^{192}Os(p,2nγ),(d,3nγ) 1979Lu01

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

Target: 99% enriched ^{192}Os. Projectiles: p, E=12, 16, 20, and 24 MeV; d, E=18.9, 23.2, and 27.8 MeV. Measured γ rays, excitation functions, $\gamma\gamma$-coin, $\gamma\gamma$(t), $\gamma(\theta)$. Angular distributions measured with deuterons of E=23.2 MeV only at five equally spaced angles in the range 22.5° to 90°. No isomers with $T_{1/2}\approx$60 ns were found. Detectors: Ge(Li).

^{191}Ir Levels

All levels with spin/parity assignments were adopted, with the exception of the 1091.7 level: assigned 213.8γ was an unresolved doublet.

The level scheme has been constructed on the bases of γ-ray coincidence measurements. Spin assignments are primarily from γ-ray angular distributions and relative excitation functions. Coriolis-mixing calculations between N=4 orbitals have been performed to explain the energies of even-parity states. The agreement between calculated and experimental values is only fair. Odd-parity states are described with the asymmetric rigid-rotor model. The model reproduces reasonably well the level energies, with the exception of the J^π=3/2$^-$ level at 659.0 keV.

E(level)[†]	J^π[#]	$T_{1/2}$	Comments
0.0[b]	3/2$^+$		
82.7[c] *3*	1/2$^+$		
129.34[b] *14*	5/2$^+$		
171.2[d] *5*	11/2$^-$	5.05[&] s *5*	
178.95[c] *24*	3/2$^+$		
300.4 *4*			
343.13[b] *23*	7/2$^+$		
351.1[c] *3*	5/2$^+$		
390.8 *5*	7/2$^-$		
502.5[b] *3*	9/2$^+$		
504.2[c] *3*	7/2$^+$		
539.0 *3*	3/2$^+$		
557.0 *7*	13/2$^-$		
587.8 *4*	(5/2)$^+$		
591.1 *7*	15/2$^-$		
653.8 *5*	9/2$^-$		
659.0 *4*	3/2$^-$		
686.2 *3*	7/2$^+$		
714.1 *7*			
747.7 *4*	(5/2$^+$)		
762.2 *6*	(3/2$^+$)		
799.9 *6*	5/2$^-$		
812.3[c] *4*	9/2$^+$		
825.6 *4*	(7/2$^+$)		
832.0[b] *4*	11/2$^+$		
877.9 *5*	(9/2$^-$)		
918.7 *6*	11/2$^-$		
928.0 *4*	(7/2,5/2)		
945.2 *4*	(9/2$^+$)		
963.4 *8*	15/2$^-$		
977.3 *6*	7/2$^-$		
991.3[c] *4*	11/2$^+$		
1004.1[b] *5*	13/2$^+$		
1014.2 *7*			E(level): Level not reported in other studies. 1979Lu01 proposed based on the multiple

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^{192}Os(p,2nγ),(d,3nγ) 1979Lu01 (continued)

^{191}Ir Levels (continued)

E(level)[†]	Jπ[#]	$T_{1/2}$	Comments
			placement of 360.4γ. Level not adopted by the evaluator.
1036.6 *7*	17/2⁻		
1052.5 *4*	(9/2⁺)[@]		
1084.0 *11*			E(level): Not adopted. 693.2γ observed in coincidence spectra only.
1091.7 *7*	(13/2⁻)		E(level): From multiplaced 213.8γ. The level energy for this γ placement was not adopted.
1127.1 *8*	19/2⁻		
1135.8 *6*	11/2⁻		
1170.4 *7*			E(level): Level energy based on complex 242.4γ, was not adopted.
1205.9 *8*	(9/2⁻)		
1207.2 *4*	(11/2⁺)		
1210.5 *6*	(11/2⁻)		
1243.0 *6*			
1253.3 *6*	13/2⁻		
1277.9 *7*			
1366.1 *8*			
1397.6[c] *5*	(13/2⁺)		
1400.9 *5*	(5/2⁺)		
1418.4[b] *6*	15/2⁺		
1421.8 *7*	(17/2⁻)		
1428.8 *11*			
1440.1 *8*			
1445.8 *7*			
1472.6 *6*			E(level): Level not reported in other studies. 1979Lu01 proposed based on the multiple placement of 420.1γ. Level not adopted by the evaluator.
1600.6[b] *7*	(17/2⁺)		
1645.9 *10*	21/2⁻		
1651.6 *10*			
1680.6 *10*	23/2⁻		
2046.7 *11*			
2101.3[‡] *10*		5.75[a] s *55*	E(level),$T_{1/2}$: From Adopted Levels.

[†] From a least-squares fit to γ-ray energies.
[‡] The energy of this level is not known accurately. The upper limit is 2123 keV, and the lower limit 2047 keV. These limits were obtained on the basis that only assigned γ rays with Eγ>76 keV were observed in the spectra.
[#] As given in Fig. 5. Spin assignments were made primarily from γ-ray angular distributions and relative excitation functions, 1979Lu01 noted.
[@] Value suggested by 1979Lu01, not adopted.
[&] From 129.4γ(t) during the beam-off intervals.
[a] From 395.1γ, 420.1γ, 524.5γ and 536.0γ(t).
[b] Band(A): 3/2[402] band member.
[c] Band(B): 1/2[400] band member.
[d] Band(C): 11/2[505] band member.

