^{188}Os(n,γ) E=thermal 1992Br17

History

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

1992Br17: ^{188}Os(n,γ), E=thermal; 94.5% enriched ^{188}Os target; LEPS for E$\gamma \leq$200 keV, Ge detectors for other γ rays. Measured Eγ, Iγ, $\gamma\gamma(\theta)$. For conversion electron measurements, 86.67% enriched ^{188}Os target was used, and electrons detected by high-resolution beta-ray spectrometer (BILL). Deduced multiplicity of γ-transitions.

1976Be50: E=thermal; ^{188}Os target of 15 to 40 μg/cm^2 thickness; Measured with pair spectrometer. Resolution of Ge(Li) was 6-7 keV FWHM for high-energy γ rays. Low-energy γ ray (100-1500 keV) measured in anti-coincidence mode with 3-keV FWHM resolution. Under 100 keV measured with Si(Li) detector of 0.5- to 0.9-keV FWHM resolution.

^{189}Os Levels

E(level)†	J$^\pi$‡	Comments
0.0	3/2$^-$	
30.83 4	9/2$^-$	
36.17 2	1/2$^-$	
69.53 3	5/2$^-$	
95.25 2	3/2$^-$	
97.36 4	11/2$^+$	
216.66 3	5/2$^-$	
219.38 3	7/2$^-$	
233.58 2	5/2$^-$	
275.96 4	5/2$^-$	
365.76 3	7/2$^-$	J$^\pi$: From Adopted Levels.
438.74 3	1/2$^-$,3/2$^-$#	
444.22 3	7/2$^+$	
498.79 3	1/2$^-$,3/2$^-$	
505.85 3	1/2$^-$,3/2$^-$	
531.54 3	5/2$^-$	
550.06 3	3/2$^-$,(1/2$^-$)	
557.35 3	3/2$^-$#	
562.70 5		
599.64 3	3/2$^-$	J$^\pi$: 1/2 is less likely for γ to 7/2$^-$.
622.02 3	(3/2$^-$,5/2$^-$)	
672.13 4	5/2$^-$	
679.90 3	3/2$^-$	
688.42 3	1/2$^-$,3/2$^-$	
717.00 4	5/2$^-$,7/2$^-$	
792.10 5	5/2	
849.73 6	1/2$^-$,3/2$^-$	
908.04 4	1/2$^-$,3/2$^-$	
939.66 4	3/2$^+$#	
990.15 4	7/2$^+$#	
994.63 3	1/2$^-$,3/2$^-$	
1036.74 7	(5/2$^-$,7/2,9/2$^-$)	
1056.01 4	(3/2)$^-$	J$^\pi$: γ to 7/2$^-$ makes 1/2 less likely.
1076.96 7		
1149.39 7	1/2$^+$,3/2$^+$	
1159.93 5	3/2$^-$	
1190.43 9	1/2$^-$,3/2$^-$	
1206.74 7		
1220.27 7	1/2$^-$,3/2$^-$	
1226.34 8	1/2$^+$,3/2$^+$	
1254.84 6	1/2$^-$,3/2$^-$	

Continued on next page (footnotes at end of table)

^{188}Os(n,γ) E=thermal 1992Br17 (continued)

^{189}Os Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	Comments
1267.36 *6*	3/2,1/2$^{(-)}$	J$^{\pi}$: assigned as 3/2$^+$ in 1992Br17, but not reported in ARC measurements, and with γ transitions to 1/2$^-$,3/2$^-$ and 5/2$^-$, but no multipolarity is available, thus a more definite assignment can not be made.
1277.68 *6*		
1297.26 *5*	3/2$^-$	
1311.74 *9*	1/2$^-$,3/2$^-$	
1333.47 *6*	3/2$^+$	
1370.08 *6*	1/2$^-$,3/2$^-$	
1376.72 *4*	3/2$^-$	
1394.6 *4*	1/2$^-$,3/2$^-$	
1407.54 *5*	3/2$^-$	
1451.37 *8*	1/2$^+$,3/2$^+$	
1472.26 *6*	1/2$^-$,3/2$^-$	
1700[a] *4*	(5/2$^-$)	
1895[a] *4*	(1/2,3/2)[&]	
1941[a] *4*	(1/2,3/2)[&]	
(5921[a] *1*)	1/2$^+$[@]	E(level): S(n)=5920.8 *4* (2017Wa10).

[†] Deduced from a least-square fit to Eγ values, except where noted.
[‡] From ARC measurements and/or from the assumption of M1, E1 or E2 transitions from the capture state (1992Br17), except as noted.
[#] From $\gamma\gamma(\theta)$ (1992Br17).
[@] s-wave capture (1976Be50).
[&] E1 transition from the s-wave captured state (1976Be50).
[a] From 1976Be50.

