Adopted Levels, Gammas

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia	NDS 195,368 (2024)	1-Dec-2023

Q(β^-)=−1010 *4*; S(n)=8026.5 *4*; S(p)=5290.0 *11*; Q(α)=2082.8 *12* 2021Wa16

Compilation, review: NMR in oriented nuclei: 1996Ha09.
Isotope shift and hyperfine structure measurements: 1989Sa31.

^{191}Ir Levels

The rotational bands of ^{191}Ir with axially asymmetric core are discussed in 1979Vi06, 1987Pr10, and 2001Ro23. The band assignments are based on assignments in ^{191}Ir(n,n′γ) (1987Pr10) and ^{192}Os(^{3}He,d) (1971Pr13). U(6/4), U(6/20) supersymmetry are used to describe ^{191}Ir (1984Mu19, 1986Mc01, 2000Be07).

Cross Reference (XREF) Flags

A	^{191}Os β^- decay (14.99 d)	F	^{191}Ir(γ,γ')	K	^{192}Os(p,2nγ),(d,3nγ)
B	^{191}Ir IT decay (4.899 s)	G	^{191}Ir(n,n′γ)	L	^{193}Ir(p,t)
C	^{191}Pt ε decay	H	^{191}Ir(p,p′) E=50 MeV	M	(HI,xnγ)
D	^{190}Os(^{3}He,d),(α,t)	I	^{191}Ir(d,d′)		
E	^{191}Ir(γ,γ): Mossbauer	J	Coulomb excitation		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[#]	3/2$^+$	stable	ABCDEFGHIJKLM	μ=+0.1502 *6*; Q=+0.816 *9* J$^\pi$: optical spectroscopy (1950Br75,1952Mu40,1953Si61). Parity from L=2 in (^{3}He,d) and (α,t). Nilsson assignment 3/2[402] based on energy systematics of this orbital in other odd-mass Ir isotopes. Spectroscopic factors in (^{3}He,d) and (α,t), and L=0 population in (p,t) are consistent with 3/2, 3/2[402]. μ: Atomic beam (direct); independent of the Knight shift (1984Bu15,2000Ve10,2019StZV). Other values: +0.1461 *6*, NMR, includes +1.3% *4* Knight−shift correction (1968Na01); +0.152 *4* hfs in resonant laser spectroscopy (2006Ve10), 0.146 *8* (1969Da11). Q: Meson hfs (1983Ta14,1984Ta04,1985St28,2016St14). Other values: +0.81 *21*, atomic beam, optical spectroscopy, including Sternheimer correction (1978Bu17); +0.774 *24*, hfs in Mossbauer (1967Wa12); +0.82 *8*, hfs in resonant laser spectroscopy (2006Ve10), 0.78 *20* (1973Bu15 – atomic-beam magnetic-resonance), 0.86 (1974ScYF preliminary). Nuclear charge radius: <r^2>$^{1/2}$=5.40 fm *11* (2004An14).
82.4241[@] *23*	1/2$^+$	4.10 ns *7*	ABCDE GHIJKL	μ=+0.581 *5* J$^\pi$: L=0 in (^{3}He,d) and (α,t). Relative values of spectroscopic factors in (^{3}He,d) and (α,t) agree with theory for 1/2[400] Nilsson orbital assignment. Absolute values are about one-half of the theoretical predictions for 1/2[400]. This is probably due to a mixture of a (K-2) γ-vibration coupled to the 3/2[402] ground-state orbital. The Nilsson orbital 1/2[400] has been observed in other odd-mass Ir isotopes at about the same energy. T$_{1/2}$: Weighted average of 4.02 ns *12* (from τ=5.18 ns *17* − 82γ(t) (1971Bo13)), 4.17 ns *10* (1969Ha03 − 82γ(t)); in ^{191}Pt ε decay: 3.85 ns *35* (1955Su64 − (β)(ce)(t)); 3.8 ns *4* (K x-ray)(γ)(t), 4.1 ns *3* (K x-ray)(ce)(t), and 3.7 ns *6* Mossbauer (all three values in

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Adopted Levels, Gammas (continued)

^{191}Ir Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
				1969Ow02); 4.21 ns *16* (Coulomb excitation). μ: From 1983Wa31, 2020StZV − Mossbauer Effect.
129.426[#] *3*	5/2+	89.7 ps *12*	ABCDE GHIJKL	μ=+0.81 *6* Jπ: L=2 in (^{3}He,d); ce-γ(θ) (1964De06) using ce(41.9L,E3) from level seen with L=5+2 in (^{3}He,d),(α,t) and 129.4γ (M1+E2) to 3/2+ within possible spin choices determine this and 171.2-keV-level spins. G.s. band assignment from 129.4γ to ground state with enhanced B(E2). Spectroscopic factors in (^{3}He,d) and (α,t) are consistent with 5/2,3/2[402]. $T_{1/2}$: weighted average of 90.5 ps *11* from (γ,γ): Mossbauer, and 87.9 ps *16* from Coulomb excitation. Others: 122 ps *6* from ^{191}Os β− decay (15.4 d); 120.4 ps *34* (1986Ko20 − in Coul. Ex.). μ: transient field IMPAC in Coulomb excitation (2000Be07, 2020StZV; supersedes 1996St22). Other value: +0.450 *23* (1986Ko20), transient field IMPAC in Coulomb excitation.
171.268[b] *11*	11/2−	4.899 s *23*	ABCD G IJKLM	%IT=100 μ=+6.03 *4* XREF: L(?). Jπ: See comment on 129.4 keV level J^π. Nilsson orbital assignment 11/2[505] based on energy systematics of this orbital in other odd-mass Ir isotopes. This assignment is consistent with experimental μ (theoretical μ=+6.9). $T_{1/2}$: from ^{191}Ir IT decay (4.9 s). μ: NMR, radiative detection; no hfs-anomaly correction (1974Kr06,1971Es03,2019StZV). Sign=+, nuclear orientation/NMR (1988Sc20, 1996Oh03, 1991Sc28 (Compton Polarimeter)). Other: 3.27 *12* (1973Kr05).
178.9761[@] *21*	3/2+	43 ps *4*	CD GHIJKL	μ=+1.4 *4* Jπ: 96.5γ M1+E2 to 1/2+. $T_{1/2}$: from B(E2)↑=0.102 *6* (Coulomb excitation) and adopted γ properties. Other: 40 ps *12* (1970Ma10 − ^{191}Pt ε decay). μ: IPAC (1973Il02,2020StZV).
300.4 *4*			K	
343.32[#] *4*	7/2+	20.4 ps *8*	CD GHIJKL	μ=+1.40 *6* Jπ: π=+ from Coulomb excitation; 343.3γ E2 to 3/2+ and component L=(4) from the 343-351 doublet in (^{3}He,d) and (α,t) (see comment on 351 keV level J^π); γ(θ) in low-energy Coulomb excitation. $T_{1/2}$: From Coulomb excitation. μ: From g−factor=+0.401 *18*, transient field IMPAC measurement in Coulomb excitation (2000Be07, supersedes 1996St22, 2020StZV).
351.1914[@] *21*	5/2+	28 ps *4*	CD GH JKL	XREF: L(?). Jπ: 268.7γ E2 to 1/2+ excludes component L=(4) from L=(4+2) for 343-351 doublet in (^{3}He,d) and (α,t) and limits choices to 3/2+ and 5/2+; band member. $T_{1/2}$: From Coulomb excitation.
390.941[a] *10*	7/2−	240 ps *20*	CD G JK	Jπ: L=3 in (^{3}He,d) and (α,t); 219.7γ E2 to 11/2− is E2(+M1) in ^{191}Pt ε decay (adopted E2). $T_{1/2}$: from 1970Ba56, (ce)(ce)(t) − ^{191}Pt ε decay.
502.80[#] *4*	(9/2)+	9.8 ps *6*	G IJKL	μ=+2.4 *2* Jπ: 373.1γ E2 to 5/2+, with enhanced B(E2) (g.s. band member). $T_{1/2}$: from 2000Be07, recoil-distance method listed in Coulomb

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Adopted Levels, Gammas (continued)

^{191}Ir Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
				excitation. μ: From g−factor=+0.53 *5*, transient field IMPAC measurement in Coulomb excitation (2000Be07, supersedes 1996St22, 2020StZV).
504.28[@] *10*	(7/2$^+$)		GHIJK	Jπ: 325.2γ to 3/2$^+$; 161.2γ to (7/2)$^+$; 152.9γ (D(+Q); ΔJ=1) to (5/2)$^+$; populated in ^{191}Ir(n,n′γ) with the expected intensity for the 7/2 member of band.
538.9118[&] *24*	3/2$^+$	10.7 ps *7*	C FG IJKL	Jπ: L=0 in (p,t) on 3/2$^+$ target. $T_{1/2}$: from ^{191}Ir(γ,γ).
556.82[b] *8*	(13/2$^-$)		G K M	Jπ: 385.3γ (ΔJ=1) to 11/2$^-$; 385.3γ excitation function discussed in 591.32 keV level Jπ comment. Feeding pattern in ^{192}Ir(p,2n),(d,3nγ) suggests yrast level.
587.99 *2*	3/2$^+$,5/2$^+$	≈0.3 ps	CD FG JKL	XREF: D(591). Jπ: L=2 in (^{3}He,d) and (α,t). $T_{1/2}$: from ^{191}Ir(γ,γ′) res fluorescence; $T_{1/2}$=0.27 ps *4* if Jπ=3/2$^+$, $T_{1/2}$=0.40 ps *6* if Jπ=5/2$^+$.
591.32[b] *14*	(15/2$^-$)		G K M	Jπ: 419.9γ (Q) to 11/2$^-$; 419.9γ excitation function in ^{192}Ir(p,2n),(d,3nγ), relative to 385.3γ from 556.82 keV level, increases with projectile energy; hence ΔJ(419.9γ)>ΔJ(385.3γ)=(1). Feeding pattern in ^{192}Ir(p,2n),(d,3nγ) suggests yrast level.
614 *4*			I	
624.080[&] *4*	(1/2$^+$)	>9 ps	C FG J L	Jπ: 541.6γ (M1) to 1/2$^+$; populated in ^{191}Ir(n,n′γ) with the expected intensity for the 1/2 member of band. The 1/2[411] Nilsson orbital has been observed at about 560 keV in ^{193}Ir. $T_{1/2}$: from ^{191}Ir(γ,γ′).
654.11[a] *6*	(9/2$^-$)		G IJK	Jπ: 263.1γ to 7/2$^-$; 482.5γ to 11/2$^-$; band member.
658.9184[c] *22*	(3/2$^-$)	<0.12 ns	C FG IJK	Jπ: 267.9γ E2 to 7/2$^-$ from ^{191}Pt ε decay; 576.5γ to 1/2$^+$. $T_{1/2}$: From 1970Ba56, Auger-ce(t) − ^{191}Pt ε decay. Others: >0.05 fs and 0.78 ps *+1590−38* in (γ,γ′).
686.41 *9*	7/2$^+$	2.7 ps *3*	CD GHIJKL	μ=+0.8 *3* Jπ: L=4 in (^{3}He,d) and (α,t), 557.0γ M1+E2 to 5/2$^+$, 686.4γ E2 to 3/2$^+$. $T_{1/2}$: from Coulomb excitation. μ: From 2020StZV, 2000Be07 − transient field IMPAC measurement in Coulomb excitation.
714.2 *5*			K	
747.801[&] *16*	(5/2)$^+$		C G JK	XREF: J(?). Jπ: 209.0γ M1(+E2) to 3/2$^+$; 404.1γ to (7/2)$^+$; populated in ^{191}Ir(n,n′γ) with the expected intensity for the 5/2 member of band.
762.588 *4*	3/2$^+$		C G JKL	Jπ: L=0 in (p,t) on 3/2$^+$ target.
799.808[c] *15*	(5/2)$^-$		C G JK	Jπ: 140.9γ M1 to (3/2)$^-$; 409γ to 7/2$^-$; populated in ^{191}Ir(n,n′γ) with the expected intensity for the 5/2 member of band.
812.10[@] *11*	(9/2$^+$)		G JKL	Jπ: 308.0γ (D) (ΔJ=1) to (7/2$^+$) in (p,2n),(d,3n); band member.
816.92 *14*			G	
825.44 *15*	(7/2$^+$,9/2$^+$)		G K	Jπ: 695.6γ to 5/2$^+$; 482.5γ to (7/2)$^+$.
832.35[#] *15*	(11/2$^+$)	3.14 ps *19*	G IJKL	μ=+3.4 *9* Jπ: 329.4γ D(+Q) (ΔJ=1) to (9/2)$^+$. $T_{1/2}$: from Coulomb excitation. μ: From 1996St22, 2020StZV − Transient Field method.