γ(^{191}Ir)

$E_γ$[†]	$I_γ$[&]	E_i(level)	$J_i^π$	E_f	$J_f^π$	Comments
(41.9)		171.2	11/2⁻	129.34	5/2⁺	
82.4 *5*	29 *2*	82.7	1/2⁺	0.0	3/2⁺	A_2=+0.14 *8*; A_4=+0.16 *12* Iγ=39 *3* in (d,3nγ).
[x]91.4	21 *2*					Iγ=8 *3* in (d,3nγ).

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^{192}Os(p,2nγ),(d,3nγ) 1979Lu01 (continued)

γ(^{191}Ir) (continued)

E_γ [†]	I_γ [&]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [d]	Comments
96.5 *5*	48 *4*	178.95	3/2$^+$	82.7	1/2$^+$		A_2=+0.03 *7*; A_4=+0.04 *11* Iγ=27 *2* in (d,3nγ).
121.5[‡] *5*		300.4		178.95	3/2$^+$		
129.40 *15*	1000 *55*	129.34	5/2$^+$	0.0	3/2$^+$		A_2=−0.07 *4*; A_4=+0.05 *5* Iγ=1000 *60* in (d,3nγ).
141.0 *5*	53 *10*	799.9	5/2$^-$	659.0	3/2$^-$		Iγ=14 *3* in (d,3nγ).
152.9 *5*	58 *9*	504.2	7/2$^+$	351.1	5/2$^+$	(D(+Q))	A_2=−0.02 *7*; A_4=+0.18 *11* (ΔJ=1) from DCO. Iγ=27 *2* in (d,3nγ).
159.3 *5*	44 *5*	502.5	9/2$^+$	343.13	7/2$^+$		Iγ=32 *2* in (d,3nγ).
161.2 *5*	87 *10*	504.2	7/2$^+$	343.13	7/2$^+$		A_2=−0.11 *7*; A_4=−0.06 *10* Iγ=10 *1* in (d,3nγ).
172.0[f#] *5*	130[f] *13*	351.1	5/2$^+$	178.95	3/2$^+$		A_2=−0.03 *7*; A_4=−0.02 *12* Iγ=68 *5* in (d,3nγ).
172.0[f] *5*	130[f] *13*	1004.1	13/2$^+$	832.0	11/2$^+$		
177.4 *5*	42 *5*	977.3	7/2$^-$	799.9	5/2$^-$		Iγ=42 *3* in (d,3nγ).
178.7[e@] *5*		178.95	3/2$^+$	0.0	3/2$^+$		Iγ=10 *2* in (d,3nγ).
178.7[e] *5*		991.3	11/2$^+$	812.3	9/2$^+$		
209.0 *5*	128 *13*	747.7	(5/2$^+$)	539.0	3/2$^+$		
213.8[g] *5*	163[ga] *10*	343.13	7/2$^+$	129.34	5/2$^+$		A_2=−0.17 *4*; A_4=+0.12 *6* Iγ=143 *10* in (d,3nγ), from Iγ(343γ)=225 *14* in (d,3nγ) and adopted Iγ(213γ)/Iγ(343γ)=0.637 *17*.
213.8[g] *5*	109[gb] *26*	1091.7	(13/2$^-$)	877.9	(9/2$^-$)		Iγ=82 *10* in (d,3nγ), from Iγ(213γ)=225 *14* in (d,3nγ) and Iγ(213γ) from 343 level=143 *10*.
216.8 *5*	74 *10*	1135.8	11/2$^-$	918.7	11/2$^-$		Iγ=25 *3* in (d,3nγ).
219.60 *15*	500 *40*	390.8	7/2$^-$	171.2	11/2$^-$		A_2=+0.03 *3*; A_4=+0.10 *6* Iγ=400 *20* in (d,3nγ).
223.2 *5*		762.2	(3/2$^+$)	539.0	3/2$^+$		Iγ=23 *2* in (d,3nγ).
228.6 *5*	37 *5*	1205.9	(9/2$^-$)	977.3	7/2$^-$		
[x]231.8	28 *4*						
242.4[#] *5*	43 *5*	1170.4		928.0	(7/2,5/2)		A_2=−0.06 *6*; A_4=+0.11 *9* Iγ=150 *8* in (d,3nγ).
259.0 *5*	33 *5*	945.2	(9/2$^+$)	686.2	7/2$^+$		Iγ=29 *3* in (d,3nγ).
263.10 *15*	187 *24*	653.8	9/2$^-$	390.8	7/2$^-$		A_2=+0.16 *7*; A_4=+0.1 *1* Iγ=160 *8* in (d,3nγ).
264.8 *5*	78 *8*	918.7	11/2$^-$	653.8	9/2$^-$	(Q)	A_2=+0.19 *9*; A_4=−0.03 *13* Iγ=87 *5* in (d,3nγ).
268.2[f#] *5*	111[f] *10*	351.1	5/2$^+$	82.7	1/2$^+$		A_2=−0.25 *8*; A_4=−0.07 *13* Iγ=87 *5* in (d,3nγ).
268.2[f#] *5*	111[f] *10*	659.0	3/2$^-$	390.8	7/2$^-$		Iγ=87 *5* in (d,3nγ).
300.4 *5*	77 *6*	300.4		0.0	3/2$^+$		A_2=−0.03 *10*; A_4=+0.30 *17* Iγ=30 *5* in (d,3nγ).
308.2 *5*	36 *4*	812.3	9/2$^+$	504.2	7/2$^+$	(D)	A_2=−0.17 *10*; A_4=+0.04 *17* (ΔJ=1) from DCO. Iγ=42 *4* in (d,3nγ).
[x]315.0	22 *3*						Iγ=22 *3* in (d,3nγ).
318.4[‡] *10*		977.3	7/2$^-$	659.0	3/2$^-$		
323.3 *5*		714.1		390.8	7/2$^-$		Iγ=28 *4* in (d,3nγ).
325.2 *5*	72 *6*	504.2	7/2$^+$	178.95	3/2$^+$		A_2=−0.07 *18*; A_4=+0.37 *24* Iγ=60 *6* in (d,3nγ).
329.4 *5*	41 *5*	832.0	11/2$^+$	502.5	9/2$^+$	(D(+Q))	A_2=−0.22 *8*; A_4=+0.16 *12* (ΔJ=1) from DCO. Iγ=94 *7* in (d,3nγ).

