W(α,xnγ) 1975So01,1996Bb29

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	S. -c. Wu	NDS 106, 619 (2005)	1-Nov-2005

1975SO01: ^{183}W(α,2nγ), E=23, 27 MeV. Measured Eγ, Iγ, σ(E,Eγ,θ), $\gamma\gamma$-coin, $T_{1/2}$. Level energies, J^π, B(E2).
1996Bb29,1989BaZR: ^{186}W(α,5nγ), E=55 MeV. Measured Eγ, Iγ, γ(t), $\gamma\gamma$-coin, DCO, $T_{1/2}$. Level energies, J^π, band structure.

^{185}Os Levels

I≥11/2 members of the 9/2[624] and 11/2[615] rotational bands are significantly mixed by the Coriolis interaction (1975So01).

E(level)†	J^π‡	$T_{1/2}$#
0.0&	1/2$^-$	
37.39@ 20	3/2$^-$	
97.42& 22	5/2$^-$	
102.1b 4	7/2$^-$	≈3 μs
127.9c 3	3/2$^-$	
198.07@ 25	7/2$^-$	
222.39d 22	5/2$^-$	
260.3a 4	9/2$^-$	
275.4f 6	11/2$^+$	≈0.7 μs
317.8& 3	9/2$^-$	
351.7c 3	7/2$^-$	
402.4g 5	9/2$^+$	
414.2e 6	13/2$^+$	
448.6b 4	11/2$^-$	
476.5@ 4	11/2$^-$	
590.4f 6	15/2$^+$	
591.2h 6	11/2$^+$	
660.3& 4	13/2$^-$	
666.2a 4	13/2$^-$	
706.9c 4	11/2$^-$	
776.4e 6	17/2$^+$	
782.0g 6	13/2$^+$	
865.2@ 4	15/2$^-$	
907.6b 4	15/2$^-$	
1024.6f 6	19/2$^+$	
1025.5h 6	15/2$^+$	
1117.2& 5	17/2$^-$	
1173.6a 4	17/2$^-$	
1180.2c 7	15/2$^-$	
1222.4e 6	21/2$^+$	
1321.7g 6	(17/2$^+$)	
1354.2@ 5	19/2$^-$	
1462.0b 5	19/2$^-$	
1519.1 7	19/2$^+$	
1552.1h 7	19/2$^+$	
1565.7f 6	23/2$^+$	
1590.5 7	19/2$^+$	

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W(α,xnγ) 1975So01,1996Bb29 (continued)

^{185}Os Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	T$_{1/2}$[#]	Comments
1671.3[&] 6	21/2$^-$		
1745.1[e] 7	25/2$^+$		
1756.3[c] 6	19/2$^-$		
1770.1[a] 5	21/2$^-$		
1844.5 7	21/2$^+$		
1930.0[@] 6	23/2$^-$		
1987.5 7	23/2$^-$	5.5 ns 10	T$_{1/2}$: From decay curve of Eγ (1996Bb29).
2095.9[b] 6	23/2$^-$		
2204.9[f] 7	27/2$^+$		
2265.1 8	25/2$^-$		
2305.6[&] 6	25/2$^-$		
2310.6?[i] 6	(25/2$^-$)		
2351.5[e] 7	29/2$^+$		
2435.5[a] 6	25/2$^-$		
2571.8[@] 7	27/2$^-$		
2602.7 7	27/2$^-$		
2790.8[b] 7	27/2$^-$		
2929.6[f] 8	31/2$^+$		
2941.7 13	29/2$^-$		J$^{\pi}$: (27/2) from (HI,xnγ) and in Adopted Levels.
2989.6[&] 7	29/2$^-$		
3038.3[e] 8	33/2$^+$		
3138.6[a] 7	29/2$^-$		
3225.7[@] 7	31/2$^-$		
3695.1[&] 8	33/2$^-$		
3719.5[f] 8	35/2$^+$		
3787.0[e] 9	37/2$^+$		
3817.8[a] 7	33/2$^-$		
4529.0[f] 9	39/2$^+$		
4553.1[e] 9	41/2$^+$		

[†] From least squares fit to the Eγ's by evaluator, with ΔE=0.3 keV assumed for data from 1975So01 and 1996Bb29, and ΔE=1 keV assumed for data from 1989BaZR.
[‡] From $\gamma\gamma(\theta)$ and rotational structure.
[#] From from delayed $\gamma\gamma$-coin. (1975So01), except as noted.
[@] Band(a): 1/2(510) rotational band, α=−1/2.
[&] Band(A): 1/2(510) rotational band, α=+1/2.
[a] Band(B): 7/2(503) rotational band, α=+1/2.
[b] Band(b): 7/2(503) rotational band, α=−1/2.
[c] Band(C): 3/2(512) rotational band, α=−1/2.
[d] Band(c): 3/2(512) rotational band, α=+1/2.
[e] Band(D): 11/2(615) rotational band, α=+1/2.
[f] Band(d): 11/2(615) rotational band, α=−1/2.
[g] Band(E): 9/2(624) rotational band, α=+1/2.
[h] Band(e): 9/2(624) rotational band, α=−1/2.
[i] Not in Adopted Levels.