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Adopted Levels, Gammas (continued)

^{191}Ir Levels (continued)

E(level)†	Jπ‡	XREF	Comments
878.04 *11*	(9/2⁻,11/2⁺)	D G K	Jπ: L=5 or 6 in (^{3}He,d) and (α,t); 535γ to (7/2⁺).
918.85[a] *14*	(11/2⁻)	G K	Jπ: 527.9γ to 7/2⁻; 264.8γ (Q) to (9/2⁻); band member.
928.11[&] *25*	(7/2⁺)	G K	Jπ: 389.1γ to 3/2⁺; 425.5γ to (9/2⁺); populated in ^{191}Ir(n,n′γ) with the expected intensity for the 7/2 member of band.
935.70 *11*	(1/2⁺,3/2,5/2⁺)	C G	Jπ: 853.5γ to 1/2⁺ and 806.4γ to 5/2⁺; log ft=7.4 in ^{191}Pt ε decay from 3/2⁻. 1987Pr10 suggests 7/2⁺ from population in ^{191}Ir(n,n′γ), but then log $f^{1u}t$ in ^{191}Pt ε decay would be 6.4 implying ΔJ=0,1. The band member was reassigned to 928 keV level.
945.4 *3*	(9/2⁺)	G JKL	Jπ: 442γ to (9/2)⁺, 815.8γ to 5/2⁺; band assignment in Coulomb excitation (1986Mc01).
963.3 *4*	(15/2⁻)	K	Jπ: 406.5γ to (13/2⁻); 458.6γ from (17/2⁻).
977.17[c] *6*	(7/2⁻)	D G K	Jπ: 568.5γ to 7/2⁻, 318.4γ to (3/2)⁻; γ-decay pattern and population in ^{191}Ir(n,n′γ) agrees with expectation of the 7/2 member of band. If the assignment is confirmed, the level seen with L=2 in (^{3}He,d) and (α,t) must be a different level.
991.3[@] *3*	(11/2⁺)	G JK	Jπ: 487.1γ to (7/2⁺), 489.0γ to (9/2)⁺; populated in ^{191}Ir(n,n′γ) with the expected intensity for the 11/2 band member.
1004.23[#] *25*	(13/2⁺)	G JKL	Jπ: 172.0γ to (11/2⁺), 501.3γ to (9/2)⁺; band member.
1034 *3*	1/2⁺	D G	Jπ: L=0 in (^{3}He,d) and (α,t).
1036.68[b] *17*	(17/2⁻)	G K M	Jπ: 445.5γ (ΔJ=1) to (15/2⁻); populated in ^{191}Ir(n,n′γ) with the expected intensity for the 17/2 band member.
1053.13 *12*		G K	1987Pr10 from ^{191}Ir(n,n′γ) and 1979Lu01 from ^{192}Ir(p,2nγ) suggest J^π=(9/2⁺); γ-branching ratios in (n,n′γ) and (p,2nγ) do not match.
1070	3/2⁺	D L	Jπ: L=0 in (p,t) on 3/2⁺ target.
1127.4 *4*	(19/2⁻)	K M	Jπ: 536.1γ (stretched Q) to (15/2⁻);
1130		L	
1135.30 *20*	(7/2⁻,9/2,11/2⁻)	G K	Jπ: 744.0γ to 7/2⁻; 216.8γ to (11/2⁻).
1138		D I L	XREF: L(1141). L=1 or 2 in (^{3}He,d) and (α,t).
1207.11 *17*	(11/2⁺)	G JK	XREF: K(1207.2). Jπ: 520.5γ to 7/2⁺, 375.2γ to (11/2⁺); band assignment in Coulomb excitation (1986Mc01).
1207.15[c] *19*	(9/2⁻)	G K	XREF: G(1207.60)K(1205.9). Jπ: 229.9γ to (7/2⁻); populated in ^{191}Ir(n,n′γ) with the expected intensity for the 9/2 member of band.
1210.7 *4*	(9/2,11/2)	G KL	Jπ: 556.8γ to (9/2⁻).
1243.0 *6*		D KL	XREF: L(1254).
1253.5[a] *4*	(13/2⁻)	K	Jπ: 334.6γ to (11/2⁻), 599.4γ to (9/2⁻), band member.
1278.0 *5*		K	
1297.77 *20*		G	
1366.1 *8*		D K	XREF: D(1359). L=4 or 5 in (^{3}He,d) and (α,t).
1393		I	
1398.1[@] *4*	(13/2⁺)	G JK	Jπ: 406.8γ to (11/2⁺), 585.9γ to (9/2⁺); band assignment.
1401.1 *4*	(5/2⁺,7/2⁻)	K	Jπ: 741.4γ to (3/2)⁻, 898.9γ to (9/2)⁺.
1418.8[#] *3*	(15/2⁺)	G JK	Jπ: 414.3γ to (13/2⁺) and 586γ to (11/2⁺) in (d,3nγ) and Coulomb excitation suggest 15/2 member of the g.s. band.
1421.8 *4*	(17/2⁻)	K	Jπ: 864.4γ to (13/2⁻), 385.6γ to (17/2⁻).
1429.1 *10*		K	
1433		D	L=3 or 4 (^{3}He,d) and (α,t).
1440.2 *6*		K	
1446.1 *5*		K	
1449	1/2⁻,3/2⁻	D	Jπ: L=1 in (^{3}He,d) and (α,t).

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Adopted Levels, Gammas (continued)

^{191}Ir Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	XREF	Comments
1461	$3/2^+$		L	J$^{\pi}$: L=0 in (p,t) on $3/2^+$ target.
1503.5 *5*	(19/2)		M	
1507			I	
1520	$5/2^-$,$7/2^-$		D	J$^{\pi}$: L=3 in (^{3}He,d) and (α,t).
1596	$3/2^+$		L	J$^{\pi}$: L=0 in (p,t) n $3/2^+$ target.
1599.5[b] *4*	$(21/2^-)$		M	
1600.7[#] *6*	$(17/2^+)$		JK	J$^{\pi}$: 596.5γ to $(13/2^+)$, band assignment.
1613			D	
1642			D	
1646.2 *6*	$(21/2^+)$		K M	J$^{\pi}$: 518.8γ (ΔJ=0,1) to $(19/2^-)$.
1651.9 *6*	$(23/2^-)$	2.22 ns *35*	K M	$T_{1/2}$: From (HI,Xnγ).
1660			D	
1680.9 *6*	$(23/2^-)$		K	J$^{\pi}$: 553.5γ (stretched Q) to $(19/2)^-$.
1711			D	
1792.8 *8*	$(25/2^+)$		M	J$^{\pi}$: 146.6γ Q to $(21/2^+)$.
2047.2 *8*	$(25/2^-)$		K M	J$^{\pi}$: 395.3γ M1+E2 to $(23/2^-)$ in (HI,xnγ).
2101.3 *10*	$(31/2^+)$	5.75 s *55*	K M	%IT=100 J$^{\pi}$: 308.5γ M3 to $(25/2^+)$. configuration: possible $\nu(9/2^-[505],11/2^+[615])\otimes\pi(11/2^-[505])$. $T_{1/2}$: From τ=8.3 s *8* (HI,xnγ).
2112.8[#] *11*	$(19/2^+)$		J	J$^{\pi}$: intraband 694γ to $(15/2^+)$ in Coulomb excitation.
2312.7[#] *12*	$(21/2^+)$		J	J$^{\pi}$: intraband 712γ to $(17/2^+)$ in Coulomb excitation.

[†] Level energies from a least-squares fit to Eγ.

[‡] Assignments are based on rotational structure, on γ-ray multipolarities and decay patterns, and on L-transfers and spectroscopic factors of particle transfer reactions. Assignments for levels populated in ^{191}Ir(n,n$'\gamma$) are based on comparisons between experimental and theoretical population rates. Specific arguments are given with individual levels, and bases for Nilsson orbital assignments are presented for rotational bandheads.

[#] Band(A): 3/2(402).

[@] Band(B): 1/2(400). (Possibly mixed with K-2 γ-vibration coupled to 3/2[402]).

[&] Band(C): 1/2(411).

[a] Band(D): K$^{\pi}$=$(7/2^-)$.

[b] Band(E): 11/2(505).

[c] Band(F): K$^{\pi}$=$(3/2^-)$.

Adopted Levels, Gammas (continued)

$\gamma(^{191}Ir)$

Additional information 1.