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^{192}Os(p,2nγ),(d,3nγ) 1979Lu01 (continued)

γ(^{191}Ir) (continued)

E_γ[†]	I_γ[&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[d]	Comments
332.5 *5*	20 *4*	1210.5	(11/2$^-$)	877.9	(9/2$^-$)		A_2=+0.38 *23*; A_4=+0.33 *27* Iγ=19 *4* in (d,3nγ).
334.6 *5*	18 *4*	1253.3	13/2$^-$	918.7	11/2$^-$		Iγ=48 *7* in (d,3nγ).
343.2[f#] *5*	256[f] *15*	343.13	7/2$^+$	0.0	3/2$^+$		Iγ=225 *14* in (d,3nγ).
343.2[f#] *5*	256[f] *15*	686.2	7/2$^+$	343.13	7/2$^+$		A_2=+0.12 *4*; A_4=+0.09 *7* E_γ: The placement not adopted for this multiply placed γ. Iγ=225 *14* in (d,3nγ).
351.1 *5*	59 *6*	351.1	5/2$^+$	0.0	3/2$^+$		A_2=−0.16 *8*; A_4=+0.08 *12* Iγ=70 *7* in (d,3nγ).
360.4[f#] *5*	44[f] *6*	539.0	3/2$^+$	178.95	3/2$^+$		Iγ=27 *3* in (d,3nγ).
360.4[f] *5*	44[f] *6*	1014.2		653.8	9/2$^-$		
366.6 *5*		1052.5	(9/2$^+$)	686.2	7/2$^+$		
372.1[h] *5*		963.4	15/2$^-$	591.1	15/2$^-$		
373.5[#] *5*	418 *29*	502.5	9/2$^+$	129.34	5/2$^+$		A_2=+0.04 *6*; A_4=+0.02 *9* Iγ=610 *60* in (d,3nγ).
375.2[f#] *5*	309[f] *25*	504.2	7/2$^+$	129.34	5/2$^+$		Iγ=370 *40* in (d,3nγ).
375.2[f#] *5*	309[f] *25*	877.9	(9/2$^-$)	502.5	9/2$^+$		
375.2[f] *5*	309[f] *25*	1207.2	(11/2$^+$)	832.0	11/2$^+$		
385.6[f#] *5*	350[f] *30*	557.0	13/2$^-$	171.2	11/2$^-$	(D+Q)	A_2=+0.09 *4*; A_4=+0.11 *6* (ΔJ=1) from DCO. Iγ=600 *60* in (d,3nγ).
385.6[f#] *5*	350[f] *30*	1421.8	(17/2$^-$)	1036.6	17/2$^-$		
389.1 *5*	12 *5*	928.0	(7/2,5/2)	539.0	3/2$^+$		Iγ=37 *8* in (d,3nγ).
395.1 *5*		2046.7		1651.6			Iγ=22 *4* in (d,3nγ).
403.5 *5*	25 *4*	1440.1		1036.6	17/2$^-$		
406.5[f#] *5*	120[f] *20*	963.4	15/2$^-$	557.0	13/2$^-$		
406.5[f] *5*	120[f] *20*	1397.6	(13/2$^+$)	991.3	11/2$^+$		Iγ=267 *27* in (d,3nγ).
409[f#] *1*	64[f] *8*	539.0	3/2$^+$	129.34	5/2$^+$		A_2=+0.24 *8*; A_4=+0.00 *12* Iγ=73 *8* in (d,3nγ).
409[f#] *1*	64[f] *8*	799.9	5/2$^-$	390.8	7/2$^-$		Iγ=73 *8* in (d,3nγ).
414.3 *5*		1418.4	15/2$^+$	1004.1	13/2$^+$		Iγ=78 *8* in (d,3nγ).
420.1[f#] *5*	640[f] *60*	591.1	15/2$^-$	171.2	11/2$^-$	(Q)	A_2=+0.20 *4*; A_4=+0.06 *6* Iγ=1400 *140* in (d,3nγ).
420.1[f#] *5*	640[f] *60*	1472.6		1052.5	(9/2$^+$)		
425.5[‡] *10*		928.0	(7/2,5/2)	502.5	9/2$^+$		
[x]431.2	31 *5*						A_2=+0.17 *15*; A_4=+0.31 *21* Iγ=26 *13* in (d,3nγ).
442[‡] *1*		945.2	(9/2$^+$)	502.5	9/2$^+$		
445.50 *15*	110 *10*	1036.6	17/2$^-$	591.1	15/2$^-$	(D+Q)	A_2=+0.14 *5*; A_4=+0.09 *7* (ΔJ=1) from DCO. Iγ=290 *30* in (d,3nγ).
456.2 *5*	42 *5*	539.0	3/2$^+$	82.7	1/2$^+$		Iγ=32 *4* in (d,3nγ).
458.6[f#] *5*	68[f] *8*	587.8	(5/2)$^+$	129.34	5/2$^+$		A_2=−0.35 *22*; A_4=+0.10 *30* Iγ=86 *9* in (d,3nγ).
458.6[f#] *5*	68[f] *8*	1421.8	(17/2$^-$)	963.4	15/2$^-$		Iγ=86 *9* in (d,3nγ).
461.1 *5*	54 *6*	812.3	9/2$^+$	351.1	5/2$^+$		Iγ=44 *5* in (d,3nγ).
468.9 *5*	19 *4*	812.3	9/2$^+$	343.13	7/2$^+$		Iγ=27 *4* in (d,3nγ).
480[e@] *1*		659.0	3/2$^-$	178.95	3/2$^+$		A_2=−0.04 *12*; A_4=+0.30 *17*
480[e] *1*		1036.6	17/2$^-$	557.0	13/2$^-$		Iγ=68 *7* in (d,3nγ).