γ(^{189}Os)

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Energies and relative intensities of x-ray (1976Be50)
E(x ray)   I(x ray)#   Assignment
-----       ----       ---------
61.55 7         587      Os Kα2     x-ray
63.03 7         796      Os Kα1     x-ray
71.3  1         297      Os Kβ1     x-ray
73.2  4         193      Os Kβ2     x-ray+Pb Kα2     x-ray
#Values are on the same scale as the γ-ray  intensities
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E_γ †	I_γ †	E_i(level)	J^π_i	E_f	J^π_f	Mult.‡	δ‡	α[e]	Comments
36.14 *4*	105 *8*	36.17	1/2⁻	0.0	3/2⁻				
59.08 *3*	146 *11*	95.25	3/2⁻	36.17	1/2⁻	M1+E2	0.087 *10*	4.83 *10*	α(L)=3.72 *8*; α(M)=0.861 *19* α(N)=0.210 *5*; α(O)=0.0358 *7*; α(P)=0.00250 *4*
[x]64.96 *7*	13 *3*								
66.55 *4*	83 *7*	97.36	11/2⁺	30.83	9/2⁻	E1		0.227	α(L)=0.1749 *25*; α(M)=0.0404 *6* α(N)=0.00963 *14*; α(O)=0.001513 *22*; α(P)=6.73×10^{-5} *10* δ^2(M2/E1)≤0.0003 (1992Br17). Assigned as 505.8 to 438.8 transition in 1976Be50.
69.55 *6*	65 *12*	69.53	5/2⁻	0.0	3/2⁻	M1+E2	0.67 *3*	8.1 *4*	α(L)=6.1 *3*; α(M)=1.53 *7* α(N)=0.368 *17*; α(O)=0.0562 *24*; α(P)=0.00114 *3*
95.27 *4*	42 *3*	95.25	3/2⁻	0.0	3/2⁻	M1+E2	0.33 *2*	6.35	α(K)=4.90 *9*; α(L)=1.12 *4*; α(M)=0.265 *9* α(N)=0.0642 *20*; α(O)=0.0106 *3*; α(P)=0.000574 *10*
118.50 *9*	3.1 *7*	562.70		444.22	7/2⁺				
122.47 *7*	2.9 *4*	679.90	3/2⁻	557.35	3/2⁻				
124.25 *6*	3.3 *4*	219.38	7/2⁻	95.25	3/2⁻				
[x]129.42 *4*	19.1 *16*					M1+E2	0.84 *19*	2.23 *14*	α(K)=1.51 *21*; α(L)=0.55 *6*; α(M)=0.135 *15* α(N)=0.033 *4*; α(O)=0.0051 *5*; α(P)=0.00017 *3*
132.16 *5*	9.2 *10*	365.76	7/2⁻	233.58	5/2⁻				
138.30 *4*	20.1 *15*	233.58	5/2⁻	95.25	3/2⁻				
147.12 *4*	21.2 *16*	216.66	5/2⁻	69.53	5/2⁻				
149.86 *4*	17.1 *14*	219.38	7/2⁻	69.53	5/2⁻				
162.74 *9*	3.2 *8*	438.74	1/2⁻,3/2⁻	275.96	5/2⁻				Also assigned as 233.6 to 69.5 transition in 1976Be50.
164.03 *4*	17.8 *14*	233.58	5/2⁻	69.53	5/2⁻				
[x]175.62 *7*	9.6 *14*								
181.06 *6*	8.1 *10*	679.90	3/2⁻	498.79	1/2⁻,3/2⁻				
188.55 *5*	12.0 *13*	219.38	7/2⁻	30.83	9/2⁻				
197.37 *4*	62[c] *6*	233.58	5/2⁻	36.17	1/2⁻				
[x]198.29 *4*	40 *3*								
216.65 *4*	100 *7*	216.66	5/2⁻	0.0	3/2⁻	E2		0.254	α(K)=0.1377 *20*; α(L)=0.0882 *13*; α(M)=0.0222 *4* α(N)=0.00533 *8*; α(O)=0.000810 *12*; α(P)=1.308×10^{-5} *19* δ^2(E2/M1)=6.0 +*47*−*19* (1992Br17).

$^{189}_{76}Os_{113}$-3

$\gamma(^{189}Os)$ (continued)