E_i(level)	J_i^π	E_γ [†]	I_γ [c]	E_f	J_f^π	Mult.[c]	δ [f]	α [h]	Comments
82.4241	$1/2^+$	82.427 *10*	100	0.0	$3/2^+$	M1+E2	−0.871 *18*	10.54 *15*	B(M1)(W.u.)=4.73×10^{-4} *13*; B(E2)(W.u.)=20.8 *7* α(K)=5.33 *11*; α(L)=3.94 *8*; α(M)=0.991 *21* α(N)=0.240 *5*; α(O)=0.0377 *8*; α(P)=0.000688 *14* δ: From ce data in ^{191}Pt ε decay, sign from Mossbauer oriented nuc (1983Be71).
129.426	$5/2^+$	47.05[a] *3*	0.0094[a] *11*	82.4241	$1/2^+$	E2		143.5 *21*	B(E2)(W.u.)=10.5 *13* α(L)=108.1 *16*; α(M)=27.7 *4* α(N)=6.68 *10*; α(O)=1.010 *14*; α(P)=0.000955 *14* Mult.: from ce data in ^{191}Os β^- decay.
		129.427 *5*	100.00[a] *15*	0.0	$3/2^+$	M1+E2	−0.400 *5*	2.75 *4*	B(M1)(W.u.)=0.02594 *+46−44*; B(E2)(W.u.)=97.4 *27* α(K)=2.148 *31*; α(L)=0.463 *7*; α(M)=0.1100 *16* α(N)=0.0269 *4*; α(O)=0.00459 *7*; α(P)=0.000264 *4* E_γ: weighted average of 129.431 *5* from ^{191}Os β^- decay (15.4 d), 129.416 *16* from ^{191}Pt ε decay, 129.400 *16* from (n,n′γ), 129.40 *15* from (p,2nγ), and 129.39 *4* from Coulomb excitation. Mult.: from ce data in ^{191}Os β^- decay and ^{191}Pt ε decay. δ: Weighted average of −0.402 *7* (2000Be07 − particle-$\gamma(\theta)$), −0.46 *2* (1970Av02 − particle $\gamma(\theta)$) − both in Coulomb excitation; 0.396 *4* (1972Br02) and 0.404 *12* (1964De06) from L subshell ratios in Os β^- decay; −0.398 *20* (1968Da19) and −0.36 *+4−1* (1964Wi13) angular correlation on oriented nuc in (γ,γ): Mossbauer; −0.44 *4* from $\gamma(\theta)$ oriented nuc (1981La25) in ^{191}Pt ε decay. Other: −0.28 *6* (1964Ca11 − $\gamma\gamma(\theta$,H,t)) in Os β^- decay.
171.268	$11/2^-$	41.89[‡] *4*	100[a]	129.426	$5/2^+$	E3		1.689×10^4 *25*	B(E3)(W.u.)=0.0299 *5* α(L)=1.212×10^4 *18*; α(M)=3.71×10^3 *6* α(N)=919 *14*; α(O)=135.6 *21*; α(P)=0.1446 *22* Mult.: from ce data in ^{191}Os β^- decay.
178.9761	$3/2^+$	49.548 *4*	1.12 *13*	129.426	$5/2^+$	M1+E2	0.17 *4*	11.3 *15*	B(M1)(W.u.)=0.0054 *+17−12*; B(E2)(W.u.)=25 *+16−11* α(L)=8.6 *11*; α(M)=2.05 *28* α(N)=0.50 *7*; α(O)=0.085 *10*; α(P)=0.00475 *9*
		96.5517 *10*	100 *23*	82.4241	$1/2^+$	M1+E2	+0.150 *16*	6.74 *9*	B(M1)(W.u.)=0.065 *7*; B(E2)(W.u.)=62 *+15−14* α(K)=5.47 *8*; α(L)=0.975 *18*; α(M)=0.227 *5* α(N)=0.0556 *11*; α(O)=0.00973 *18*; α(P)=0.000681 *10*

$^{191}_{77}Ir_{114}$-6

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	δ[f]	α[h]	Comments
									δ: Value from ce data in ^{191}Pt ε decay, sign from γ(θ) oriented nuc (1981La25).
178.9761	3/2$^+$	178.980 *3*	32.3 *5*	0.0	3/2$^+$	M1+E2	−0.75 *5*	0.932 *24*	B(M1)(W.u.)=0.0022 *+7−4*; B(E2)(W.u.)=15.0 *+47−31* α(K)=0.699 *25*; α(L)=0.1772 *30*; α(M)=0.0426 *8* α(N)=0.01042 *19*; α(O)=0.001742 *28*; α(P)=8.43×10^{-5} *32* E_γ: weighted average of 178.9796 *19* from ^{191}Pt ε decay, 179.16 *8* from (n,n′γ), 178.7 *5* from (p,2nγ), and 178.96 *5* from Coulomb excitation.
300.4		121.5[#] *5*		178.9761	3/2$^+$				
		300.4[#] *5*	100[d] *8*	0.0	3/2$^+$				
343.32	7/2$^+$	213.88[@] *6*	63.7[&] *17*	129.426	5/2$^+$	M1+E2	−0.342 *7*	0.666 *9*	B(M1)(W.u.)=0.0296 *13*; B(E2)(W.u.)=29.8 *17* α(K)=0.541 *8*; α(L)=0.0961 *13*; α(M)=0.02235 *31* α(N)=0.00549 *8*; α(O)=0.000959 *13*; α(P)=6.63×10^{-5} *10* Mult.: from δ and RUL. δ: From particle-γ(θ) in Coulomb excitation (2000Be07).
		343.28 *8*	100[&]	0.0	3/2$^+$	E2[&]		0.0641 *9*	B(E2)(W.u.)=41.9 *18* α(K)=0.0429 *6*; α(L)=0.01608 *23*; α(M)=0.00397 *6* α(N)=0.000967 *14*; α(O)=0.0001561 *22*; α(P)=4.69×10^{-6} *7* E_γ: unweighted average of 343.22 *8* from ^{191}Pt ε decay, 343.51 *6* from (n,n′γ), 343.2 *5* from (p,2nγ), and 343.2 *2* from Coulomb excitation.
351.1914	5/2$^+$	172.2178 *25*	98.4 *18*	178.9761	3/2$^+$	M1+E2	+0.072 *6*	1.301 *18*	B(M1)(W.u.)=0.037 *+6−5*; B(E2)(W.u.)=2.6 *+7−5* α(K)=1.072 *15*; α(L)=0.1761 *25*; α(M)=0.0406 *6* α(N)=0.00997 *14*; α(O)=0.001765 *25*; α(P)=0.0001322 *19* E_γ: weighted average of 172.2181 *25* from ^{191}Pt ε decay, 172.16 *4* from (n,n′γ), 172.0 *5* from (p,2nγ), and 172.21 *5* from Coulomb excitation.
		221.765 *4*	3.46 *25*	129.426	5/2$^+$	(M1)		0.644 *9*	B(M1)(W.u.)=0.00062 *+12−9* α(K)=0.532 *7*; α(L)=0.0864 *12*; α(M)=0.01989 *28* α(N)=0.00489 *7*; α(O)=0.000866 *12*; α(P)=6.54×10^{-5} *9*
		268.772 *5*	47.2 *7*	82.4241	1/2$^+$	E2		0.1324 *19*	B(E2)(W.u.)=25.8 *+44−33* α(K)=0.0794 *11*; α(L)=0.0401 *6*; α(M)=0.01003 *14* α(N)=0.002436 *34*; α(O)=0.000387 *5*; α(P)=8.39×10^{-6} *12* Mult.: Mult=E2(+M1) with δ>3.6 from ^{191}Pt ε decay, restricted by adopted spins.
		351.187 *3*	100.0 *11*	0.0	3/2$^+$	M1+E2	−0.30 *2*	0.1734 *27*	B(M1)(W.u.)=0.0041 *+7−5*; B(E2)(W.u.)=1.19 *+26−20* α(K)=0.1428 *23*; α(L)=0.02363 *35*; α(M)=0.00545 *8* α(N)=0.001340 *19*; α(O)=0.0002364 *35*; α(P)=1.737×10^{-5} *28*
390.941	7/2$^-$	219.674 *5*	100	171.268	11/2$^-$	E2		0.2522 *35*	B(E2)(W.u.)=56 *+5−4* α(K)=0.1335 *19*; α(L)=0.0897 *13*; α(M)=0.02266 *32*

$^{191}_{77}Ir_{114}$-7

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	δ[f]	α[h]	Comments
									α(N)=0.00550 *8*; α(O)=0.000862 *12*; α(P)=1.366×10^{-5} *19* Mult.: Other: E2+(M1) with δ>3 in ^{191}Pt ε decay.
502.80	(9/2)$^+$	159.47[@] *2*	8.9[&] *5*	343.32	7/2$^+$				
		373.41[@] *7*	100.0[&] *26*	129.426	5/2$^+$	E2[&]		0.0507 *7*	B(E2)(W.u.)=107 *7* α(K)=0.0349 *5*; α(L)=0.01196 *17*; α(M)=0.00294 *4* α(N)=0.000716 *10*; α(O)=0.0001163 *16*; α(P)=3.86×10^{-6} *5*
504.28	(7/2$^+$)	152.97 *26*	58 *8*	351.1914	5/2$^+$	(D(+Q))[#]			E$_\gamma$: weighted average of 153.0 *3* from (n,n′γ) and 152.9 *5* from (p,2nγ). I$_\gamma$: weighted average of 53 *11* from (n,n′γ), 58 *9* from (p,2nγ), and 53 *7* from Coulomb excitation – relative to Iγ(325). (ΔJ=1) from DCO in ^{192}Ir(d,3nγ).
		161.2[#] *5*	202 *81*	343.32	7/2$^+$				I$_\gamma$: unweighted average of 282 *29* from (n,n′γ) and 121 *14* from (p,2nγ) – relative to Iγ(325). 161.2γ not seen in Coulomb excitation.
		325.2[#] *5*	100[&] *7*	178.9761	3/2$^+$				
		375.04[j@] *14*	52[j&] *11*	129.426	5/2$^+$				I$_\gamma$: γ multiply placed in ^{192}Os(p,2nγ) and ^{191}Ir(n,n′γ) but likely not in Coulomb excitation; see also comment on 161.2γ Iγ.
538.9118	3/2$^+$	187.7208 *19*	2.74 *5*	351.1914	5/2$^+$	M1+E2	0.50 *16*	0.91 *6*	B(M1)(W.u.)=0.00278 *39*; B(E2)(W.u.)=7.8 *+42−37* α(K)=0.72 *7*; α(L)=0.145 *4*; α(M)=0.0342 *14* α(N)=0.00837 *32*; α(O)=0.001437 *35*; α(P)=8.7×10^{-5} *9*
		196 *1*	0.022 *6*	343.32	7/2$^+$	[E2]		0.370 *8*	α(K)=0.1788 *34*; α(L)=0.144 *4*; α(M)=0.0366 *10* α(N)=0.00886 *23*; α(O)=0.00138 *4*; α(P)=1.802×10^{-5} *34* B(E2)(W.u.)=0.25 *7*
		359.930 *3*	40.8 *4*	178.9761	3/2$^+$	M1		0.1719 *24*	B(M1)(W.u.)=0.0073 *5* α(K)=0.1423 *20*; α(L)=0.02285 *32*; α(M)=0.00525 *7* α(N)=0.001291 *18*; α(O)=0.0002289 *32*; α(P)=1.735×10^{-5} *24* I$_\gamma$: Others: 34 *6* from (n,n′γ), 96 *10* from Coulomb excitation, and <85 relative to Iγ=539=100 (p,2nγ).
		409.462 *11*	55.0 *6*	129.426	5/2$^+$	M1+E2	+0.23 *12*	0.118 *5*	B(M1)(W.u.)=0.00638 *+48−58*; B(E2)(W.u.)=0.8 *+10−6* α(K)=0.097 *5*; α(L)=0.0158 *5*; α(M)=0.00363 *11* α(N)=0.000892 *26*; α(O)=0.000158 *5*; α(P)=1.18×10^{-5} *6* I$_\gamma$: Others: 74 *8* from (n,n′γ), 108 *14* from (p,2nγ), and 91 *9* from Coulomb excitation. Discrepant data – unweighted average of all values: 82 *11*. δ: from 1976Kr21 evaluation, using γγ(θ) of 1972Be01, 1969Ow02, and 1973Il02.