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^{192}Os(p,2nγ),(d,3nγ) 1979Lu01 (continued)

γ(^{191}Ir) (continued)

E_γ [†]	I_γ [&]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[d]	Comments
482.5[f#] *5*	123[f] *13*	653.8	9/2⁻	171.2	11/2⁻		Iγ=410 *40* in (d,3nγ).
482.5[f] *5*	123[f] *13*	825.6	(7/2⁺)	343.13	7/2⁺		Iγ=410 *40* in (d,3nγ).
482.5[f] *5*	123[f] *13*	1135.8	11/2⁻	653.8	9/2⁻		Iγ=410 *40* in (d,3nγ).
487.1 *5*	60 *8*	991.3	11/2⁺	504.2	7/2⁺		
489.0[f#] *5*	300[f] *30*	832.0	11/2⁺	343.13	7/2⁺		A_2=+0.10 *4*; A_4=+0.14 *6* Iγ=580 *50* in (d,3nγ).
489.0[f] *5*	300[f] *30*	991.3	11/2⁺	502.5	9/2⁺		Iγ=580 *50* in (d,3nγ).
501.6[#] *5*	160 *16*	1004.1	13/2⁺	502.5	9/2⁺		A_2=+0.17 *9*; A_4=+0.14 *16* Iγ=189 *19* in (d,3nγ).
518.8 *5*	61 *7*	1645.9	21/2⁻	1127.1	19/2⁻		A_2=−0.21 *4*; A_4=+0.0 *1* (ΔJ=0,1) from DCO. Iγ=286 *26* in (d,3nγ).
521.0[‡] *5*		1207.2	(11/2⁺)	686.2	7/2⁺		
524.5 *5*		1651.6		1127.1	19/2⁻		Iγ=31 *4* in (d,3nγ).
527.9 *5*	14 *4*	918.7	11/2⁻	390.8	7/2⁻		
535[‡] *1*		877.9	(9/2⁻)	343.13	7/2⁺		
536.0 *5*	96 *6*	1127.1	19/2⁻	591.1	15/2⁻	(Q)	A_2=+0.20 *5*; A_4=+0.06 *8* Iγ=690 *70* in (d,3nγ).
539.1 *5*	59 *8*	539.0	3/2⁺	0.0	3/2⁺		A_2=−0.09 *13*; A_4=+0.16 *18* Iγ=61 *6* in (d,3nγ).
549.8 *5*	47 *5*	1052.5	(9/2⁺)	502.5	9/2⁺		A_2=+0.0 *13*; A_4=+0.05 *18* Iγ=39 *5* in (d,3nγ).
553.5 *5*	48 *5*	1680.6	23/2⁻	1127.1	19/2⁻	(Q)	A_2=+0.18 *10*; A_4=−0.14 *14* (ΔJ=2) from DCO.
556.8[f#] *5*	84[f] *8*	686.2	7/2⁺	129.34	5/2⁺		Iγ=22 *8* in (d,3nγ) from Iγ(686γ)=17 *6* in (d,3nγ) and Iγ(557γ)/Iγ(686γ)=1.32 *7* in Coulomb excitation.
556.8[f] *5*	<17[fc]	1210.5	(11/2⁻)	653.8	9/2⁻		Iγ=64 *13* in (d,3nγ), includes intensity from 1243 level, calculated from Iγ=86 *10* in (d,3nγ) and Iγ(556γ)=22 *8* from 686 level, see comment on 556γ from 686 level.
556.8[f] *5*	<17[fc]	1243.0		686.2	7/2⁺		Iγ=64 *13* in (d,3nγ), includes intensity from 1210 level, see comment on 556γ from 1210 level.
568.6 *5*	42 *6*	747.7	(5/2⁺)	178.95	3/2⁺		Iγ=40 *5* in (d,3nγ).
575.8 *5*	26 *4*	659.0	3/2⁻	82.7	1/2⁺		A_2=+0.14 *10*; A_4=+0.18 *15* Iγ=65 *7* in (d,3nγ).
585.2 *5*	57 *6*	1397.6	(13/2⁺)	812.3	9/2⁺		A_2=+0.20 *8*; A_4= +0.10 *12* Iγ=108 *11* in (d,3nγ).
586.5[e‡] *10*		977.3	7/2⁻	390.8	7/2⁻		
586.5[e‡] *10*		1418.4	15/2⁺	832.0	11/2⁺		
587.7 *5*	49 *5*	587.8	(5/2)⁺	0.0	3/2⁺		A_2=−0.38 *16*; A_4=+0.10 *22* Iγ=51 *6* in (d,3nγ).
596.5 *5*		1600.6	(17/2⁺)	1004.1	13/2⁺		Iγ=136 *14* in (d,3nγ).
599.4 *5*		1253.3	13/2⁻	653.8	9/2⁻		Iγ=127 *13* in (d,3nγ).
686.2 *5*	67 *7*	686.2	7/2⁺	0.0	3/2⁺		Iγ=17 *6* in (d,3nγ).
693.2[‡] *10*		1084.0		390.8	7/2⁻		
696.2 *5*	57 *7*	825.6	(7/2⁺)	129.34	5/2⁺		Iγ=49 *7* in (d,3nγ).
704.8 *5*	10 *5*	1207.2	(11/2⁺)	502.5	9/2⁺		Iγ=23 *4* in (d,3nγ).
709.4 *5*	18 *5*	1052.5	(9/2⁺)	343.13	7/2⁺		
715[‡] *1*		1400.9	(5/2⁺)	686.2	7/2⁺		
741.4 *5*	15 *3*	1400.9	(5/2⁺)	659.0	3/2⁻		
744.7 *5*	30 *3*	1135.8	11/2⁻	390.8	7/2⁻		