E_γ [†]	I_γ [†]	E_i(level)	J_i^π	E_f	J_f^π	Mult. [‡]	δ [‡]	α [e]	Comments
219.39 *4*	115 *8*	219.38	7/2⁻	0.0	3/2⁻	E2		0.244	α(K)=0.1332 *19*; α(L)=0.0837 *12*; α(M)=0.0210 *3* α(N)=0.00506 *7*; α(O)=0.000769 *11*; α(P)=1.268×10^{-5} *18* δ^2(E2/M1)≥73 (1992Br17). Also assigned as 438.8 to 219.4 transition in 1976Be50.
222.84 *8*	6.0 *9*	498.79	1/2⁻,3/2⁻	275.96	5/2⁻				
224.82 *6*	8.7 *11*	444.22	7/2⁺	219.38	7/2⁻				
227.60 *5*	17.4 *18*	444.22	7/2⁺	216.66	5/2⁻				
233.59 *4*	87 *6*	233.58	5/2⁻	0.0	3/2⁻	M1+E2	1.8 *+6−3*	0.27 *3*	α(K)=0.19 *3*; α(L)=0.0657 *10*; α(M)=0.01611 *24* α(N)=0.00389 *6*; α(O)=0.000612 *11*; α(P)=2.0×10^{-5} *4*
[x]235.14 *6*	9.5 *12*								
240.02 *12*	3.6 *9*	275.96	5/2⁻	36.17	1/2⁻				
241.22 *7*	7.8 *11*	679.90	3/2⁻	438.74	1/2⁻,3/2⁻				
245.09 *4*	158 *11*	275.96	5/2⁻	30.83	9/2⁻	E2		0.1704	α(K)=0.0997 *14*; α(L)=0.0536 *8*; α(M)=0.01338 *19* α(N)=0.00322 *5*; α(O)=0.000493 *7*; α(P)=9.67×10^{-6} *14* δ^2(E2/M1)≥15.6 (1992Br17).
256.23 *4*	23.3 *20*	622.02	(3/2⁻,5/2⁻)	365.76	7/2⁻				
265.22 *5*	14.3 *14*	498.79	1/2⁻,3/2⁻	233.58	5/2⁻				
270.50 *6*	13.6 *18*	365.76	7/2⁻	95.25	3/2⁻				
272.4[&] *5*		505.85	1/2⁻,3/2⁻	233.58	5/2⁻				
272.77[f] *7*	12.0[f] *17*	717.00	5/2⁻,7/2⁻	444.22	7/2⁺				
272.77[f] *7*	12.0[f] *17*	1267.36	3/2,1/2$^{(-)}$	994.63	1/2⁻,3/2⁻				
[x]274.97 *9*	11.2 *18*								
275.85 *8*	13.5 *19*	275.96	5/2⁻	0.0	3/2⁻				
277.79 *15*	4.6 *15*	994.63	1/2⁻,3/2⁻	717.00	5/2⁻,7/2⁻				
280.71 *9*	8.6 *14*	1220.27	1/2⁻,3/2⁻	939.66	3/2⁺				
281.74 *16*	4.1 *13*	557.35	3/2⁻	275.96	5/2⁻				
291.83 *20*	2.0 *5*	1451.37	1/2⁺,3/2⁺	1159.93	3/2⁻				
293.18 *11*	3.9 *6*	792.10	5/2	498.79	1/2⁻,3/2⁻				
296.21 *4*	38 *3*	365.76	7/2⁻	69.53	5/2⁻				
297.83 *9*	8.0 *15*	531.54	5/2⁻	233.58	5/2⁻				
[x]304.58 *7*	3.1 *3*								
306.37 *5*	5.0 *4*	672.13	5/2⁻	365.76	7/2⁻				
308.41 *4*	11.3 *8*	908.04	1/2⁻,3/2⁻	599.64	3/2⁻				
312.17 *4*	2.0[cd] *7*	531.54	5/2⁻	219.38	7/2⁻				
314.91 *4*	4.7 *3*	531.54	5/2⁻	216.66	5/2⁻				
316.52 *6*	2.4 *2*	550.06	3/2⁻,(1/2⁻)	233.58	5/2⁻				
323.72 *4*	29[d] *5*	557.35	3/2⁻	233.58	5/2⁻				
[x]326.02 *28*	5.2 *22*								
[x]332.72 *5*	1.8[d] *4*								
339.91 *8*	9.8 *12*	939.66	3/2⁺	599.64	3/2⁻				
343.47 *4*	298 *21*	438.74	1/2⁻,3/2⁻	95.25	3/2⁻	M1		0.179	α(K)=0.1488 *21*; α(L)=0.0237 *4*; α(M)=0.00542 *8*