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	δ[f]	α[h]	Comments
538.9118	3/2$^+$	456.485 *7*	24.29 *22*	82.4241	1/2$^+$	M1+E2	−0.32 *4*	0.0856 *18*	B(M1)(W.u.)=0.00194 *14*; B(E2)(W.u.)=0.38 *+10−8* α(K)=0.0707 *15*; α(L)=0.01152 *21*; α(M)=0.00265 *5* α(N)=0.000652 *11*; α(O)=0.0001152 *21*; α(P)=8.56×10^{-6} *19* I_γ: Others: 36 *7* from (n,n′γ), 71 *9* from (p,2nγ), and 22.9 *26* from Coulomb excitation. Discrepant data − unweighted average of all values: 38 *11*.
		538.899 *11*	100.0 *11*	0.0	3/2$^+$	M1+E2	−0.68 *2*	0.0467 *8*	B(M1)(W.u.)=0.00366 *+27−24*; B(E2)(W.u.)=2.29 *+19−17* α(K)=0.0383 *7*; α(L)=0.00649 *10*; α(M)=0.001502 *24* α(N)=0.000369 *6*; α(O)=6.47×10^{-5} *11*; α(P)=4.59×10^{-6} *8* E_γ: weighted average of 538.897 *11* from ^{191}Pt ε decay, 539.05 *11* from (n,n′γ), and 539.1 *5* from (p,2nγ).
556.82	(13/2$^-$)	385.54[@] *8*	100	171.268	11/2$^-$	(D+Q)[#]			(ΔJ=1) from DCO in ^{191}Ir(d,3nγ).
587.99	3/2$^+$,5/2$^+$	244.6[&] *2*	69[&] *7*	343.32	7/2$^+$				I_γ: Other: 2.1 *5* in ^{191}Pt ε decay.
		458.55 *4*	39 *3*	129.426	5/2$^+$				E_γ: weighted average of 458.546 *20* from ^{191}Pt ε decay and 458.79 *13* from (n,n′γ). Other: 458.6 *5* from (p,2nγ). I_γ: weighted average of 38 *3* from ^{191}Pt ε decay, 41 *8* from (n,n′γ), and 39 *4* from Coulomb excitation. Other: 139 *16* from (p,2nγ).
		587.99 *3*	100 *3*	0.0	3/2$^+$	(M1)		0.0471 *7*	B(M1)(W.u.)=0.17 *+15−6* α(K)=0.0391 *5*; α(L)=0.00619 *9*; α(M)=0.001419 *20* α(N)=0.000349 *5*; α(O)=6.19×10^{-5} *9*; α(P)=4.72×10^{-6} *7* E_γ: weighted average of 587.98 *3* from ^{191}Pt ε decay, 588.21 *13* from (n,n′γ), and 587.7 *5* from (p,2nγ). I_γ: weighted average of 100 *3* from ^{191}Pt ε decay, 100 *11* from (n,n′γ), 100 *10* from (p,2nγ), and 100 *11* from Coulomb excitation.
591.32	(15/2$^-$)	420.10 *14*	100	171.268	11/2$^-$	(Q)[#]			E_γ: weighted average of 420.12 *15* from (n,n′γ), 420.1 *5* from (p,2nγ), and 419.9 *5* from (HI,xnγ).
624.080	(1/2$^+$)	85.161 *4*	4.0 *5*	538.9118	3/2$^+$				
		445.109 *7*	3.95 *11*	178.9761	3/2$^+$				I_γ: weighted average of 3.95 *11* from ^{191}Pt ε decay and 4.7 *23* from (n,n′γ).
		494.675 *9*	3.95 *11*	129.426	5/2$^+$	(E2)		0.02438 *34*	α(K)=0.01812 *25*; α(L)=0.00478 *7*; α(M)=0.001154 *16* α(N)=0.000282 *4*; α(O)=4.67×10^{-5} *7*; α(P)=2.046×10^{-6} *29* Mult.: (M1,E2) from ce data. Decay scheme requires E2.
		541.664 *17*	28.5 *4*	82.4241	1/2$^+$	(M1)		0.0583 *8*	α(K)=0.0484 *7*; α(L)=0.00767 *11*; α(M)=0.001762 *25* α(N)=0.000433 *6*; α(O)=7.68×10^{-5} *11*; α(P)=5.85×10^{-6} *8* I_γ: Others: 20 *5* from (n,n′γ), and 51 *5* from Coulomb excitation. Discrepant data − unweighted average of all values: 32 *10*.

$^{191}_{77}Ir_{114}$-9

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	δ[f]	α[h]	Comments
624.080	(1/2$^+$)	624.086 *17*	100.0 *11*	0.0	3/2$^+$	(M1+E2)	0.40 *22*	0.037 *4*	α(K)=0.0304 *32*; α(L)=0.0049 *4*; α(M)=0.00113 *9* α(N)=0.000277 *22*; α(O)=4.9×10^{-5} *4*; α(P)=3.7×10^{-6} *4*
654.11	(9/2$^-$)	263.20 *6*	79[&] *17*	390.941	7/2$^-$				E_γ: weighted average of 263.22 *6* from (n,n′γ) and 263.10 *15* from (p,2nγ). I_γ: Other: >150 in ^{192}Os(p,2nγ).
		482.5[#] *5*	100[&] *13*	171.268	11/2$^-$				I_γ: This transition seems not to be a multiplet in Coulomb excitation; placed also from levels 825.4 and 1135.1 keV in other reactions.
658.9184	(3/2$^-$)	267.978 *10*	100.0 *10*	390.941	7/2$^-$	E2		0.1336 *19*	α(K)=0.0800 *11*; α(L)=0.0405 *6*; α(M)=0.01015 *14* α(N)=0.002465 *35*; α(O)=0.000391 *5*; α(P)=8.45×10^{-6} *12* Mult.: Mult=E2(+M1) with δ>3 from ^{191}Pt ε decay; see comment on 659 keV level J^π for adopted multipolarity.
		479.9417 *7*	6.6 *2*	178.9761	3/2$^+$	[E1]		0.00869 *12*	α(K)=0.00725 *10*; α(L)=0.001111 *16*; α(M)=0.000254 *4* α(N)=6.19×10^{-5} *9*; α(O)=1.079×10^{-5} *15*; α(P)=7.47×10^{-7} *10*
		576.492 *18*	15.70 *20*	82.4241	1/2$^+$	E1		0.00591 *8*	α(K)=0.00494 *7*; α(L)=0.000746 *10*; α(M)=0.0001700 *24* α(N)=4.16×10^{-5} *6*; α(O)=7.26×10^{-6} *10*; α(P)=5.14×10^{-7} *7* Mult.: RUL − see comment on 659 keV level J^π.
		658.76 *6*	2.13 *16*	0.0	3/2$^+$	[E1]		0.00450 *6*	α(K)=0.00377 *5*; α(L)=0.000564 *8*; α(M)=0.0001285 *18* α(N)=3.14×10^{-5} *4*; α(O)=5.51×10^{-6} *8*; α(P)=3.95×10^{-7} *6*
686.41	7/2$^+$	557.08 *13*	100[&] *3*	129.426	5/2$^+$	M1+E2[&]	−1.11 *10*	0.0344 *18*	B(M1)(W.u.)=0.0117 *+20−16*; B(E2)(W.u.)=18.3 *+27−24* α(K)=0.0278 *15*; α(L)=0.00504 *19*; α(M)=0.00118 *4* α(N)=0.000288 *10*; α(O)=5.01×10^{-5} *19*; α(P)=3.31×10^{-6} *19* E_γ: weighted average of 557.10 *13* from (n,n′γ) and 556.8 *5* from (p,2nγ). δ: From particle-γ(θ) in Coulomb excitation (1984Mu19,2000Be07).
		686.40[@] *14*	76[&] *3*	0.0	3/2$^+$	E2[&]		0.01140 *16*	B(E2)(W.u.)=8.9 *+11−9* α(K)=0.00895 *13*; α(L)=0.001879 *26*; α(M)=0.000445 *6* α(N)=0.0001088 *15*; α(O)=1.849×10^{-5} *26*; α(P)=1.019×10^{-6} *14*
714.2		323.3 *5*	100	390.941	7/2$^-$				
747.801	(5/2)$^+$	209.03 *15*	100 *6*	538.9118	3/2$^+$	M1		0.759 *11*	α(K)=0.627 *9*; α(L)=0.1019 *14*; α(M)=0.02346 *33* α(N)=0.00577 *8*; α(O)=0.001022 *14*; α(P)=7.71×10^{-5} *11* E_γ: weighted average of 208.96 *15* from ^{191}Pt ε decay, 209.06 *9* from (n,n′γ), and 209.0 *5* from (p,2nγ).
		396.75 *7*	9.3 *12*	351.1914	5/2$^+$				
		404.1 *3*	9 *4*	343.32	7/2$^+$				
		568.850 *10*	44.1 *12*	178.9761	3/2$^+$	(M1)		0.0513 *7*	α(K)=0.0426 *6*; α(L)=0.00675 *9*; α(M)=0.001549 *22* α(N)=0.000381 *5*; α(O)=6.75×10^{-5} *9*; α(P)=5.14×10^{-6} *7*