Continued on next page (footnotes at end of table)

^{192}Os(p,2nγ),(d,3nγ) 1979Lu01 (continued)

γ(^{191}Ir) (continued)

E_γ [†]	I_γ [&]	E_i(level)	J_i^π	E_f	J_f^π	Comments
747.6 *5*	20 *14*	747.7	(5/2$^+$)	0.0	3/2$^+$	Iγ=20 *3* in (d,3nγ).
775[‡] *1*		1428.8		653.8	9/2$^-$	
792.0 *5*	32 *5*	1445.8		653.8	9/2$^-$	Iγ=22 *4* in (d,3nγ).
798.5[‡] *5*		928.0	(7/2,5/2)	129.34	5/2$^+$	
809.1 *5*	12 *4*	1366.1		557.0	13/2$^-$	Iγ=34 *4* in (d,3nγ).
816.0 *5*	22 *3*	945.2	(9/2$^+$)	129.34	5/2$^+$	Iγ=28 *3* in (d,3nγ).
864.4 *5*	26 *3*	1421.8	(17/2$^-$)	557.0	13/2$^-$	
[x]870.9						Iγ=78 *8* in (d,3nγ).
887.1 *5*	23 *4*	1277.9		390.8	7/2$^-$	
898.9 *5*		1400.9	(5/2$^+$)	502.5	9/2$^+$	Iγ=17 *3* in (d,3nγ).

[†] From 1979Lu01. Uncertainties are assigned by evaluator based on the guidelines noted in 1979Lu01: 0.10 to 0.15 keV for strong and well-resolved γ′s and 0.5 keV for weak and poorly resolved γ′s. For rounded Eγ values in keV, 1 keV uncertainty is assigned.

[‡] Observed in coincidence spectra only.

[#] Complex line.

[@] Complex line observed in (d,3nγ) only.

[&] Relative photon intensities measured in the (p,2nγ) reaction at 16 MeV; when measured, intensities in (d,3nγ) reaction at 23.2 MeV are given in comments. Both data sets are normalized to Iγ(129γ)=1000.

[a] From Iγ(343γ)=256 *15* and adopted Iγ(213γ)/Iγ(343γ)=0.637 *17*.

[b] From Iγ(213γ)=272 *24* and Iγ(213γ) from 343 level=163 *10*.

[c] From Iγ(556γ)/Iγ(686γ)=1.32 *7* for 686 level in Coulomb excitation, and Iγ(686γ)=67 *7*.

[d] Multipole assignments and deduced ΔJ must be taken with caution due to the low angular momentum transfer; hence they are all in parentheses.

[e] Multiply placed.

[f] Multiply placed with undivided intensity.

[g] Multiply placed with intensity suitably divided.

[h] Placement of transition in the level scheme is uncertain.