W(α,xnγ) 1975So01,1996Bb29 (continued)

$\gamma(^{185}Os)$

See 1975So01 for detailed prompt and delayed coincidence relations.
$\gamma(\theta)$: see 1975So01 for angular distribution coefficients deduced from photon spectra measured at θ=18°, 30°, 45°, 60°, 75°, and 90°.

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	Comments
(4.9)		102.1	$7/2^-$	97.42	$5/2^-$		Transition was not observed. Its existence is inferred from delayed (158.2γ) (97γ,60γ,37γ) coincidences.
(15.2)		275.4	$11/2^+$	260.3	$9/2^-$		Transition was not observed. Its existence is inferred by the 158.2γ measured in the delayed spectrum.
37.4[&]		37.39	$3/2^-$	0.0	$1/2^-$		I_γ: Iγ=13.3 from branching relative to the 97.4γ in a delayed spectrum.
60.0[&]		97.42	$5/2^-$	37.39	$3/2^-$		I_γ: Iγ=39.8 from branching relative to the 97.4γ in a delayed spectrum.
90.4	≈0.9	127.9	$3/2^-$	37.39	$3/2^-$		
94.5	≈0.4	222.39	$5/2^-$	127.9	$3/2^-$		
97.4	24.1	97.42	$5/2^-$	0.0	$1/2^-$		
100.7	5.9	198.07	$7/2^-$	97.42	$5/2^-$		
119.8[a]	≤5.5[d]	317.8	$9/2^-$	198.07	$7/2^-$		
126.9	6.6	402.4	$9/2^+$	275.4	$11/2^+$	M1+E2	
138.7	36.8	414.2	$13/2^+$	275.4	$11/2^+$		
142.1[f]	0.8	402.4	$9/2^+$	260.3	$9/2^-$		
143.0[b]		1987.5	$23/2^-$	1844.5	$21/2^+$	(E1)[@]	DCO=2.0 2 (1996Bb29), ΔJ=1 dipole transition.
153.6	1.1	351.7	$7/2^-$	198.07	$7/2^-$		
158.2	100	260.3	$9/2^-$	102.1	$7/2^-$		
158.7[a]		476.5	$11/2^-$	317.8	$9/2^-$		
160.7	4.8	198.07	$7/2^-$	37.39	$3/2^-$		
166[b]		1756.3	$19/2^-$	1590.5	$19/2^+$		
176.2	33	590.4	$15/2^+$	414.2	$13/2^+$		
179.4[c]		1745.1	$25/2^+$	1565.7	$23/2^+$		
185.0	≤1.2	222.39	$5/2^-$	37.39	$3/2^-$		
186.0	16.5	776.4	$17/2^+$	590.4	$15/2^+$		
188.2	19	448.6	$11/2^-$	260.3	$9/2^-$		
188.9	9.5	591.2	$11/2^+$	402.4	$9/2^+$		
190.9	4.4	782.0	$13/2^+$	591.2	$11/2^+$		
198[a]	1.0	1222.4	$21/2^+$	1024.6	$19/2^+$		
204.9	1.0	865.2	$15/2^-$	660.3	$13/2^-$		
211.7	5.6	660.3	$13/2^-$	448.6	$11/2^-$	M1+E2	
217.6	7.7	666.2	$13/2^-$	448.6	$11/2^-$		
220.3	32.5	317.8	$9/2^-$	97.42	$5/2^-$		
222.4	2.6	222.39	$5/2^-$	0.0	$1/2^-$		
223.8	1.0	351.7	$7/2^-$	127.9	$3/2^-$		
231.2[b]		1987.5	$23/2^-$	1756.3	$19/2^-$	(E2)[@]	DCO=1.03 8 (1996Bb29), ΔJ=2 stretched quadrupole transition.
237[b]		1756.3	$19/2^-$	1519.1	$19/2^+$		
241.3	3.8	907.6	$15/2^-$	666.2	$13/2^-$		
243.5	3.5	1025.5	$15/2^+$	782.0	$13/2^+$		
248.2	8.2	1024.6	$19/2^+$	776.4	$17/2^+$		
254.0[c]		1844.5	$21/2^+$	1590.5	$19/2^+$		
254.2	5.4	351.7	$7/2^-$	97.42	$5/2^-$		
266.2	2.4	1173.6	$17/2^-$	907.6	$15/2^-$		
278[b]		2265.1	$25/2^-$	1987.5	$23/2^-$		
278.4	20	476.5	$11/2^-$	198.07	$7/2^-$		