$^{189}_{76}Os_{113}$-4

γ(^{189}Os) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	Mult.‡	α [e]	Comments
								α(N)=0.001324 *19*; α(O)=0.000229 *4*; α(P)=1.713×10^{-5} *24* δ^2(E2/M1)≤0.08 (1992Br17).
346.88 *4*	148 *11*	444.22	7/2$^+$	97.36	11/2$^+$	E2	0.0599	α(K)=0.0409 *6*; α(L)=0.01446 *21*; α(M)=0.00355 *5* α(N)=0.000856 *12*; α(O)=0.0001345 *19*; α(P)=4.20×10^{-6} *6* δ^2(E2/M1)≥7.8 (1992Br17).
351.06 *10*	2.4 *3*	717.00	5/2$^-$,7/2$^-$	365.76	7/2$^-$			
366.05 *5*	10.2 *9*	599.64	3/2$^-$	233.58	5/2$^-$			
372.55 *6*	12.4 *11*	994.63	1/2$^-$,3/2$^-$	622.02	(3/2$^-$,5/2$^-$)			
379.84 *5*	4.0 *3*	599.64	3/2$^-$	219.38	7/2$^-$			This γ ray is unplaced in 1992Br17. Evaluators assign this γ ray from 599 level, based on results from ^{189}Re β$^-$ decay. Moreover, its coincidence with a 219γ from 219 level in (n,γ) (1992Br17) supports this placement.
382.99 *5*	3.6[d] *3*	599.64	3/2$^-$	216.66	5/2$^-$			
388.40 *4*	24.2 *17*	622.02	(3/2$^-$,5/2$^-$)	233.58	5/2$^-$			
[x]390.11 *10*	3.9[d] *7*							
394.99 *5*	12.8 *10*	994.63	1/2$^-$,3/2$^-$	599.64	3/2$^-$			
[x]397.13 *4*	27[c] *3*							
402.58 *7*	22 *3*	438.74	1/2$^-$,3/2$^-$	36.17	1/2$^-$			
403.51 *5*	54 *4*	498.79	1/2$^-$,3/2$^-$	95.25	3/2$^-$			
405.5[#] *5*	14[#] *11*	622.02	(3/2$^-$,5/2$^-$)	216.66	5/2$^-$			
410.60 *4*	163 *12*	505.85	1/2$^-$,3/2$^-$	95.25	3/2$^-$			
413.14[f] *21*	6.9[f] *22*	444.22	7/2$^+$	30.83	9/2$^-$			
413.14[f] *21*	6.9[f] *22*	1407.54	3/2$^-$	994.63	1/2$^-$,3/2$^-$			
[x]423.10 *5*	9.0 *7*							
427.44 *4*	20.0 *14*	990.15	7/2$^+$	562.70				
429.22 *4*	30.1 *21*	498.79	1/2$^-$,3/2$^-$	69.53	5/2$^-$			
[x]436.43 *4*	41 *3*							
438.58 *4*	38 *3*	672.13	5/2$^-$	233.58	5/2$^-$			
440.77 *14*	3.2 *6*	717.00	5/2$^-$,7/2$^-$	275.96	5/2$^-$			
444.59 *5*	3.6 *3*	994.63	1/2$^-$,3/2$^-$	550.06	3/2$^-$,(1/2$^-$)			
452.91[#] *10*	26[#] *3*	672.13	5/2$^-$	219.38	7/2$^-$			
454.76 *4*	163 *12*	550.06	3/2$^-$,(1/2$^-$)	95.25	3/2$^-$			
[x]455.82[@] *20*								
460.64 *6*	45 *4*	679.90	3/2$^-$	219.38	7/2$^-$			
[x]461.75[#] *7*	39[#] *4*							
462.48[ag] *6*	74.7 *48*	498.79	1/2$^-$,3/2$^-$	36.17	1/2$^-$			E_γ: assigned from 557.4 level to 95.3 level in 1976Be50.
463.20 *7*	47 *5*	679.90	3/2$^-$	216.66	5/2$^-$			
465.28 *18*	7.4 *20*	562.70		97.36	11/2$^+$			
469.65 *4*	233 *17*	505.85	1/2$^-$,3/2$^-$	36.17	1/2$^-$			
[x]474.7[&] *10*								
480.53 *5*	69 *6*	550.06	3/2$^-$,(1/2$^-$)	69.53	5/2$^-$			

$^{189}_{76}$Os$_{113}$-5

γ(^{189}Os) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f	Comments
^{x}483.11 *7*	33 *3*					
487.87 *4*	25.0[d] *24*	557.35	3/2$^-$	69.53	5/2$^-$	
^{x}491.34 *10*	1.3 *1*					
495.49 *4*	67 *5*	939.66	3/2$^+$	444.22	7/2$^+$	
498.94[ag] *4*	59.2 *5*	498.79	1/2$^-$,3/2$^-$	0.0	3/2$^-$	
504.44 *7*	32 *4*	599.64	3/2$^-$	95.25	3/2$^-$	
505.86 *5*	137 *10*	505.85	1/2$^-$,3/2$^-$	0.0	3/2$^-$	
521.20 *4*	46 *3*	557.35	3/2$^-$	36.17	1/2$^-$	
^{x}527.18 *5*	30.1 *23*					
531.43 *7*	25 *3*	531.54	5/2$^-$	0.0	3/2$^-$	
532.65 *16*	10.3 *19*	1472.26	1/2$^-$,3/2$^-$	939.66	3/2$^+$	
^{x}538.44 *6*	13.4 *12*					
545.86 *6*	17.4 *15*	990.15	7/2$^+$	444.22	7/2$^+$	
550.11 *4*	66 *5*	1056.01	(3/2)$^-$	505.85	1/2$^-$,3/2$^-$	
^{x}551.94[@] *52*						
^{x}554.46[@] *14*						
^{x}556.63 *8*	50 *5*					
^{x}557.91 *4*	69[c] *19*					Assigned as 557.4 to 0.0 transition in 1976Be50.
^{x}563.67 *4*	85 *6*					E_γ: This is likely the strong γ transition from the 599.64 keV as observed in ^{189}Re β^- decay. The 308 keV γ also supports this.
563.67 *4*	85 *6*	599.64	3/2$^-$	36.17	1/2$^-$	This γ ray is unplaced in 1992Br17. Evaluators assign this γ ray from 599 level, based on results from ^{189}Re β^- decay, where it is reported as the strongest transition from this level. Moreover, its coincidence with a 308γ from a 908 level in (n,γ) (1992Br17) supports this placement.
^{x}564.80[@] *9*						
572.83 *10*	5.2 *8*	792.10	5/2	219.38	7/2$^-$	
575.40 *6*	12.1 *10*	792.10	5/2	216.66	5/2$^-$	
^{x}581.06[@] *8*						
582.97 *9*	5.4 *5*	1254.84	1/2$^-$,3/2$^-$	672.13	5/2$^-$	
584.60 *6*	16.9 *12*	679.90	3/2$^-$	95.25	3/2$^-$	
586.03 *9*	6.5 *6*	622.02	(3/2$^-$,5/2$^-$)	36.17	1/2$^-$	
593.18 *5*	59 *4*	688.42	1/2$^-$,3/2$^-$	95.25	3/2$^-$	
^{x}594.9[&] *8*						
599.62 *5*	47 *4*	599.64	3/2$^-$	0.0	3/2$^-$	
602.64 *8*	16.0 *17*	1159.93	3/2$^-$	557.35	3/2$^-$	
608.84 *10*	5.0 *6*	1297.26	3/2$^-$	688.42	1/2$^-$,3/2$^-$	
610.75 *17*	2.9 *5*	679.90	3/2$^-$	69.53	5/2$^-$	
^{x}615.20 *8*	2.2 *2*					
^{x}619.12 *11*	5.5 *8*					
621.83 *5*	33.8 *25*	717.00	5/2$^-$,7/2$^-$	95.25	3/2$^-$	
^{x}633.13 *5*	39[d] *11*					