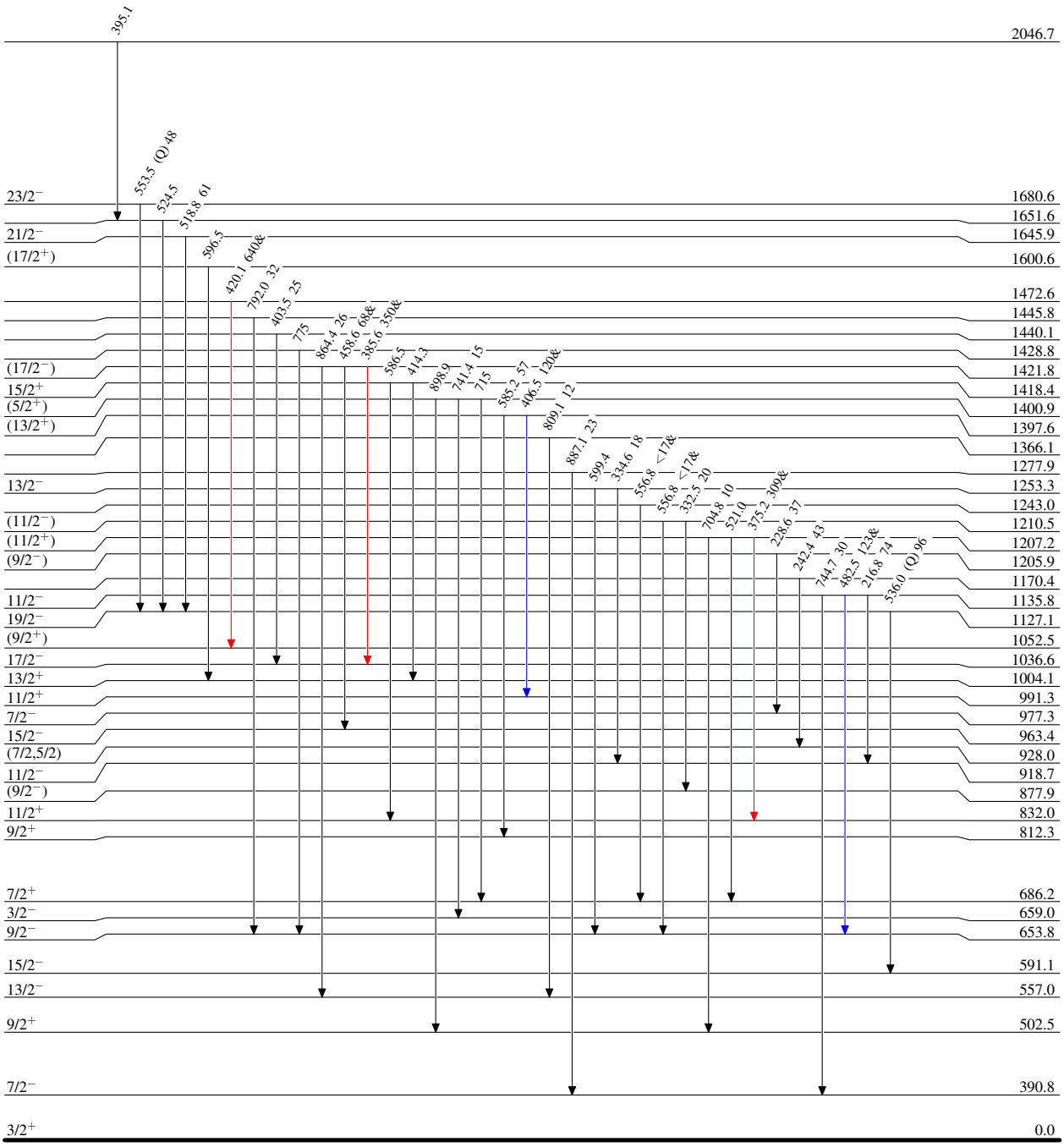
[x] γ ray not placed in level scheme.

^{192}Os(p,2nγ),(d,3nγ) **1979Lu01**

Level Scheme

Intensities: relative Iγ for (p,2nγ) E(p)=16 MeV
& Multiply placed: undivided intensity given

