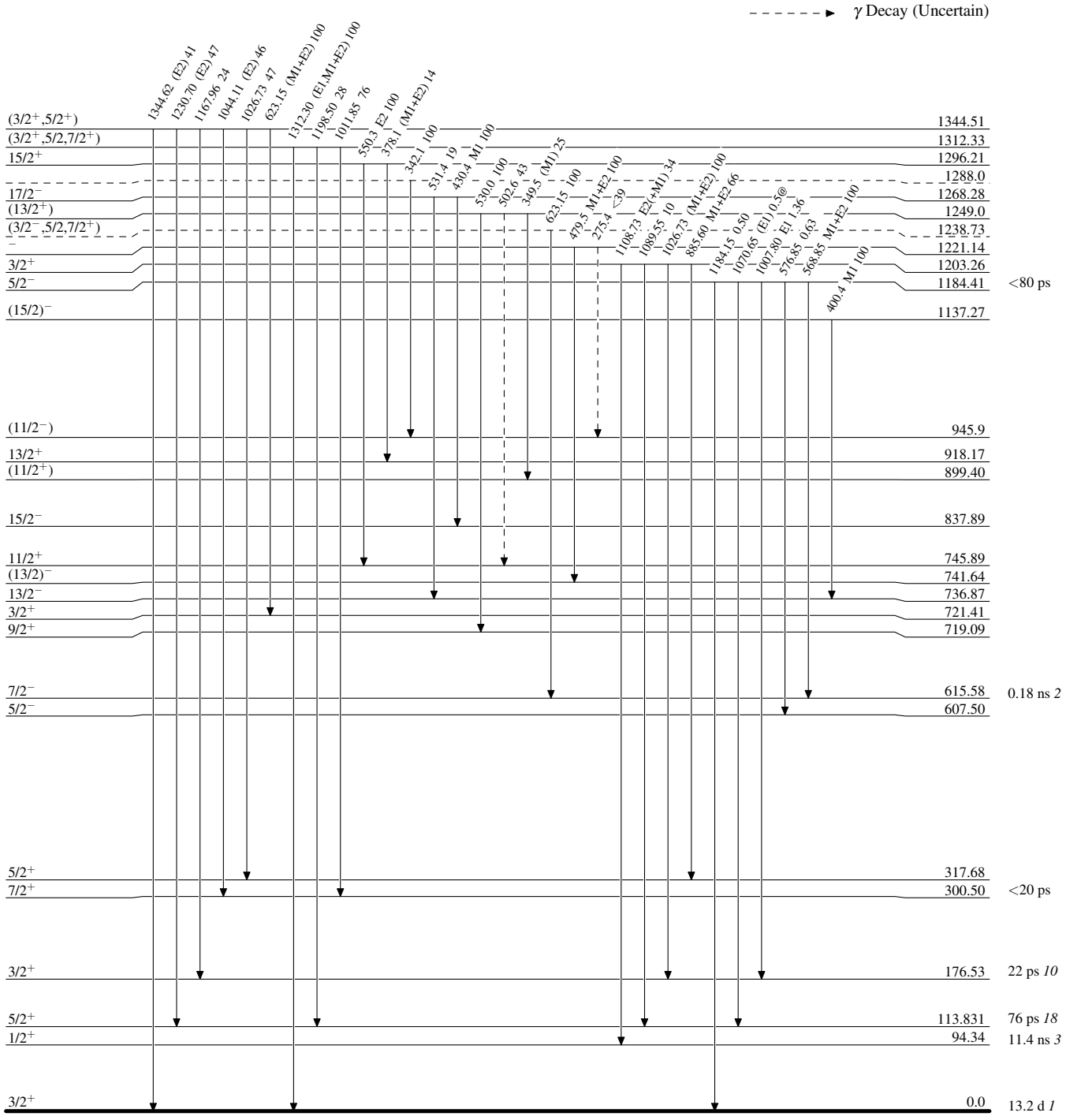
$^{189}_{77}Ir_{112}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