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W(α,xnγ) 1975So01,1996Bb29 (continued)

$\gamma(^{185}Os)$ (continued)

E_γ[†]	I_γ[‡]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[#]	δ[@]	Comments
288.0[f]	2.4	1462.0	19/2$^-$	1173.6	17/2$^-$			
300.3	6.3	402.4	9/2$^+$	102.1	7/2$^-$			
307.8[c]		1770.1	21/2$^-$	1462.0	19/2$^-$			
315[b]		351.7	7/2$^-$	37.39	3/2$^-$			
315.0	16	590.4	15/2$^+$	275.4	11/2$^+$			
337.6[b]		2602.7	27/2$^-$	2265.1	25/2$^-$	(M1+E2)[@]	0.17 *+7−13*	DCO=1.56 24 (1996Bb29).
339[b]		2941.7	29/2$^-$	2602.7	27/2$^-$			
342.6	14	660.3	13/2$^-$	317.8	9/2$^-$			
343.2[c]		1565.7	23/2$^+$	1222.4	21/2$^+$			
346.5	6.1	448.6	11/2$^-$	102.1	7/2$^-$			
348.4	1.8	666.2	13/2$^-$	317.8	9/2$^-$			
355.1	2.5	706.9	11/2$^-$	351.7	7/2$^-$			
362.3	19	776.4	17/2$^+$	414.2	13/2$^+$			
379.5	≈1.2	782.0	13/2$^+$	402.4	9/2$^+$			
388.7	19	865.2	15/2$^-$	476.5	11/2$^-$			
390[b]		706.9	11/2$^-$	317.8	9/2$^-$			
400.0	4.4	660.3	13/2$^-$	260.3	9/2$^-$	E2		
406.0	7.0	666.2	13/2$^-$	260.3	9/2$^-$			
434.2[e]	≈15[e]	1024.6	19/2$^+$	590.4	15/2$^+$			Obscured by 434-keV γ in ^{186}Os.
434.2[e f]	≈15[e]	1025.5	15/2$^+$	591.2	11/2$^+$			
435[b]		1756.3	19/2$^-$	1321.7	(17/2$^+$)			
446.0	10	1222.4	21/2$^+$	776.4	17/2$^+$			
451[b]		1117.2	17/2$^-$	666.2	13/2$^-$			
456.9	9	1117.2	17/2$^-$	660.3	13/2$^-$			
459.0	4.9	907.6	15/2$^-$	448.6	11/2$^-$			
459.8[c]		2204.9	27/2$^+$	1745.1	25/2$^+$			
473[b]		1180.2	15/2$^-$	706.9	11/2$^-$			
489.0	8.3	1354.2	19/2$^-$	865.2	15/2$^-$			
507.4	4	1173.6	17/2$^-$	666.2	13/2$^-$			
514[b]		1173.6	17/2$^-$	660.3	13/2$^-$			
520[b]		1180.2	15/2$^-$	660.3	13/2$^-$			
522.7	4.7	1745.1	25/2$^+$	1222.4	21/2$^+$			
523[b]		1844.5	21/2$^+$	1321.7	(17/2$^+$)			
527.5[c]		1552.1	19/2$^+$	1025.5	15/2$^+$			
541.0	4.4	1565.7	23/2$^+$	1024.6	19/2$^+$			
554.1[e]	3.7[e]	1462.0	19/2$^-$	907.6	15/2$^-$			
554.1[e]	3.7[e]	1671.3	21/2$^-$	1117.2	17/2$^-$			
575.8	6.3	1930.0	23/2$^-$	1354.2	19/2$^-$			
576[b]		1756.3	19/2$^-$	1180.2	15/2$^-$			
596.8[c]		1770.1	21/2$^-$	1173.6	17/2$^-$			
606.4[c]		2351.5	29/2$^+$	1745.1	25/2$^+$			
615.1[b]		2602.7	27/2$^-$	1987.5	23/2$^-$			
633.9[c]		2095.9	23/2$^-$	1462.0	19/2$^-$			
634.3[c]		2305.6	25/2$^-$	1671.3	21/2$^-$			
639[b]		1756.3	19/2$^-$	1117.2	17/2$^-$			
639.2[c]		2204.9	27/2$^+$	1565.7	23/2$^+$			
639.3	1.9	2310.6?	(25/2$^-$)	1671.3	21/2$^-$			E_γ: Not in adopted gammas.
641.8[c]		2571.8	27/2$^-$	1930.0	23/2$^-$			
653.9[c]		3225.7	31/2$^-$	2571.8	27/2$^-$			
665.4[c]		2435.5	25/2$^-$	1770.1	21/2$^-$			

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W(α,xnγ) 1975So01,1996Bb29 (continued)

$\gamma(^{185}Os)$ (continued)