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



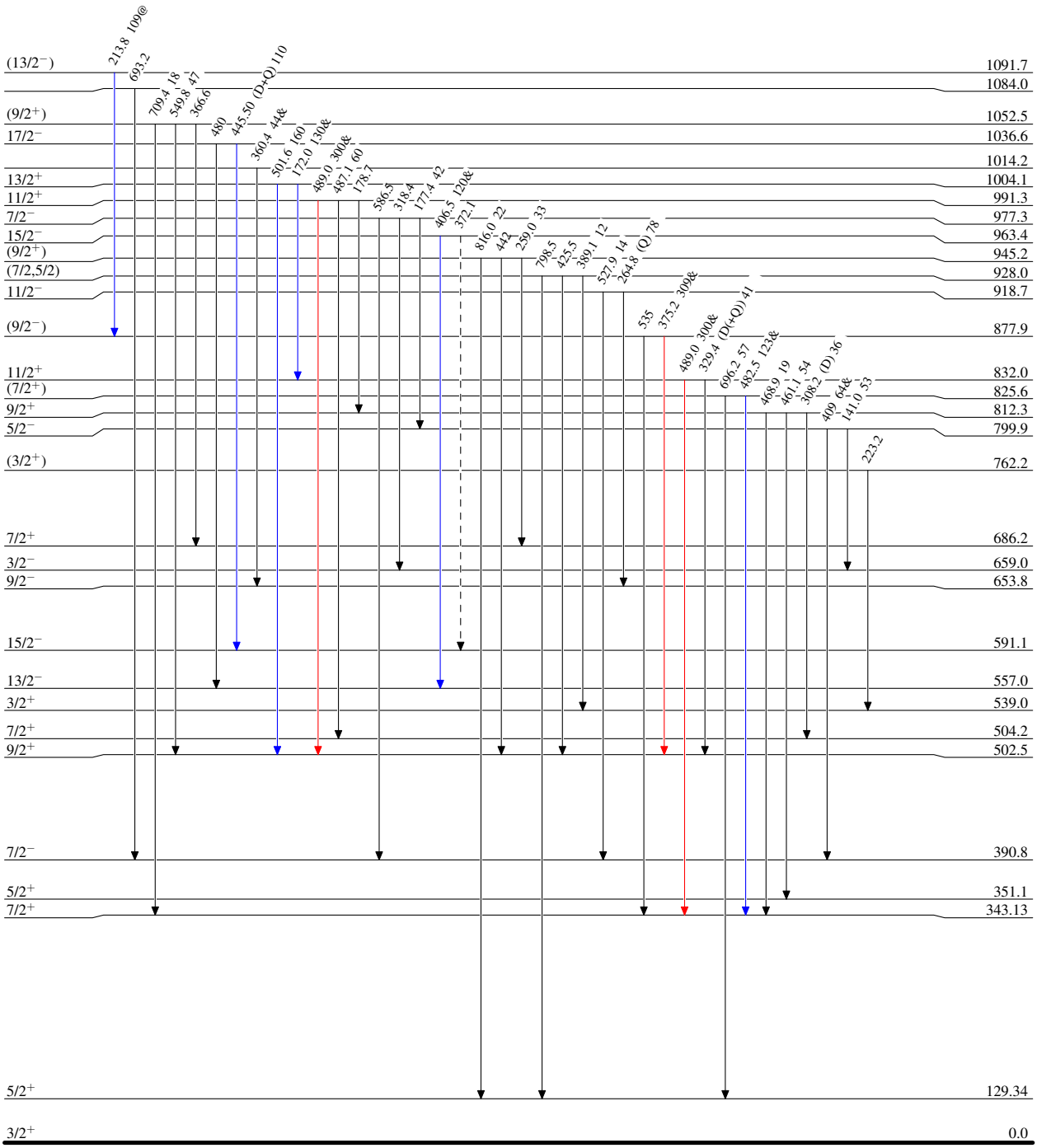
$^{191}_{77}Ir_{114}$

^{192}Os(p,2nγ),(d,3nγ) 1979Lu01

Level Scheme (continued)

Intensities: relative Iγ for (p,2nγ) E(p)=16 MeV
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