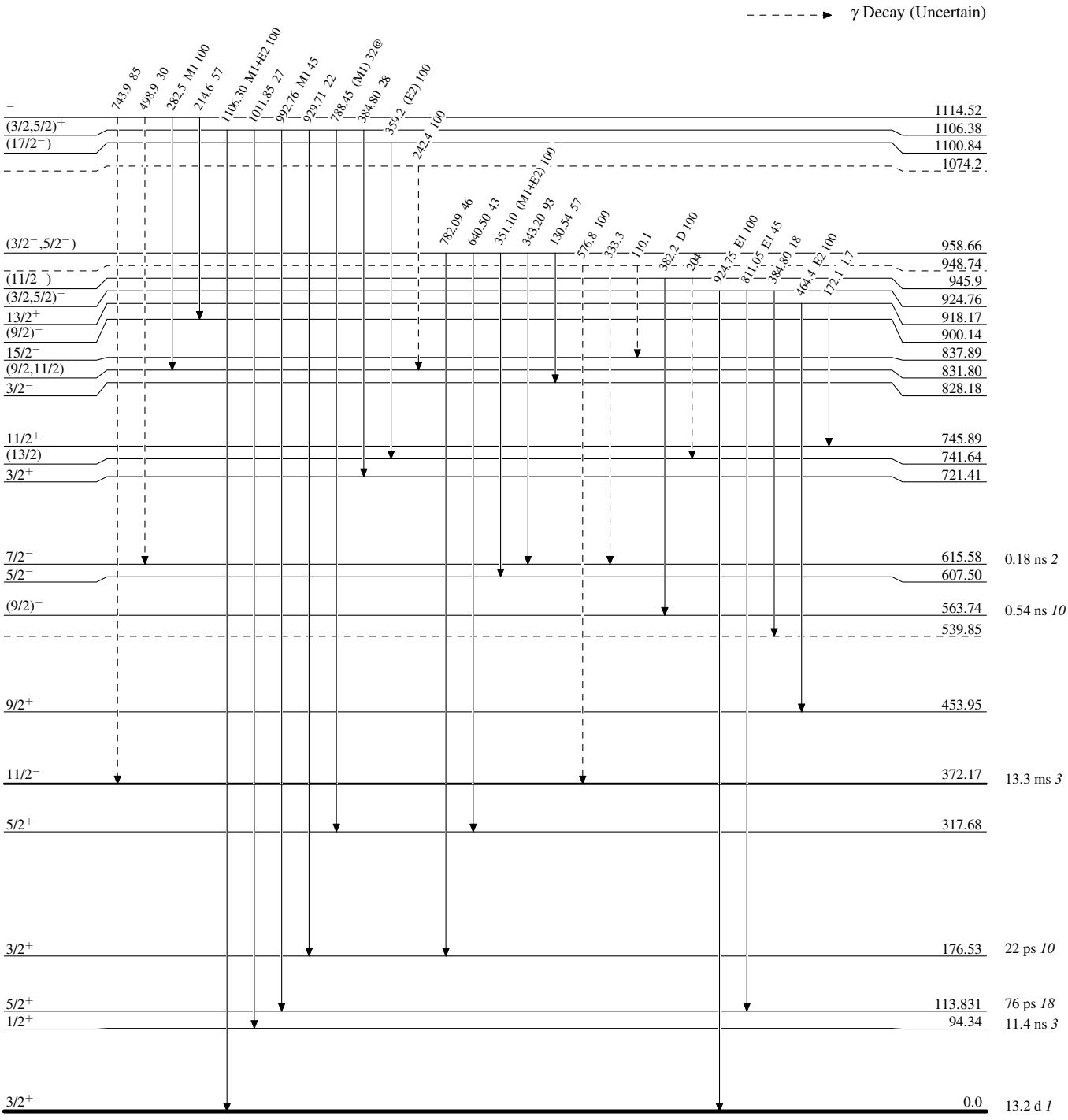


$^{189}_{77}Ir_{112}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

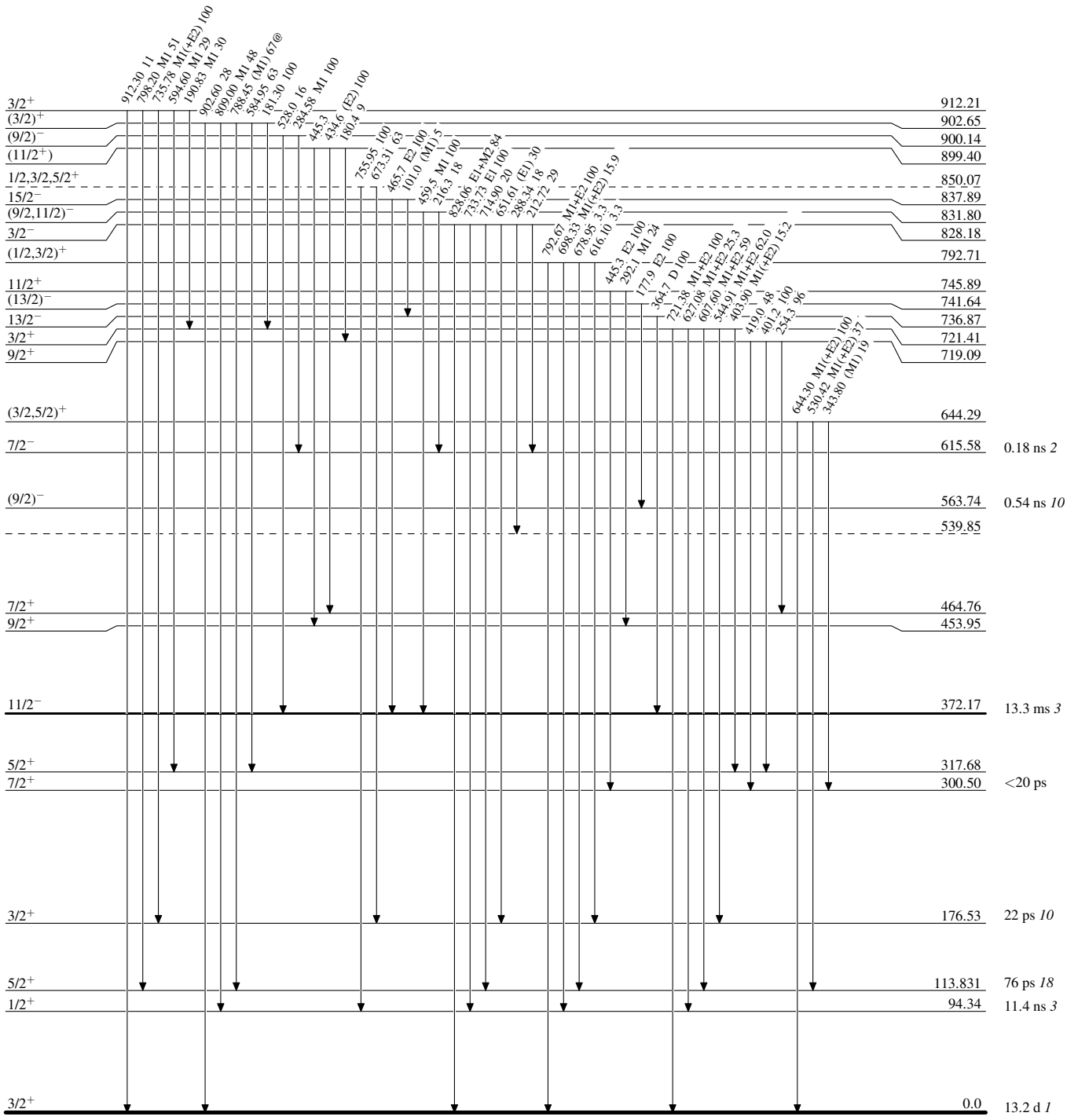


$^{189}_{77}Ir_{112}