E_γ †	I_γ ‡	E_i(level)	J_i^π	E_f	J_f^π	E_γ †	E_i(level)	J_i^π	E_f	J_f^π
679.2[c]		3817.8	$33/2^-$	3138.6	$29/2^-$	766.1[c]	4553.1	$41/2^+$	3787.0	$37/2^+$
684.0[c]		2989.6	$29/2^-$	2305.6	$25/2^-$	789.9[c]	3719.5	$35/2^+$	2929.6	$31/2^+$
686.8[c]		3038.3	$33/2^+$	2351.5	$29/2^+$	809.5[c]	4529.0	$39/2^+$	3719.5	$35/2^+$
694.9[c]		2790.8	$27/2^-$	2095.9	$23/2^-$	814[b]	1590.5	$19/2^+$	776.4	$17/2^+$
703.1[c]		3138.6	$29/2^-$	2435.5	$25/2^-$	820[b]	1844.5	$21/2^+$	1024.6	$19/2^+$
705.5[c]		3695.1	$33/2^-$	2989.6	$29/2^-$	908[b]	1321.7	$(17/2^+)$	414.2	$13/2^+$
724.7[c]		2929.6	$31/2^+$	2204.9	$27/2^+$	929[b]	1519.1	$19/2^+$	590.4	$15/2^+$
731.3	6.6	1321.7	$(17/2^+)$	590.4	$15/2^+$	1000[b]	1590.5	$19/2^+$	590.4	$15/2^+$
742.6	3.8	1519.1	$19/2^+$	776.4	$17/2^+$	1068[b]	1844.5	$21/2^+$	776.4	$17/2^+$
748.7[c]		3787.0	$37/2^+$	3038.3	$33/2^+$					

† From ^{183}W(α,2nγ) (1975So01), except as noted. Uncertainties are of the order of 0.1 to 0.3 keV; for weak transitions above 500 keV, they are possibly about 0.5 keV.

‡ From 1975So01. Relative photon intensities measured for Eα=27 MeV. Uncertainties are of the order of 5% to 30%, depending on the line strength. See 1975So01 for the ratio of intensities measured with E=23- and 27-MeV incident α's.

Except as noted, multipolarities are determined from γ angular distributions (1975So01). The observed prompt coincidences rule out M2 multipolarity for Q transition and E1+M2 for D+Q transitions.

@ From DCO measurements (1996Bb29). DCO=1.00 for ΔJ=2 transition, DCO=1.94 for pure dipole ΔJ=1 transition and DCO=0.91 for pure dipole ΔJ=0 transition.

& From delayed-γ spectrum (1975So01).

[a] Observed in $\gamma\gamma$-coincidence spectra only (1975So01).

[b] From ^{186}W(α,5nγ) (1996Bb29).

[c] From ^{186}W(α,5nγ) (1989BaZR).

[d] Intensity limit relative to Iγ(220.3γ) was obtained from ^{186}W(^{3}He,4nγ) (1973FuZE).

[e] Multiply placed with undivided intensity.