$^{191}_{77}Ir_{114}$-10

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	δ[f]	α[h]	Comments
747.801	(5/2)$^+$	618.48 *7*	6.5 *11*	129.426	5/2$^+$				
		747.76 *15*	2.86 *25*	0.0	3/2$^+$				I_γ: weighted average of 2.82 *25* from ^{191}Pt ε decay, 4.8 *16* from (n,n′γ), and 16 *11* from (p,2nγ).
762.588	3/2$^+$	138.515 *20*	21 *14*	624.080	(1/2$^+$)				
		223.672 *3*	100 *7*	538.9118	3/2$^+$	M1		0.629 *9*	α(K)=0.519 *7*; α(L)=0.0844 *12*; α(M)=0.01942 *27* α(N)=0.00477 *7*; α(O)=0.000846 *12*; α(P)=6.39×10^{-5} *9*
		411.398 *9*	8.6 *21*	351.1914	5/2$^+$				I_γ: Other: 70 *30* from ^{191}Ir(n,n′γ).
		583.621 *7*	68.6 *21*	178.9761	3/2$^+$	(M1)		0.0480 *7*	α(K)=0.0399 *6*; α(L)=0.00631 *9*; α(M)=0.001447 *20* α(N)=0.000356 *5*; α(O)=6.31×10^{-5} *9*; α(P)=4.81×10^{-6} *7*
		633.186 *14*	24.9 *9*	129.426	5/2$^+$	E2(+M1)	2.3 *6*	0.0177 *25*	I_γ: Other: 37 *12* from ^{191}Ir(n,n′γ). α(K)=0.0140 *21*; α(L)=0.00277 *27*; α(M)=0.00065 *6* α(N)=0.000160 *15*; α(O)=2.74×10^{-5} *28*; α(P)=1.63×10^{-6} *26*
		680.24 *16*	6.1 *6*	82.4241	1/2$^+$				
		762.74 *6*	12.2 *6*	0.0	3/2$^+$				
799.808	(5/2)$^-$	140.884 *15*	78 *12*	658.9184	(3/2$^-$)	M1		2.301 *32*	α(K)=1.898 *27*; α(L)=0.311 *4*; α(M)=0.0715 *10* α(N)=0.01759 *25*; α(O)=0.00311 *4*; α(P)=0.0002346 *33*
		409.49[@] *18*	100 *17*	390.941	7/2$^-$				
812.10	(9/2$^+$)	308.2[@] *2*	67 *5*	504.28	(7/2$^+$)	(D)[#]			(ΔJ=1) from DCO in (d,3nγ). I_γ: weighted average of 70 *30* from (n,n′γ), 67 *8* and 77 *7* from (p,2nγ), and 55 *7* from Coulomb excitation.
		460.71 *13*	100[&] *9*	351.1914	5/2$^+$				E_γ: weighted average of 460.68 *13* from (n,n′γ) and 461.1 *5* from (p,2nγ).
		468.9[#] *5*	45 *5*	343.32	7/2$^+$				I_γ: weighted average of 35 *7* and 50 *7* from (p,2nγ), and 40 *7* from Coulomb excitation.
816.92		645.65[@] *14*	100	171.268	11/2$^-$				
825.44	(7/2$^+$,9/2$^+$)	482.5[i#] *5*	<240[id]	343.32	7/2$^+$				
		695.98[@] *15*	100[d] *12*	129.426	5/2$^+$				
832.35	(11/2$^+$)	329.4[#] *5*	35.4[&] *18*	502.80	(9/2)$^+$	(D(+Q))[#]			(ΔJ=1) from DCO in (d,3nγ).
		489.12[@] *16*	100[&] *3*	343.32	7/2$^+$	(E2)[&]		0.02507 *35*	B(E2)(W.u.)=71.5 *+48–41* α(K)=0.01859 *26*; α(L)=0.00495 *7*; α(M)=0.001196 *17* α(N)=0.000292 *4*; α(O)=4.84×10^{-5} *7*; α(P)=2.097×10^{-6} *29*

$^{191}_{77}Ir_{114}$-11

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	Comments
878.04	(9/2$^-$,11/2$^+$)	375.04[j@] *14*	100[je] *15*	502.80	(9/2)$^+$		
		534.88[@] *13*	78[e] *13*	343.32	7/2$^+$		
918.85	(11/2$^-$)	264.8[#] *5*	100[d] *10*	654.11	(9/2$^-$)	(Q)[#]	
		527.9[#] *5*	18[d] *5*	390.941	7/2$^-$		
		747.61[@] *16*		171.268	11/2$^-$		
928.11	(7/2$^+$)	389.1[#] *5*		538.9118	3/2$^+$		
		425.5[#] *10*		502.80	(9/2)$^+$		
		798.7[@] *3*		129.426	5/2$^+$		
935.70	(1/2$^+$,3/2,5/2$^+$)	756.5 *4*	13 *3*	178.9761	3/2$^+$		
		806.4 *3*	33 *3*	129.426	5/2$^+$		
		853.5 *4*	9.0 *7*	82.4241	1/2$^+$		
		935.68 *12*	100 *5*	0.0	3/2$^+$		E_γ: weighted average of 935.61 *27* from ^{191}Pt ε decay and 935.70 *13* from (n,n′γ).
945.4	(9/2$^+$)	259.0[#] *5*	94 *8*	686.41	7/2$^+$		I_γ: Weighted average of 103 *16* (p,2nγ) and 91 *9* (d,3nγ) with respect to Iγ(816.0).
		442.2[@]	99 *5*	502.80	(9/2)$^+$		I_γ: weighted average of 100 *5* from (n,n′γ) and 83 *17* from Coulomb excitation.
		603[&]	100[&] *17*	343.32	7/2$^+$		
		815.8[#] *4*	69 *8*	129.426	5/2$^+$		E_γ: weighted average of 815.5 *7* from (n,n′γ) and 816.0 *5* from (p,2nγ). I_γ: weighted average of 74 *21* from (n,n′γ), 67 *9* from (p,2nγ), and 71 *17* from Coulomb excitation.
963.3	(15/2$^-$)	372.1[#k] *5*		591.32	(15/2$^-$)		
		406.5[#] *5*		556.82	(13/2$^-$)		
977.17	(7/2$^-$)	177.35[@] *5*	100[e] *15*	799.808	(5/2)$^-$		
		318.4[#] *10*		658.9184	(3/2$^-$)		
		586.5[j@] *3*	43[je] *16*	390.941	7/2$^-$		I_γ: In ^{191}Ir(n,n′γ), 586.2γ is a multiplet whose intensity was divided.
991.3	(11/2$^+$)	178.7[#] *5*		812.10	(9/2$^+$)		
		487.1[#] *5*		504.28	(7/2$^+$)		
		489.0[#] *5*		502.80	(9/2)$^+$		
1004.23	(13/2$^+$)	172.0[#] *5*		832.35	(11/2$^+$)		
		501.3 *3*		502.80	(9/2)$^+$		E_γ: weighted average of 501.2 *3* from (n,n′γ) and 501.6 *5* from (p,2nγ).
1036.68	(17/2$^-$)	445.40 *12*	100 *10*	591.32	(15/2$^-$)	(D+Q)[#]	(ΔJ=1) from DCO in ^{192}Ir(d,3nγ). E_γ: weighted average of 445.2 *2* from (n,n′γ), 445.50 *15* from (p,2nγ), and 445.6 *5* from (HI,xnγ). I_γ: from ^{192}Os(d,3nγ), where it is a singlet (seen as a doublet in ^{191}Ir(n,n′γ)).

$^{191}_{77}Ir_{114}$-12

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	Comments
1036.68	(17/2⁻)	479.7[#] *5*	<25	556.82	(13/2⁻)		E_γ: weighted average of 480 *1* from (p,2nγ) and 479.6 *5* from (HI,xnγ). I_γ: from ^{192}Os(d,3nγ), where it is multiply placed.
1053.13		366.76[@] *10*	100[e] *16*	686.41	7/2⁺		
		550.1[@] *3*	23[e] *6*	502.80	(9/2)⁺		
		709.4[#] *5*	9 *3*	343.32	7/2⁺		I_γ: from (p,2nγ),(d,3nγ), relative to Iγ(550)=23 *6*. Eγ not reported in ^{191}Ir(n,n′γ).
1127.4	(19/2⁻)	90.6[b] *5*		1036.68	(17/2⁻)		
		536.1[b] *5*	100	591.32	(15/2⁻)	(Q)[#]	
1135.30	(7/2⁻,9/2,11/2⁻)	216.8[#] *5*	100[d] *14*	918.85	(11/2⁻)		
		482.5[i#] *5*	<184[id]	654.11	(9/2⁻)		
		744.00[@] *23*	33[d] *3*	390.941	7/2⁻		
1207.11	(11/2⁺)	375.2[i#] *5*	<180[id]	832.35	(11/2⁺)		
		520.8[@] *3*	100[&] *14*	686.41	7/2⁺		
		704.2[@] *2*	67 *12*	502.80	(9/2)⁺		I_γ: weighted average of 78 *22* from (n,n′γ) and 62 *14* from Coulomb excitation.
1207.15	(9/2⁻)	229.98[@] *18*	100	977.17	(7/2⁻)		E_γ: Other: Eγ=228.6 *5* in (p,2nγ).
1210.7	(9/2,11/2)	332.5[#] *5*	100[d] *20*	878.04	(9/2⁻,11/2⁺)		
		556.8[i#] *5*	<85[id]	654.11	(9/2⁻)		
1243.0		556.8[i#] *5*	100[i]	686.41	7/2⁺		
1253.5	(13/2⁻)	334.6[#] *5*	38 *6*	918.85	(11/2⁻)		I_γ: From ^{192}Os(d,3nγ).
		599.4[#] *5*	100 *10*	654.11	(9/2⁻)		I_γ: From ^{192}Os(d,3nγ).
1278.0		887.1[#] *5*	100	390.941	7/2⁻		
1297.77		793.4[@] *3*	43[e] *14*	504.28	(7/2⁺)		
		946.64[@] *25*	100[e] *14*	351.1914	5/2⁺		
1366.1		809.1[#] *5*	100	556.82	(13/2⁻)		
1398.1	(13/2⁺)	406.8 *3*	100[e] *48*	991.3	(11/2⁺)		E_γ: weighted average of 406.9 *3* from (n,n′γ) and 406.5 *5* from (p,2nγ). I_γ: Undivided intensity of multiplaced Eγ in (p,2nγ),(d,3nγ).
		585.9[#] *7*	9[e] *4*	812.10	(9/2⁺)		E_γ: unweighted average of 586.5 *3* from (n,n′γ) and 585.2 *5* from (p,2nγ).
1401.1	(5/2⁺,7/2⁻)	715[#] *1*		686.41	7/2⁺		
		741.4[#] *5*		658.9184	(3/2⁻)		
		898.9[#] *5*		502.80	(9/2)⁺		
1418.8	(15/2⁺)	414.3[#] *5*	100[&] *18*	1004.23	(13/2⁺)		