$^{189}_{76}$Os$_{113}$-6

γ(^{189}Os) (continued)

E_γ[†]	I_γ[†]	E_i(level)	J^π_i	E_f	J^π_f
^{x}634.60 *6*	37[d] *8*				
^{x}637.11[@] *10*					
^{x}641.51[@] *10*					
643.69 *4*	23.6 *17*	679.90	$3/2^-$	36.17	$1/2^-$
647.41 *10*	3.3 *4*	717.00	$5/2^-,7/2^-$	69.53	$5/2^-$
652.16 *5*	10.5 *8*	688.42	$1/2^-,3/2^-$	36.17	$1/2^-$
659.24 *6*	12.5 *10*	1451.37	$1/2^+,3/2^+$	792.10	5/2
663.03 *15*	4.2 *6*	1220.27	$1/2^-,3/2^-$	557.35	$3/2^-$
^{x}665.00 *11*	5.8 *7*				
^{x}672.26 *5*	38 *3*				
^{x}673.54[@] *6*					
^{x}676.26 *25*	4.1 *10*				
678.33 *21*	7.1 *13*	1277.68		599.64	$3/2^-$
679.97 *20*	3.5[c] *14*	679.90	$3/2^-$	0.0	$3/2^-$
^{x}681.69[@] *11*					
^{x}686.88 *11*	9.9 *11*				
688.50 *5*	40 *3*	688.42	$1/2^-,3/2^-$	0.0	$3/2^-$
690.30 *8*	13.3 *12*	1056.01	$(3/2)^-$	365.76	$7/2^-$
^{x}691.69[@] *11*					
696.66 *10*	6.6 *8*	1376.72	$3/2^-$	679.90	$3/2^-$
704.66 *6*	12.0 *9*	1254.84	$1/2^-,3/2^-$	550.06	$3/2^-,(1/2^-)$
710.62 *6*	10.4 *9*	1149.39	$1/2^+,3/2^+$	438.74	$1/2^-,3/2^-$
^{x}715.42[@] *22*					
717.09 *8*	6.6 *6*	717.00	$5/2^-,7/2^-$	0.0	$3/2^-$
719.11 *9*	6.7 *6*	1407.54	$3/2^-$	688.42	$1/2^-,3/2^-$
721.16 *8*	6.3 *6*	1159.93	$3/2^-$	438.74	$1/2^-,3/2^-$
727.55 *7*	7.0 *6*	1226.34	$1/2^+,3/2^+$	498.79	$1/2^-,3/2^-$
^{x}730.8 *3*	1.1 *5*				
735.78 *7*	5.8 *5*	1267.36	$3/2,1/2^{(-)}$	531.54	$5/2^-$
739.99 *7*	6.5 *6*	1297.26	$3/2^-$	557.35	$3/2^-$
^{x}742.60 *22*	1.6 *5*				
^{x}748.38 *9*	8.1 *8*				
751.69[#] *8*	6.2[#] *6*	1190.43	$1/2^-,3/2^-$	438.74	$1/2^-,3/2^-$
^{x}753.81 *5*	26.4[c] *21*				
756.05 *12*	2.7[c] *9*	1254.84	$1/2^-,3/2^-$	498.79	$1/2^-,3/2^-$
761.08 *5*	39 *3*	994.63	$1/2^-,3/2^-$	233.58	$5/2^-$
770.81[f] *7*	2.9[f] *2*	990.15	$7/2^+$	219.38	$7/2^-$
770.81[f] *7*	2.9[f] *2*	1333.47	$3/2^+$	562.70	
^{x}779.48 *8*	4.1 *3*				
781.39 *9*	3.4 *3*	1220.27	$1/2^-,3/2^-$	438.74	$1/2^-,3/2^-$
791.38 *16*	2.6 *4*	1297.26	$3/2^-$	505.85	$1/2^-,3/2^-$
795.0[f] *4*	0.9[f] *3*	1159.93	$3/2^-$	365.76	$7/2^-$
795.0[f] *4*	0.9[f] *3*	1394.6	$1/2^-,3/2^-$	599.64	$3/2^-$
801.00 *6*	9.9 *8*	1076.96		275.96	$5/2^-$
^{x}806.63 *24*	0.8 *2*				
812.74 *5*	46[c] *4*	1370.08	$1/2^-,3/2^-$	557.35	$3/2^-$
817.59 *16*	6.2 *10*	1036.74	$(5/2^-,7/2,9/2^-)$	219.38	$7/2^-$
819.82 *14*	7.3 *11*	1036.74	$(5/2^-,7/2,9/2^-)$	216.66	$5/2^-$
^{x}823.82 *11*	4.1 *4*				
^{x}825.81 *18*	3.6 *5*				
827.58 *8*	7.7[d] *10*	1333.47	$3/2^+$	505.85	$1/2^-,3/2^-$
838.92 *5*	11.8 *9*	1277.68		438.74	$1/2^-,3/2^-$
^{x}844.81 *5*	11.9 *8*				
^{x}846.67 *14*	2.4 *3*				
849.73 *6*	6.0 *5*	849.73	$1/2^-,3/2^-$	0.0	$3/2^-$
^{x}858.36 *9*	2.5 *2*				
864.13 *12*	7.0 *10*	1370.08	$1/2^-,3/2^-$	505.85	$1/2^-,3/2^-$
^{x}868.39 *8*	14.9 *13*				
871.02 *6*	27.0 *21*	1376.72	$3/2^-$	505.85	$1/2^-,3/2^-$
873.00 *8*	18.2 *16*	1311.74	$1/2^-,3/2^-$	438.74	$1/2^-,3/2^-$
^{x}876.20[@] *21*					
^{x}877.70 *7*	10.8[c] *15*				
^{x}879.93[@] *9*					
889.19[#] *11*	2.7[#] *6*	1333.47	$3/2^+$	444.22	$7/2^+$
892.92 *14*	3.1 *4*	990.15	$7/2^+$	97.36	$11/2^+$
^{x}896.26 *7*	7.6 *6*				
899.39 *5*	22.1 *16*	994.63	$1/2^-,3/2^-$	95.25	$3/2^-$
901.64 *7*	8.5 *7*	1407.54	$3/2^-$	505.85	$1/2^-,3/2^-$
908.00 *6*	10.2 *8*	908.04	$1/2^-,3/2^-$	0.0	$3/2^-$
914.90 *5*	14.7 *10*	1472.26	$1/2^-,3/2^-$	557.35	$3/2^-$
920.72 *12*	2.7 *3*	990.15	$7/2^+$	69.53	$5/2^-$
930.78 *7*	12.7 *10*	1206.74		275.96	$5/2^-$
937.99 *5*	13.3 *10*	1376.72	$3/2^-$	438.74	$1/2^-,3/2^-$
940.41 *11*	3.8 *4*	1159.93	$3/2^-$	219.38	$7/2^-$
943.24 *16*	2.2 *3*	1159.93	$3/2^-$	216.66	$5/2^-$
^{x}951.46 *5*	7.8[cd] *9*				
959.37 *12*	3.0 *3*	990.15	$7/2^+$	30.83	$9/2^-$
^{x}961.62 *5*	12.6 *9*				
967.17 *9*	1.9[d] *3*	1036.74	$(5/2^-,7/2,9/2^-)$	69.53	$5/2^-$
^{x}970.36 *19*	0.9 *1*				
^{x}974.37 *20*	0.8 *1*				
^{x}980.68 *10*	2.4 *2*				