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

W(α,xnγ) 1975So01,1996Bb29

Level Scheme

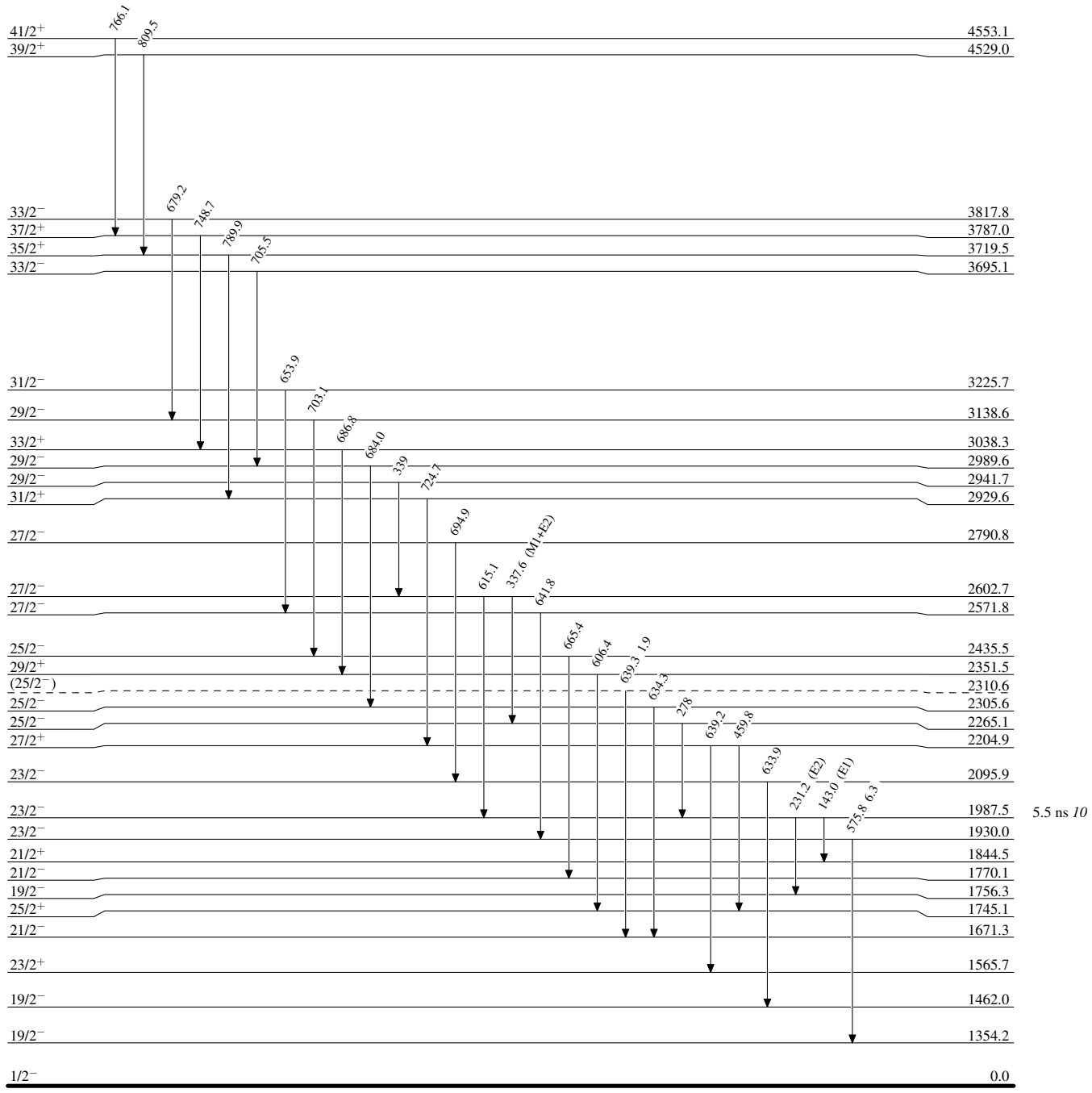
Intensities: Relative I_γ

Legend

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

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