$^{191}_{77}Ir_{114}$-13

Adopted Levels, Gammas (continued)

γ(^{191}Ir) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[c]	E_f	J_f^π	Mult.[c]	δ[f]	α[h]	Comments
1418.8	(15/2$^+$)	586.5[j@] *3*	<300[j&]	832.35	(11/2$^+$)				I_γ: In Coulomb excitation, 586γ is a doublet and the intensity could not be divided; 414.3γ was not seen in ^{191}Ir(n,n′γ), where 586.2γ intensity could be divided.
1421.8	(17/2$^-$)	385.6[#] *5*	<1460[d]	1036.68	(17/2$^-$)				
		458.6[#] *5*	<292[d]	963.3	(15/2$^-$)				
		864.4[#] *5*	100[d] *12*	556.82	(13/2$^-$)				
1429.1		775[#] *1*	100	654.11	(9/2$^-$)				
1440.2		403.5[#] *5*	100	1036.68	(17/2$^-$)				
1446.1		792.0[#] *5*	100	654.11	(9/2$^-$)				
1503.5	(19/2)	375.9[b] *5*	100	1127.4	(19/2$^-$)				
1599.5	(21/2$^-$)	95.8[b] *5*		1503.5	(19/2)				
		472.2[b] *5*		1127.4	(19/2$^-$)	M1+E2[g]		0.055 *28*	α(K)=0.045 *25*; α(L)=0.0083 *28*; α(M)=0.0019 *6* α(N)=4.7×10^{-4} *15*; α(O)=8.2×10^{-5} *28*; α(P)=5.3×10^{-6} *31*
		562.9[b] *5*		1036.68	(17/2$^-$)				
1600.7	(17/2$^+$)	596.5[#] *5*	100	1004.23	(13/2$^+$)				
1646.2	(21/2$^+$)	518.8[#] *5*	100	1127.4	(19/2$^-$)	D			Mult.: From (HI,xnγ). (ΔJ=0,1) from DCO in (d,3nγ).
1651.9	(23/2$^-$)	524.5[#] *5*	100	1127.4	(19/2$^-$)	[E2]		0.02114 *30*	α(K)=0.01590 *23*; α(L)=0.00400 *6*; α(M)=0.000963 *14* α(N)=0.0002350 *34*; α(O)=3.92×10^{-5} *6*; α(P)=1.800×10^{-6} *25* B(E2)(W.u.)=0.096 *+18−13*
1680.9	(23/2$^-$)	553.5[#] *5*	100	1127.4	(19/2$^-$)	(Q)[#]			(ΔJ=2) from DCO in ^{191}Ir(d,3nγ).
1792.8	(25/2$^+$)	146.6[b] *5*	100	1646.2	(21/2$^+$)	Q		1.039 *20*	α(K)=0.366 *6*; α(L)=0.507 *11*; α(M)=0.1298 *27* α(N)=0.0314 *7*; α(O)=0.00484 *10*; α(P)=3.63×10^{-5} *6* Mult.: E2 in (HI,xnγ) from α(exp)=1.14 *13*.
2047.2	(25/2$^-$)	395.3 *4*	100	1651.9	(23/2$^-$)	M1+E2	0.6 *4*	0.110 *21*	α(K)=0.090 *19*; α(L)=0.0157 *19*; α(M)=0.0036 *4* α(N)=0.00089 *10*; α(O)=0.000156 *19*; α(P)=1.08×10^{-5} *24* E_γ: Weighted average of 395.1 *5* (p,2nγ) and 395.4 *5* (HI,xnγ). Mult.,δ: From α(exp)=0.11 *2* (HI,xnγ).
2101.3	(31/2$^+$)	308.5[b] *5*	100	1792.8	(25/2$^+$)	M3		3.34 *5*	α(K)=2.259 *34*; α(L)=0.810 *13*; α(M)=0.2063 *33* α(N)=0.0513 *8*; α(O)=0.00873 *14*; α(P)=0.000501 *8* B(M3)(W.u.)=0.0091 *+10−8* Mult.: from α(exp)=4.1 *6* (HI,xnγ).
2112.8	(19/2$^+$)	694[&]	100	1418.8	(15/2$^+$)				
2312.7	(21/2$^+$)	712[&]	100	1600.7	(17/2$^+$)				

$^{191}_{77}Ir_{114}$-14

Adopted Levels, Gammas (continued)

$\gamma(^{191}Ir)$ (continued)

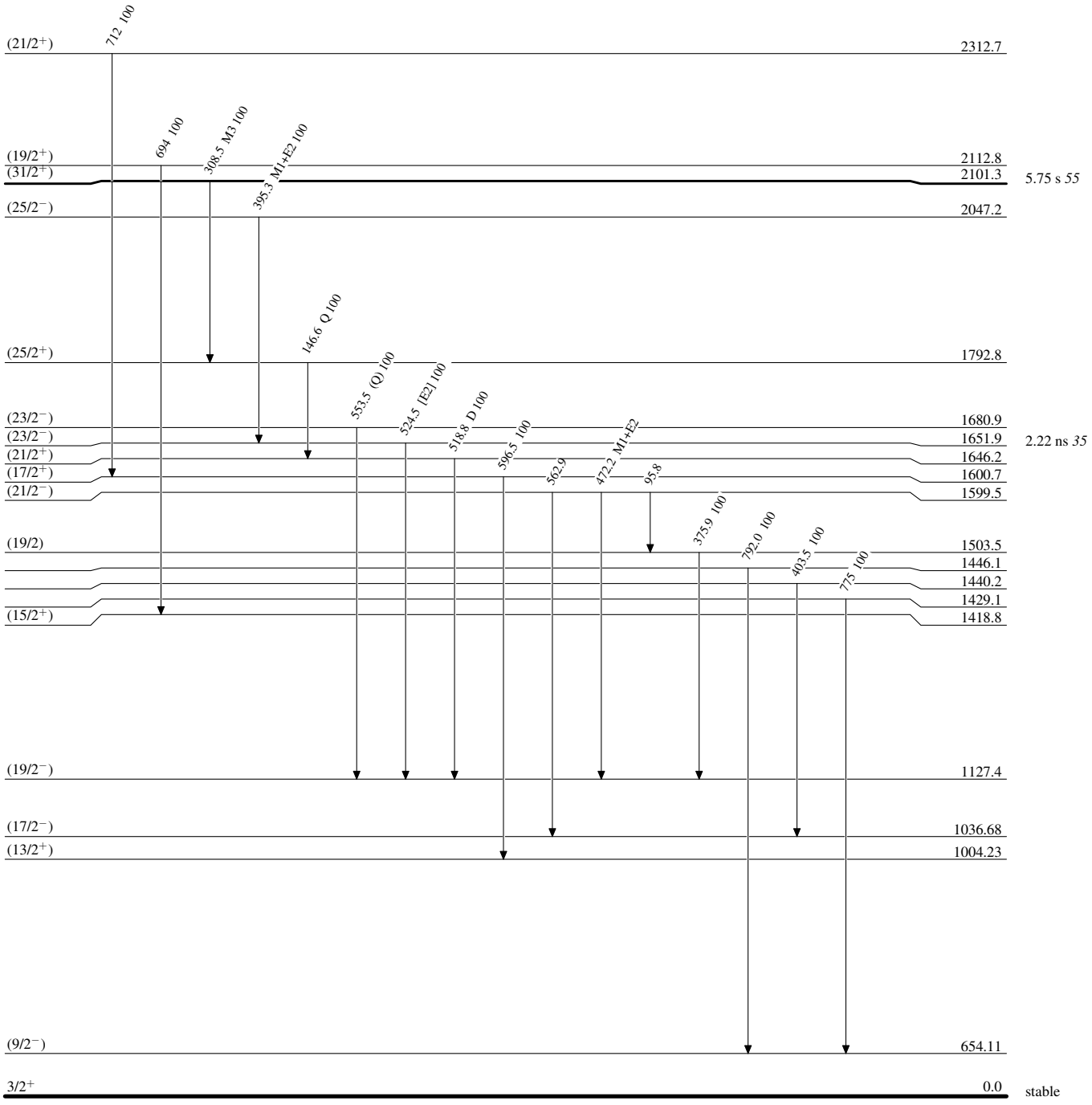
† From ^{191}Pt ε decay, unless where otherwise noted.
‡ Unweighted average from ^{191}Os β^- decay and ^{191}Pt ε decay.
# From ^{192}Os(p,2nγ),(d,3nγ).
@ From ^{191}Ir(n,n$'\gamma$).
& From Coulomb excitation.
a From ^{191}Os β^- decay.
b From (HI,xnγ).
c From ^{191}Pt ε decay, unless otherwise noted or detailed in comments.
d From ^{192}Os(p,2nγ).
e From ^{191}Ir(n,n$'\gamma$).
f From ce data in ^{191}Pt ε decay, unless otherwise noted.
g From (HI,xnγ).
h Additional information 2.
i Multiply placed with undivided intensity.
j Multiply placed with intensity suitably divided.
k Placement of transition in the level scheme is uncertain.