γ(^{189}Os) (continued)

E_γ †	I_γ †	E_i(level)	J_i^π	E_f	J_f^π
x994.24 6	8.2 6				
x996.78 7	5.9 4				
x1002.22 7	4.5 3				
1006.11 15	1.8 2	1036.74	(5/2−,7/2,9/2−)	30.83	9/2−
x1009.42 10	6.2 6				
1010.96 7	6.4[c] 14	1376.72	3/2−	365.76	7/2−
1019.98 8	9.9 8	1056.01	(3/2)−	36.17	1/2−
x1022.59 8	9.2 8				
x1027.25 19	3.0 5				
x1030.85 9	7.7 7				
x1035.05 22	2.6 5				
x1045.36 10	3.7 4				
x1051.33 14	2.6 3				
1054.36 18	2.7 4	1149.39	1/2+,3/2+	95.25	3/2−
x1056.43 12	4.2[d] 5				
x1061.72 10	2.8 3				
1064.74 7	4.6 4	1159.93	3/2−	95.25	3/2−
x1069.11 8	3.7 3				
x1075.62 12	3.3 3				
1078.03 13	3.8 4	1297.26	3/2−	219.38	7/2−
1080.50 6	8.9 6	1297.26	3/2−	216.66	5/2−
x1092.96 14	3.4 5				
x1096.41 9	5.3[d] 9				
x1098.94 12	11.3 12				
1100.71 12	18.2 15	1376.72	3/2−	275.96	5/2−
x1102.47 9	22.2 18				
x1104.56 12	7.3 7				
1109.38 13	3.7 5	1206.74		97.36	11/2+
x1115.17 7	6.0 5				
x1124.41 8	5.0 4				
1131.52 7	5.1[c] 8	1407.54	3/2−	275.96	5/2−
x1140.02 8	18.1 15				
x1141.84 7	20.0[c] 18				
x1152.14 10	17.1 16				
1156.95 11	13.5 13	1376.72	3/2−	219.38	7/2−
x1159.42 16	13.2 15				
x1161.42 18	9.8 14				
1191.14 12	8.2 10	1407.54	3/2−	216.66	5/2−
x1196.68 10	14.3 13				
x1199.41 9	36 3				
3980[&] 4	40[b] 20	(5921)	1/2+	1941	(1/2,3/2)
4026[&] 4	37[b] 19	(5921)	1/2+	1895	(1/2,3/2)