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



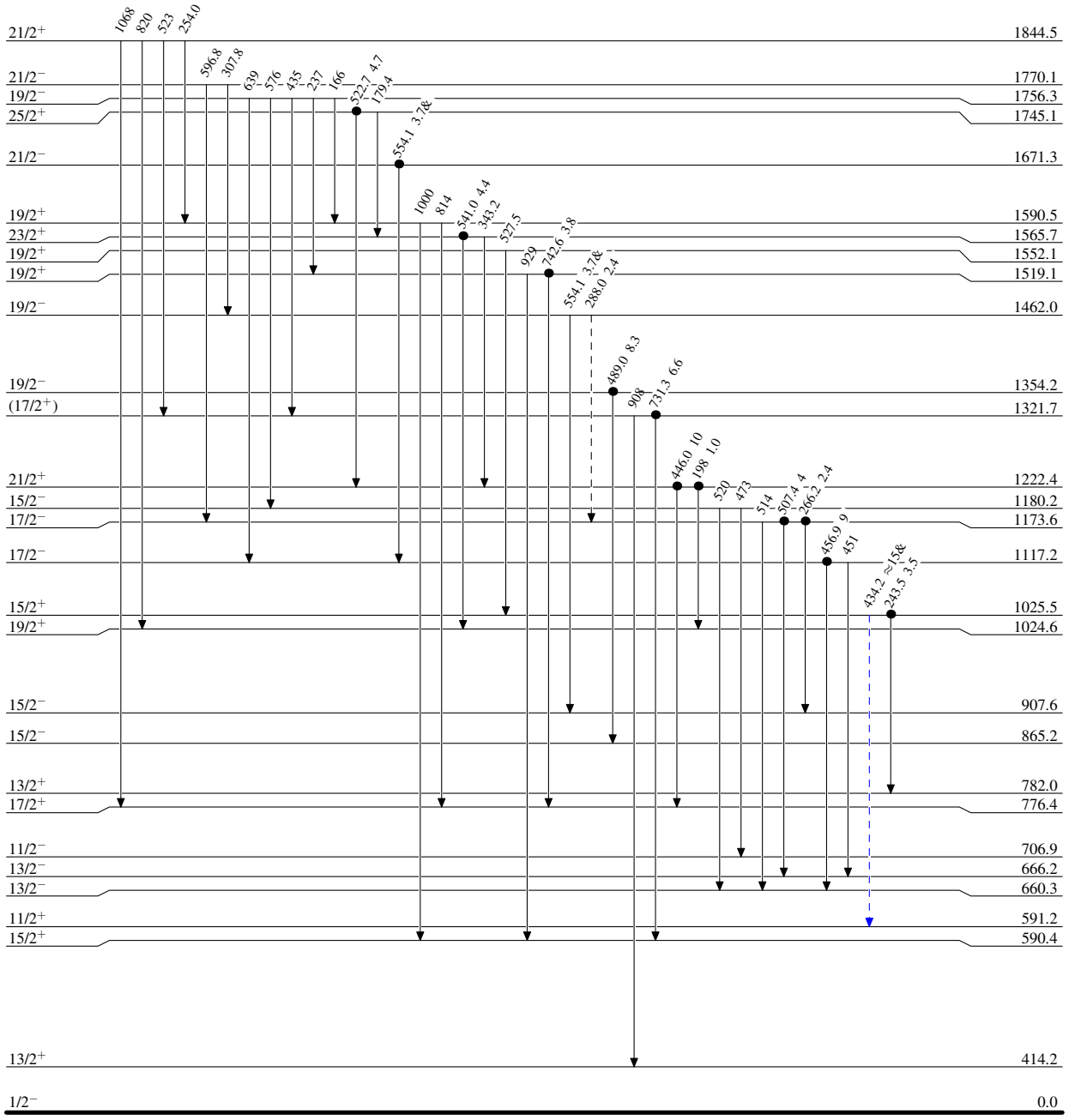
$^{185}_{76}Os_{109}$

W(α,xnγ) 1975So01,1996Bb29

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



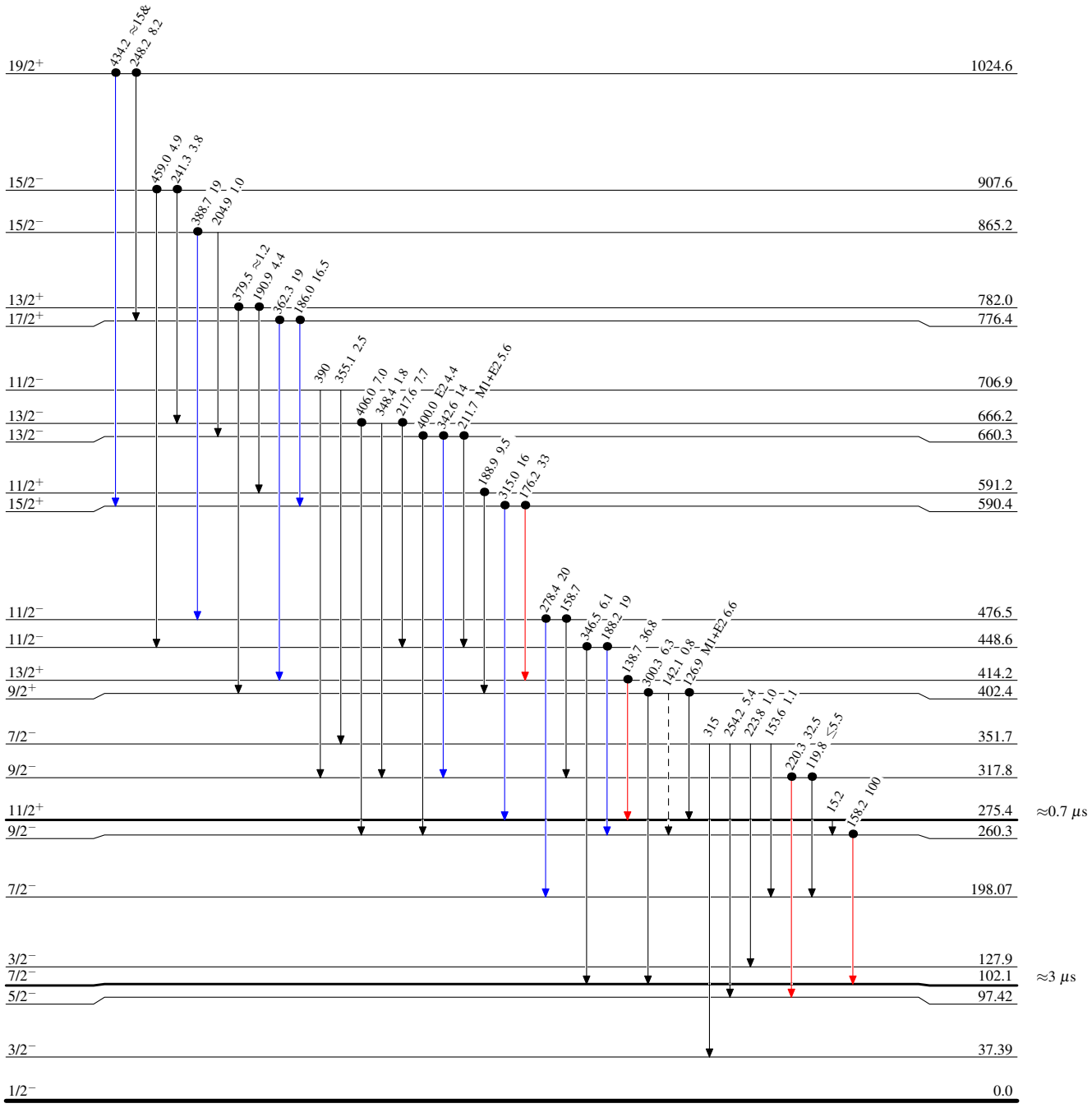
$^{185}_{76}Os_{109}$

W(α,xnγ) 1975So01,1996Bb29