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided



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

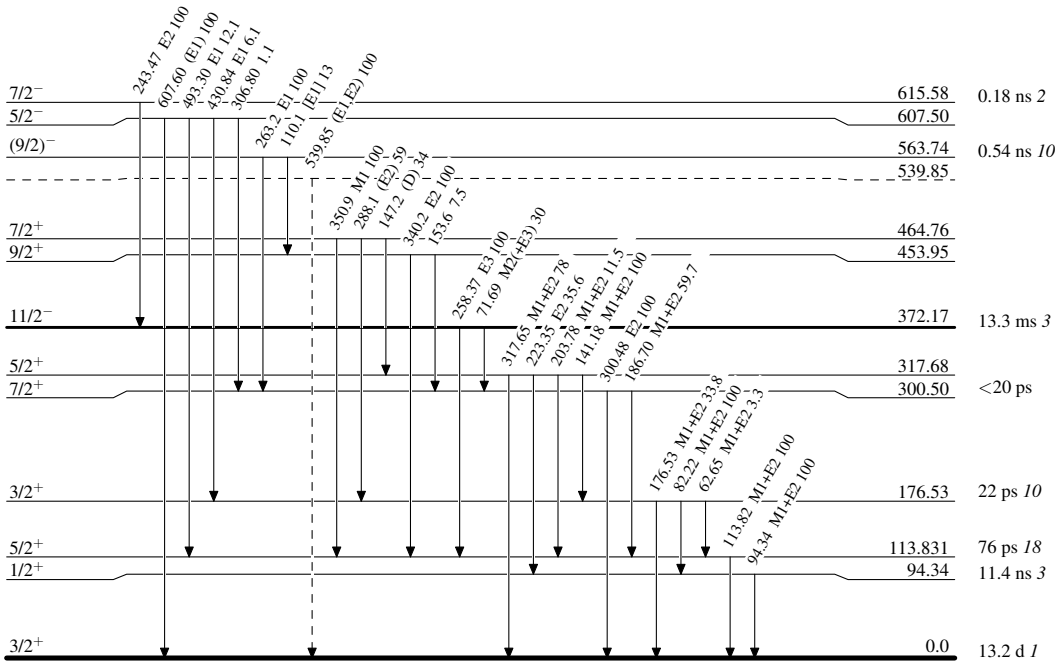
Adopted Levels, Gammas

Legend

Level Scheme (continued)