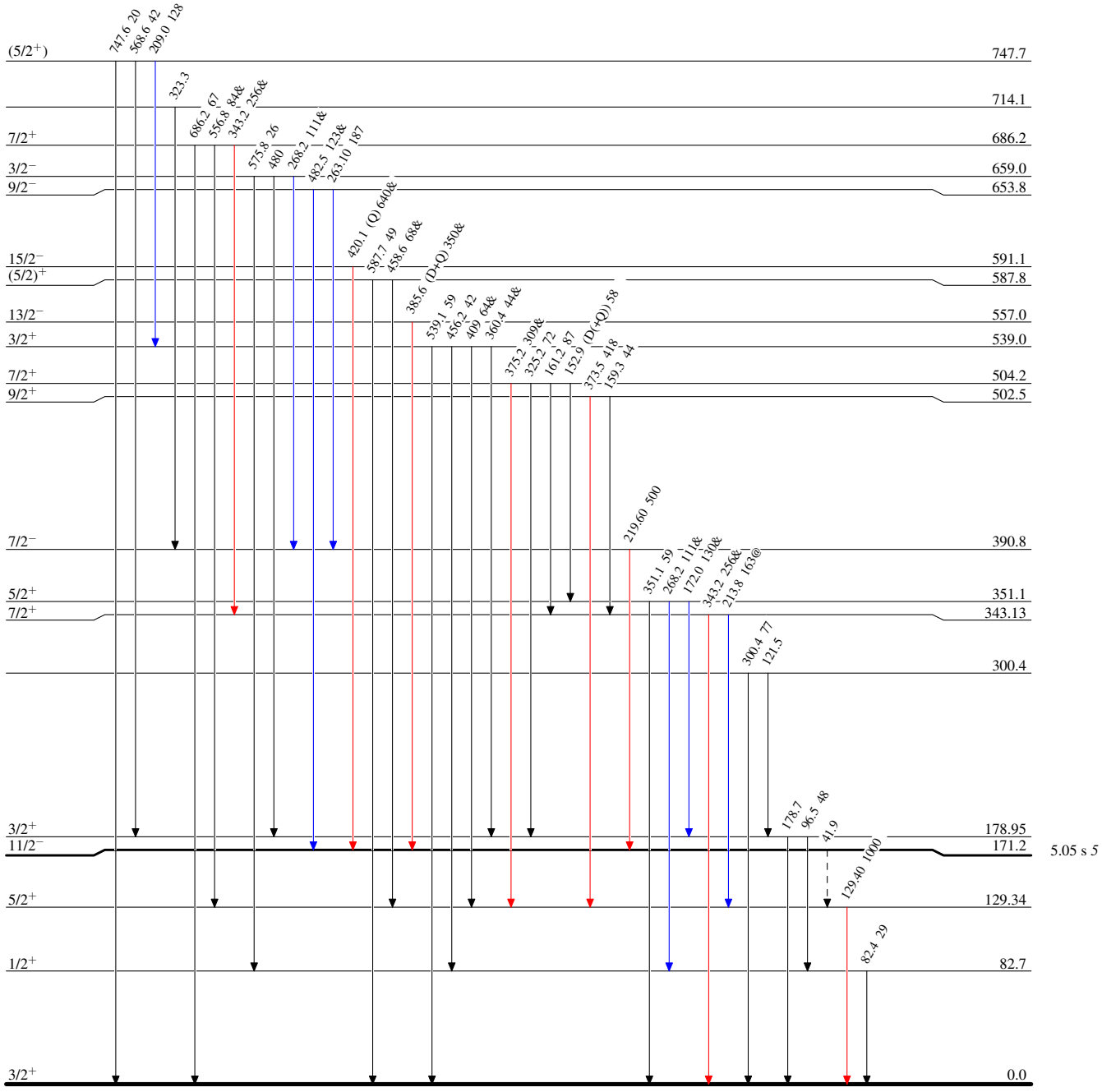
$^{191}_{77}Ir_{114}$

^{192}Os(p,2nγ),(d,3nγ) 1979Lu01

Level Scheme (continued)

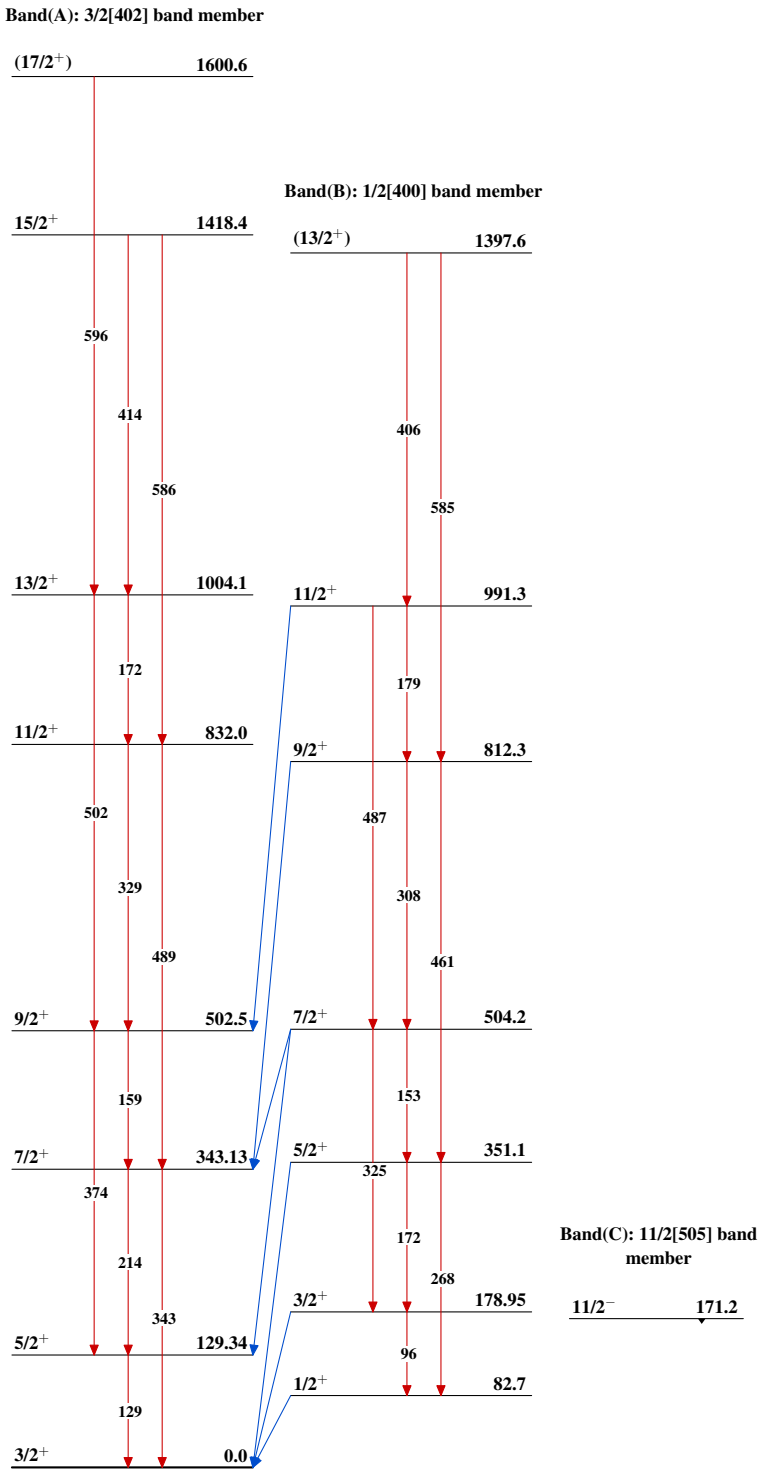
Intensities: relative Iγ for (p,2nγ) E(p)=16 MeV
& Multiply placed: undivided intensity given
@ Multiply placed: intensity suitably divided

Legend
$I_\gamma < 2\% \times I_\gamma^{max}$
$I_\gamma < 10\% \times I_\gamma^{max}$
$I_\gamma > 10\% \times I_\gamma^{max}$
γ Decay (Uncertain)



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

^{192}Os(p,2nγ),(d,3nγ) 1979Lu01



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