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



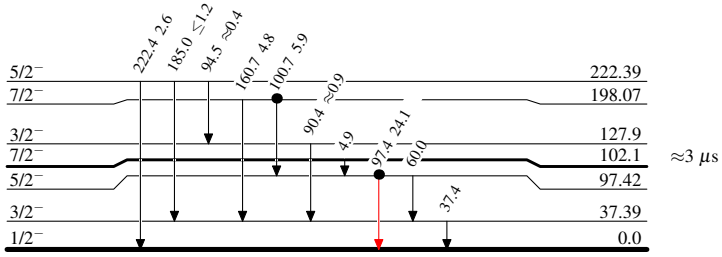
$^{185}_{76}Os_{109}$

W(α,xnγ) 1975So01,1996Bb29

Level Scheme (continued)

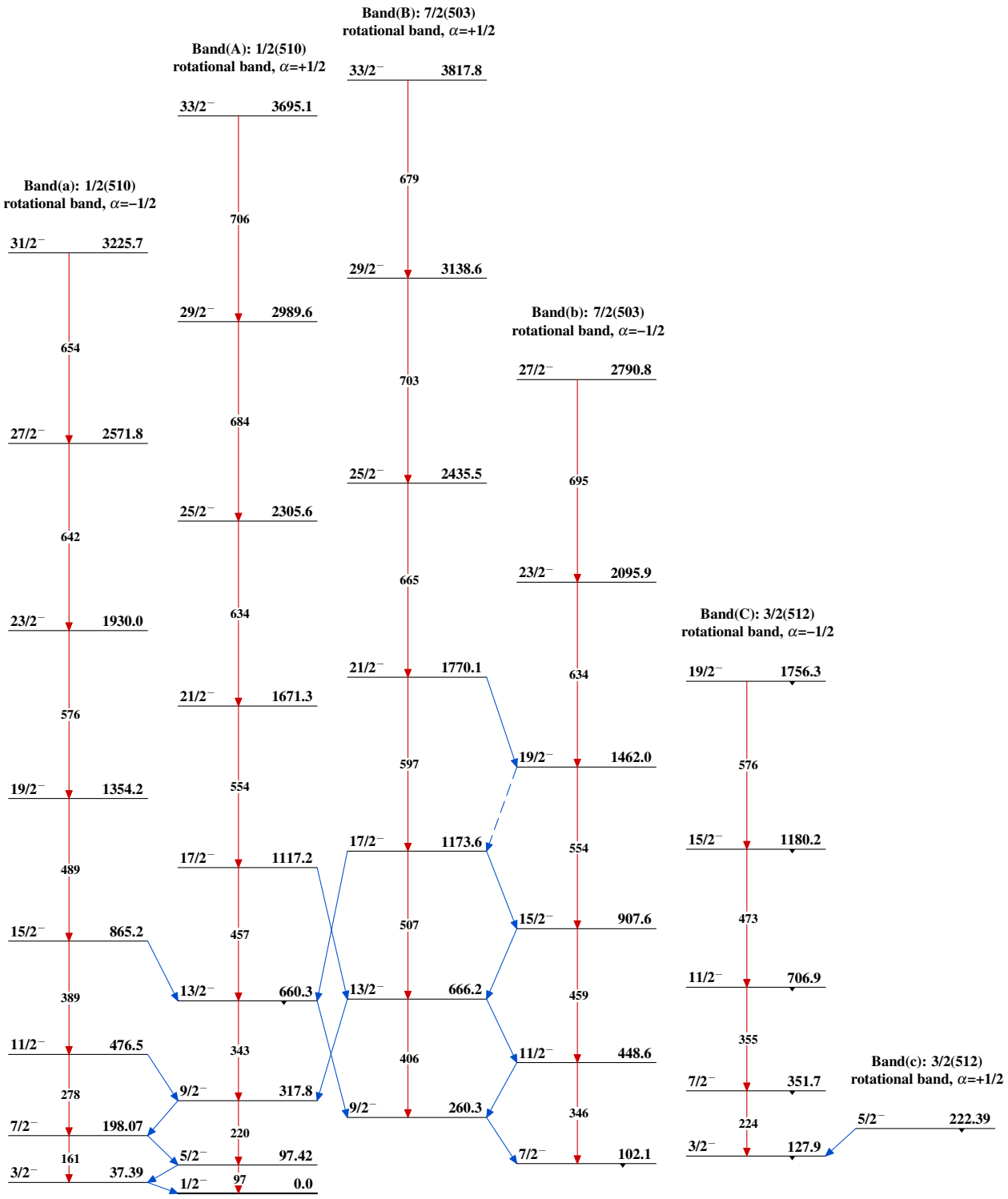
Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