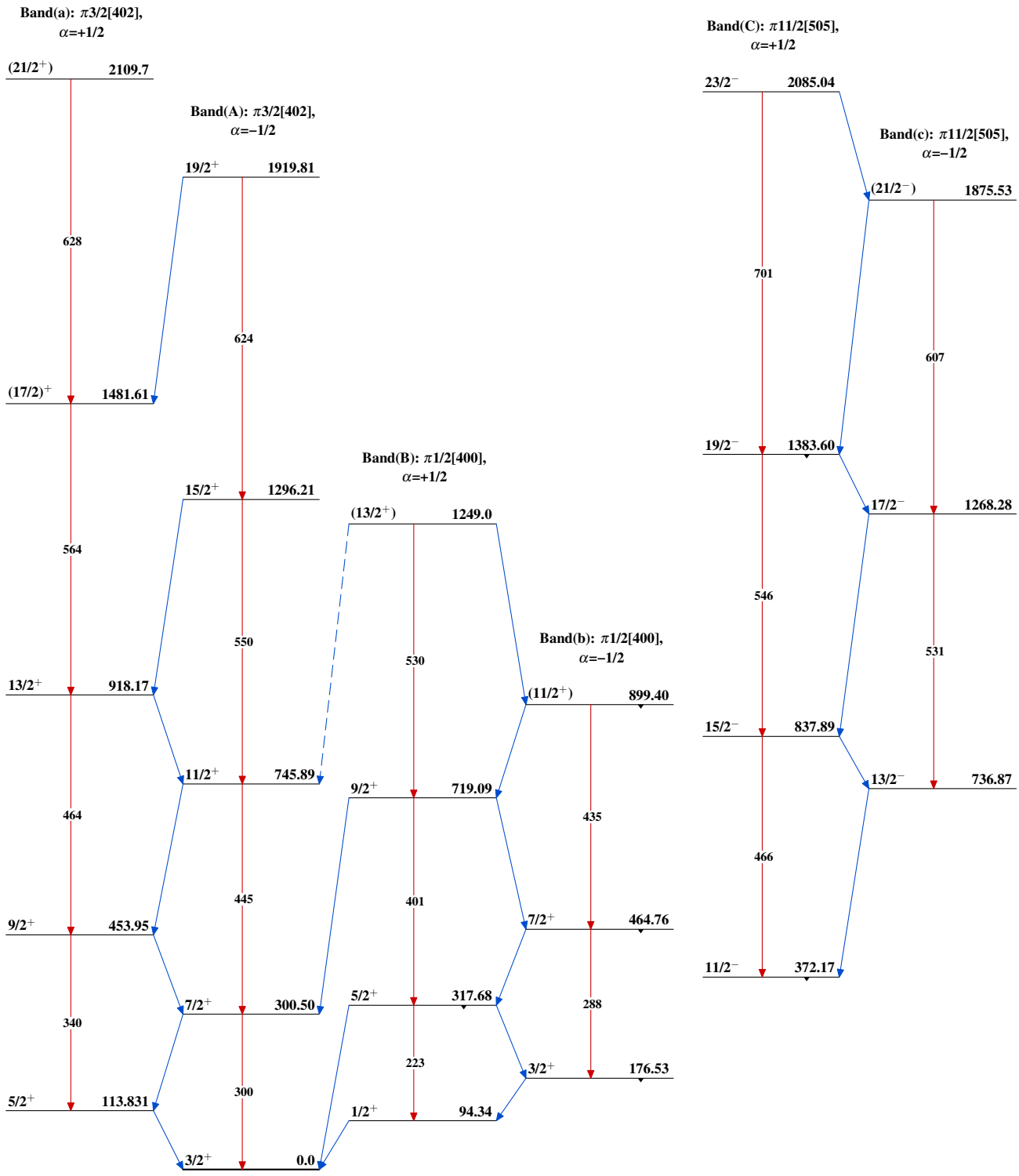
Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



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

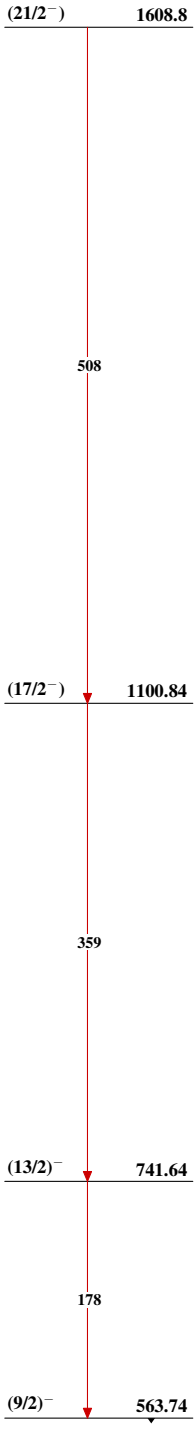
Adopted Levels, Gammas



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

Adopted Levels, Gammas (continued)

Band(D): ROTATIONAL BAND



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