$^{189}_{76}$Os$_{113}$-8

γ(^{189}Os) (continued)

E_γ [†]	I_γ [†]	E_i(level)	J^π_i	E_f	J^π_f
4221[&] 3	140[b] 36	(5921)	1/2+	1700	(5/2−)
4449[&] 4	35[b] 18	(5921)	1/2+	1472.26	1/2−,3/2−
4527[&] 3	56[b] 18	(5921)	1/2+	1394.6	1/2−,3/2−
4546[&] 3	118[b] 26	(5921)	1/2+	1376.72	3/2−
4928[&] 3	116[b] 42	(5921)	1/2+	994.63	1/2−,3/2−
5363[&] 3	31[b] 12	(5921)	1/2+	557.35	3/2−
5370[&] 3	97[b] 23	(5921)	1/2+	550.06	3/2−,(1/2−)
5415[&] 2	311[b] 65	(5921)	1/2+	505.85	1/2−,3/2−
5482[&] 2	119[b] 27	(5921)	1/2+	438.74	1/2−,3/2−
5884[&] 2	136[b] 29	(5921)	1/2+	36.17	1/2−

[†] From 1992Br17, except as noted.
[‡] From conversion electron data (1992Br17), but the conversion coefficients or subshell ratios are not provided in the paper.
[#] Energy and intensity from coincidence measurement.
[@] Energy from coincidence measurement.
[&] Eγ observed in 1976Be50 only.
[a] Strong γ rays of 462.48 *6* and 498.94 *4* were unplaced in 1992Br17. However, comparison with data from ^{189}Re β^- suggests that both the γ rays can deexcite the 499 level which in 1992Br17 is depopulated by 429.22, 403.51 and 265.22 γ rays, whose energies and branching ratios match closely with those from ^{189}Re β^- decay data. A weak 222.84γ assigned from this level by 1992Br17 is not reported in β^- decay, probably because of its low intensity. Evaluators assign here 462.48 and 498.94 gamma rays, tentatively, from the 499 level.
[b] Partial cross sections in mb from 1976Be50.
[c] Intensity from ^{189}Os(n,γ) has been corrected.
[d] Intensity from ^{187}Os(n,γ) has been corrected.
[e] From BrIcc v2.3b (16-Dec-2014) 2008Ki07, "Frozen Orbitals" appr.
[f] Multiply placed with undivided intensity.
[g] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

$^{189}_{76}$Os$_{113}$-9

^{188}Os(n,γ) E=thermal 1992Br17

Level Scheme

Intensities: Relative I_γ

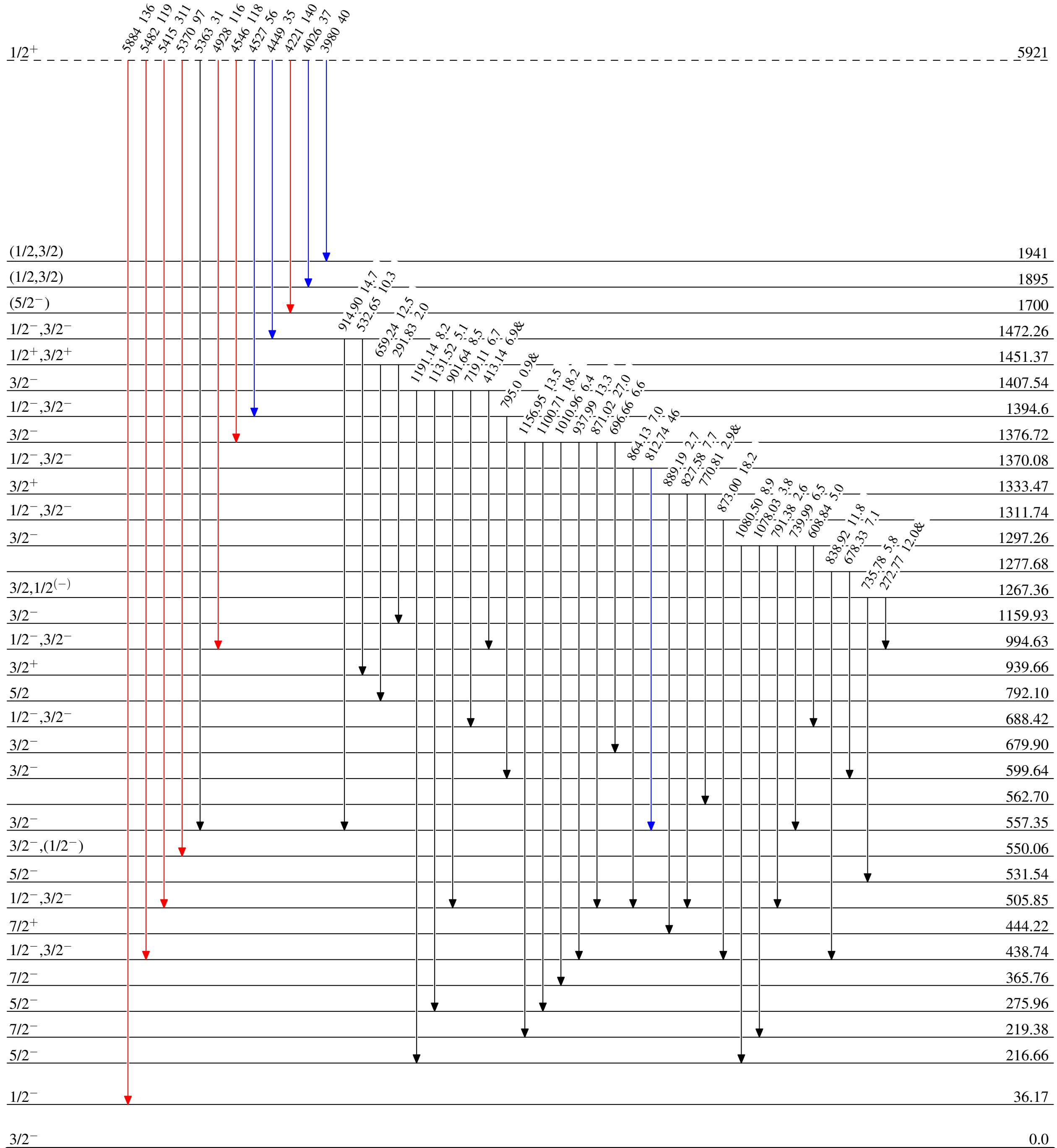
& Multiply placed: undivided intensity given