$^{191}_{77}Ir_{114}$-15

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

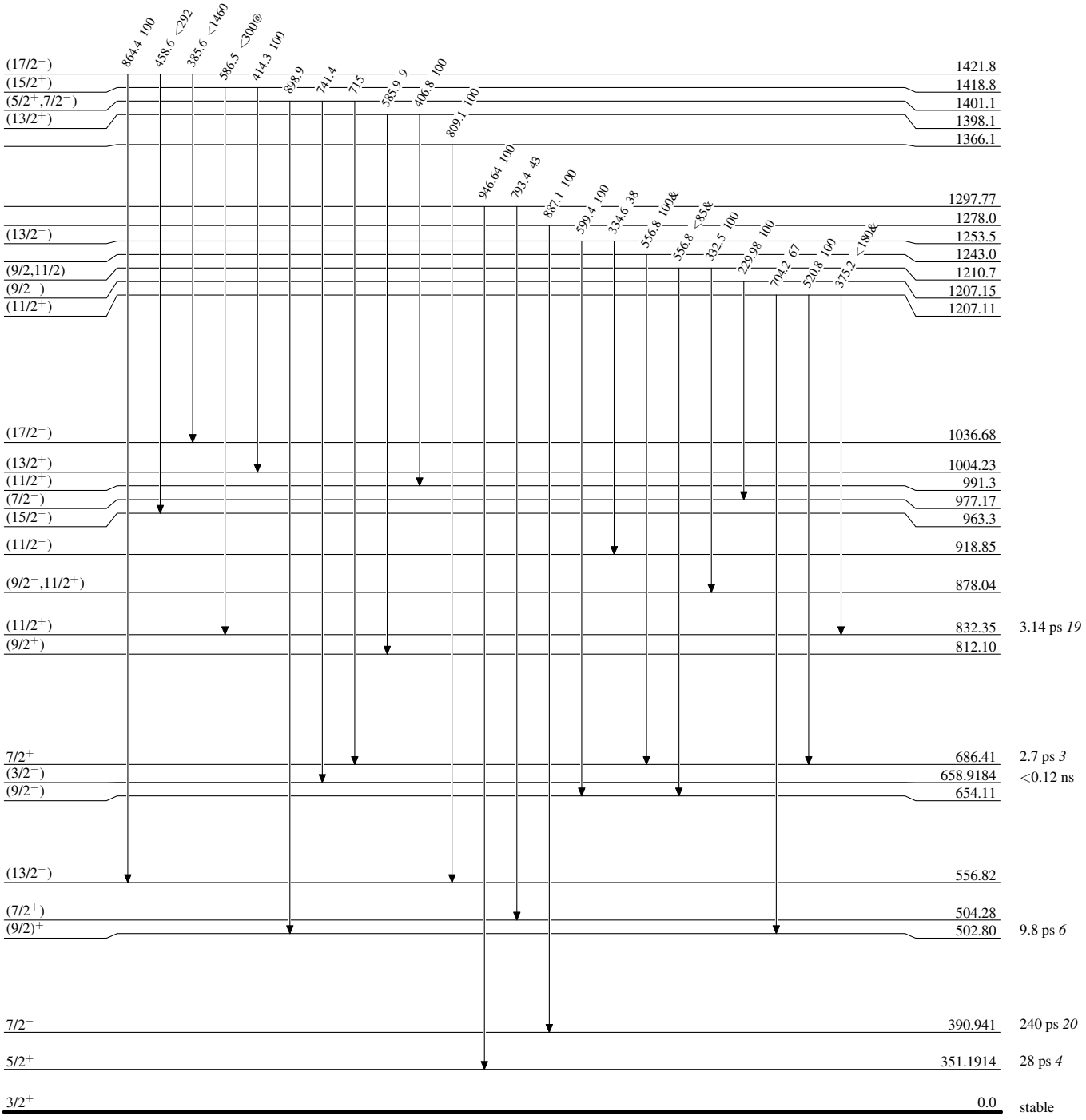


$^{191}_{77}Ir_{114}$

Adopted Levels, Gammas

Level Scheme (continued)

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



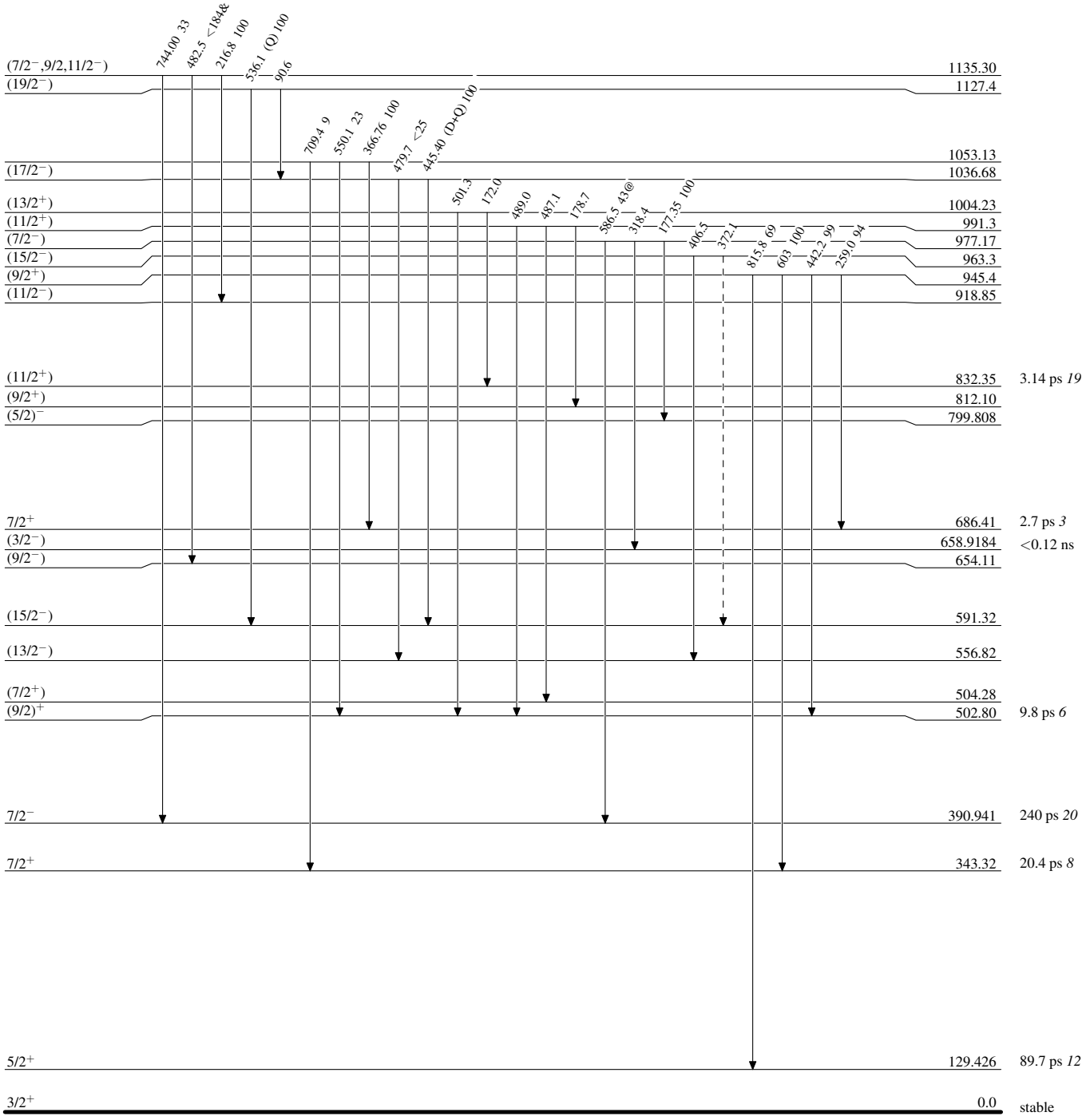
$^{191}_{77}Ir_{114}$

Adopted Levels, Gammas

Level Scheme (continued)

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

Legend
- - - - - - ► γ Decay (Uncertain)

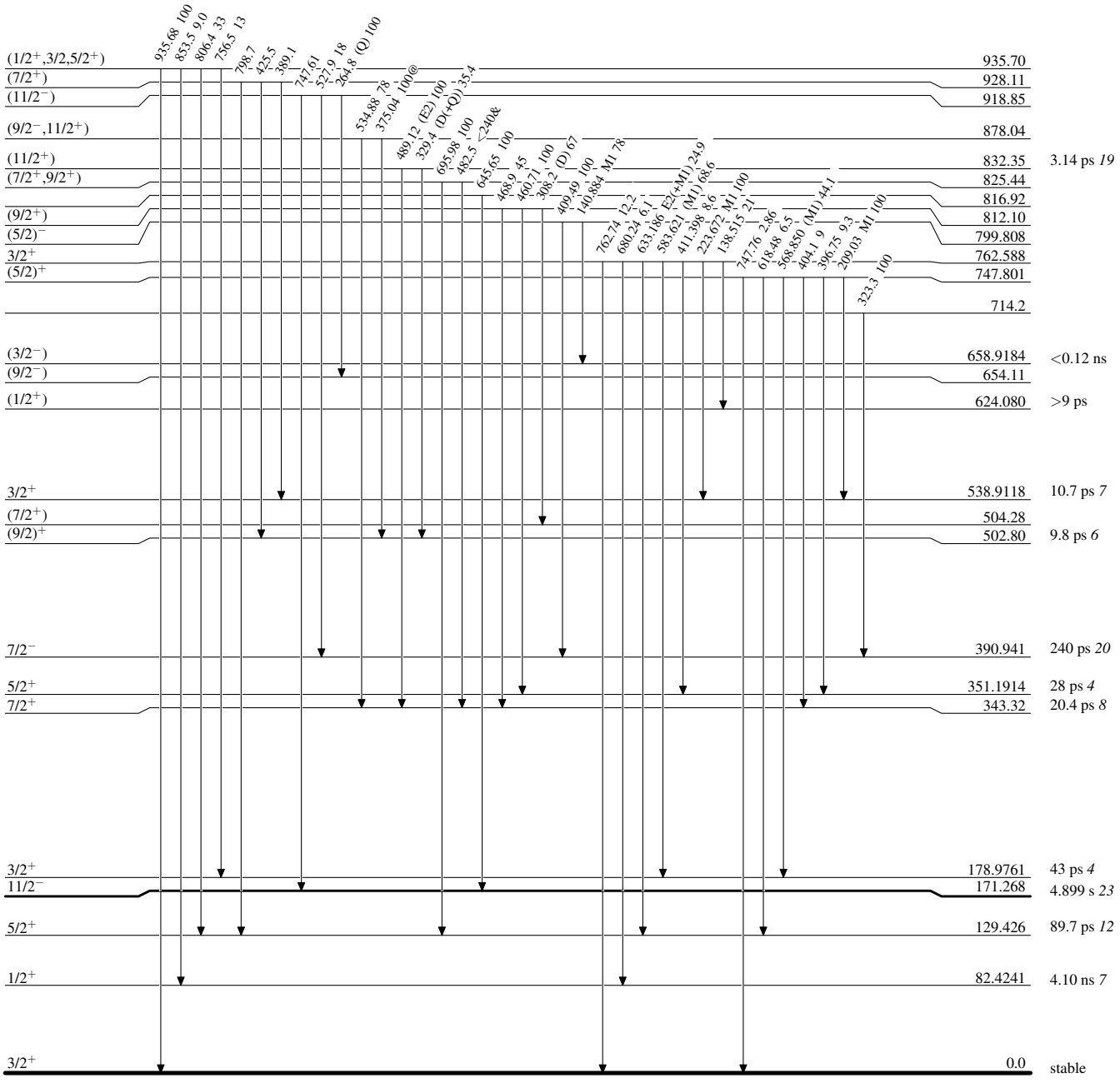


$^{191}_{77}Ir_{114}$

Adopted Levels, Gammas

Level Scheme (continued)