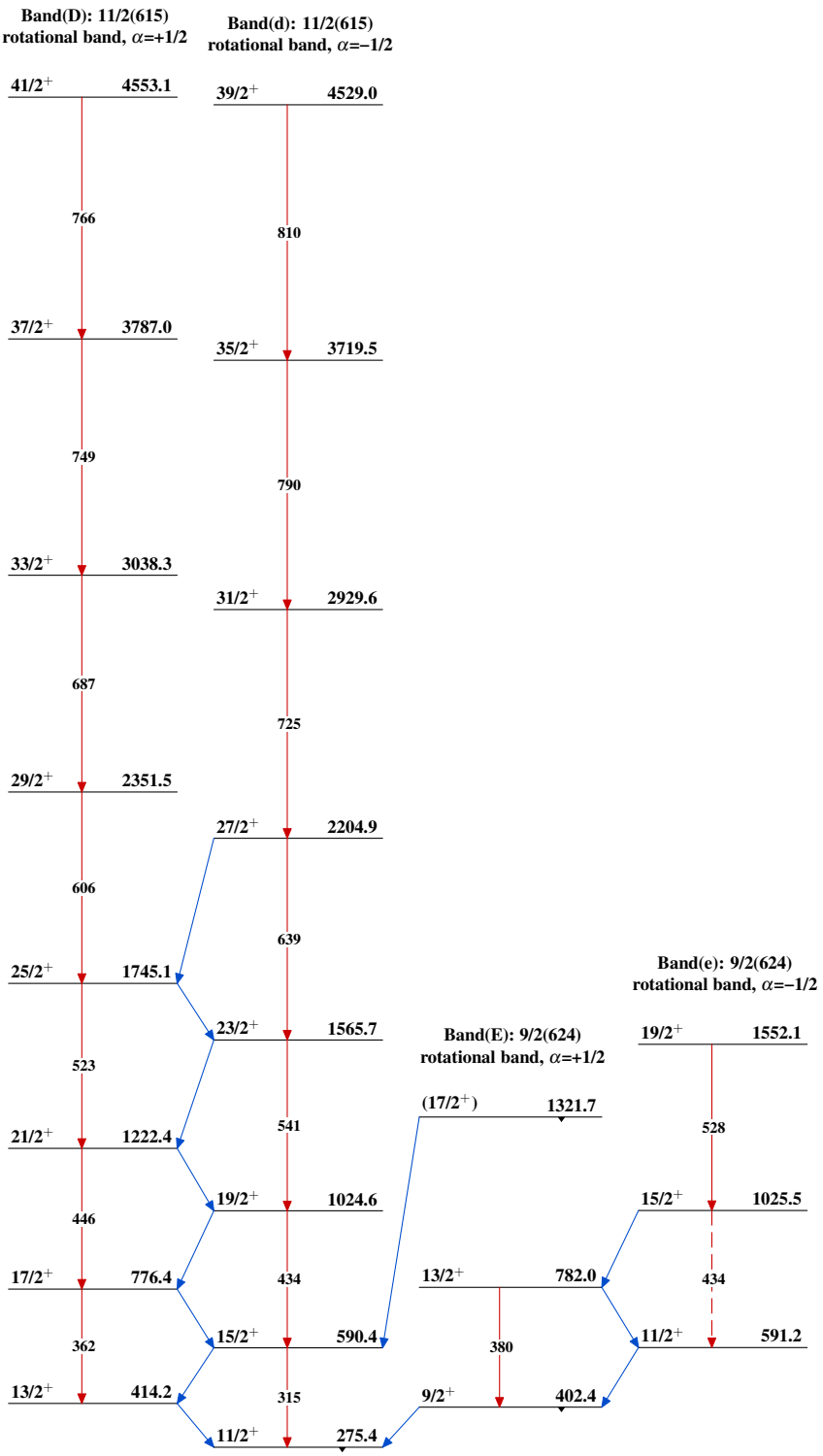
$^{185}_{76}Os_{109}$

W(α,xnγ) 1975So01,1996Bb29



$^{185}_{76}Os_{109}$

W(α,xnγ) 1975So01,1996Bb29 (continued)



$^{185}_{76}Os_{109}$