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

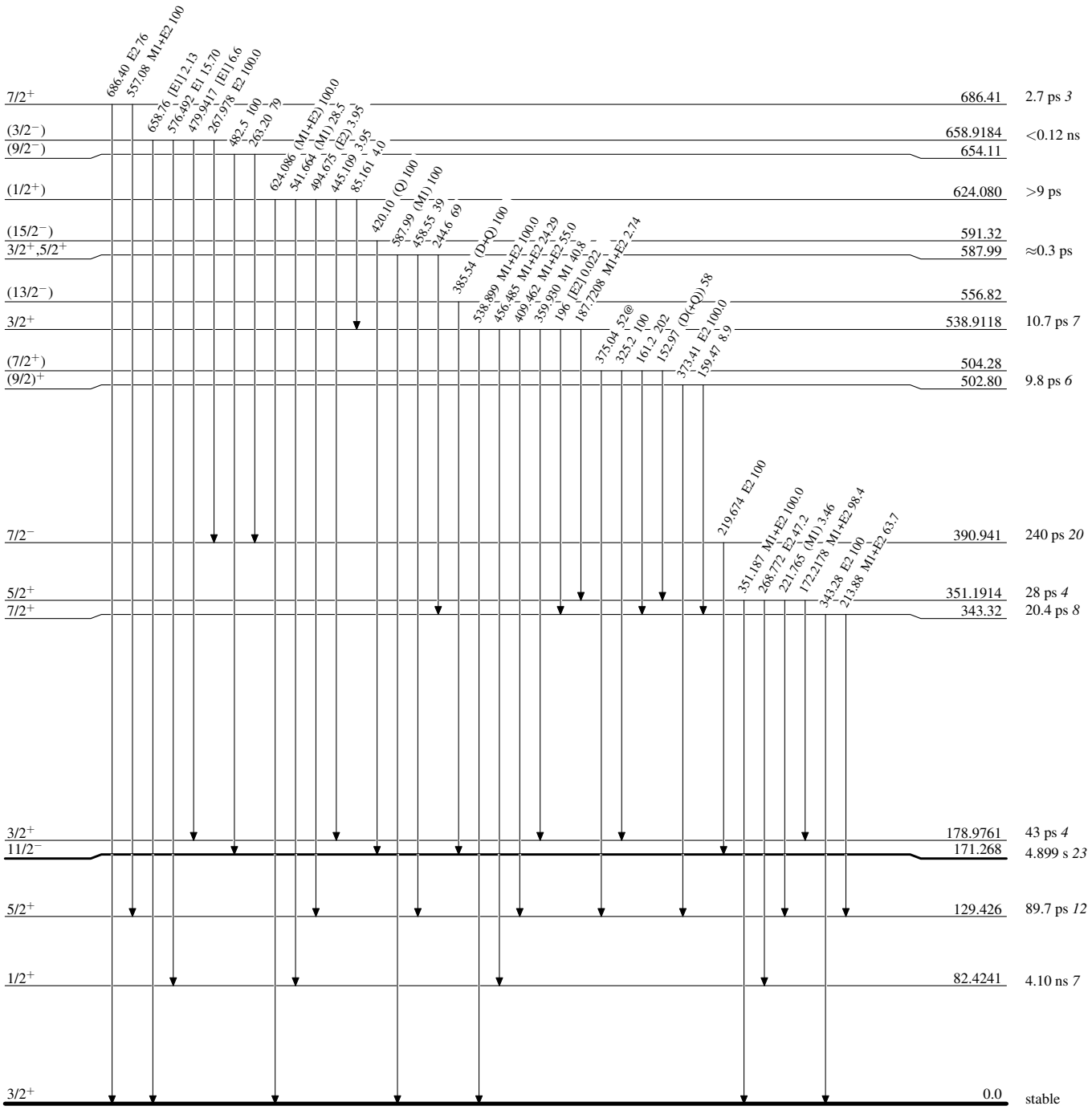


$^{191}_{77}Ir_{114}$

Adopted Levels, Gammas

Level Scheme (continued)

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

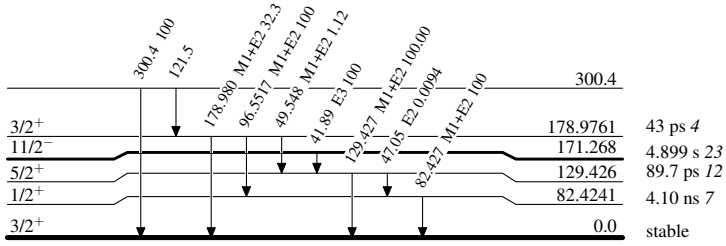


$^{191}_{77}Ir_{114}$

Adopted Levels, Gammas

Level Scheme (continued)

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



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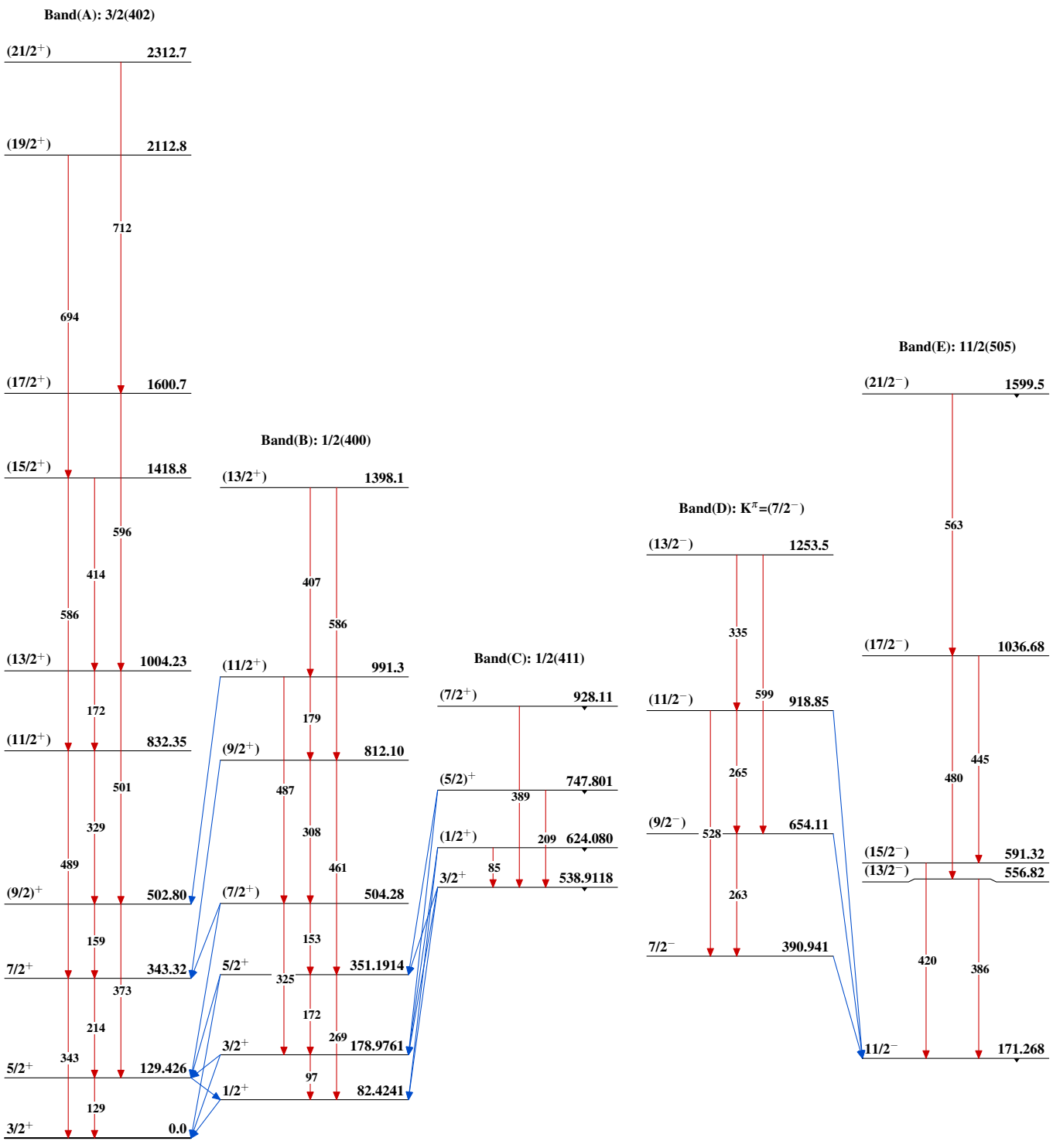
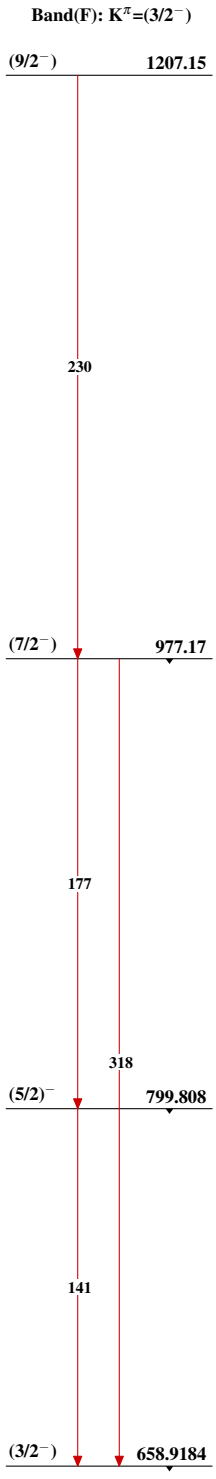
Adopted Levels, Gammas



$^{191}_{77}Ir_{114}$

Adopted Levels, Gammas (continued)



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