Legend

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

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

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



$^{189}_{76}Os_{113}$

^{188}Os(n,γ) E=thermal 1992Br17

Level Scheme (continued)

Intensities: Relative I_γ

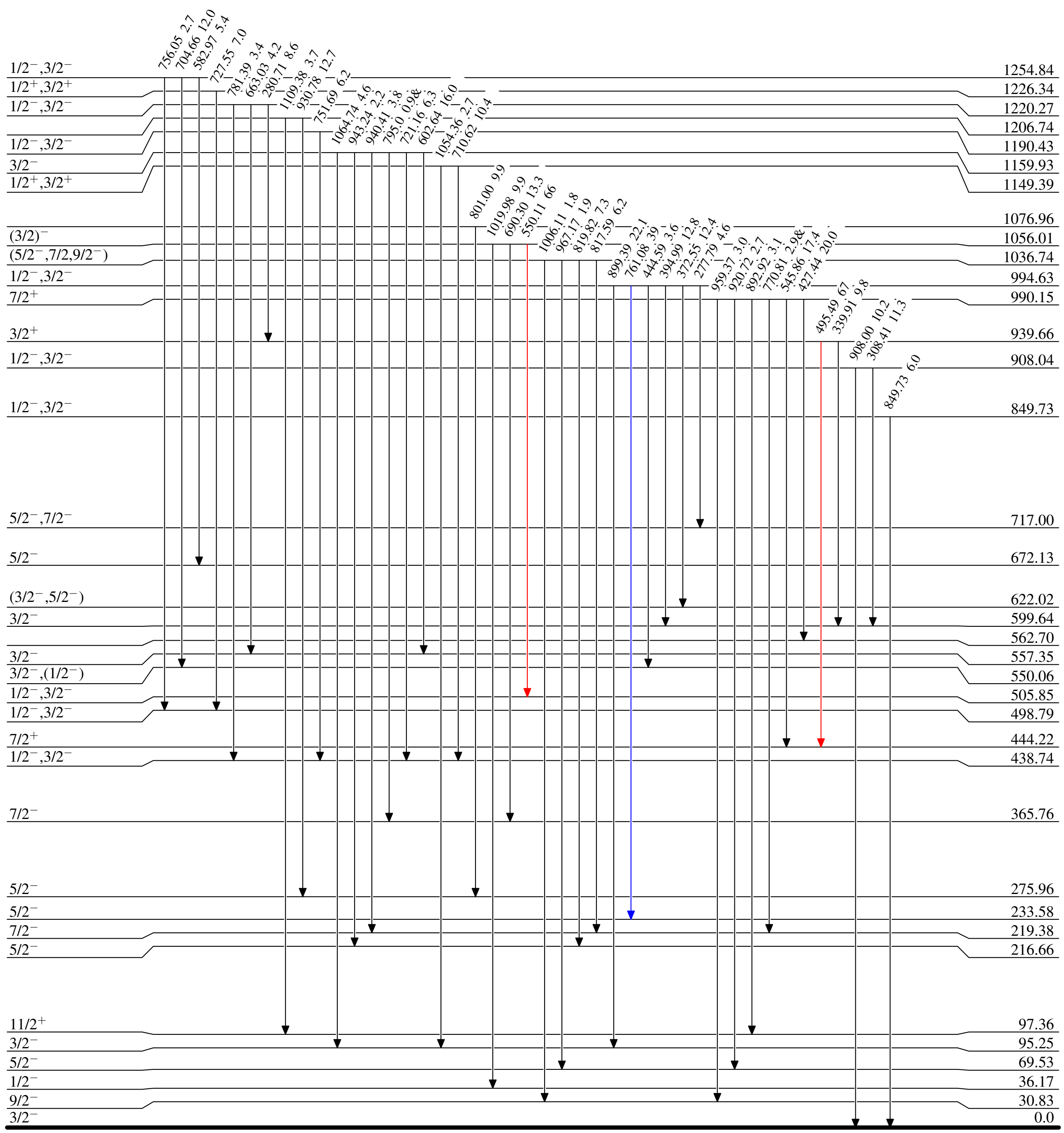
& Multiply placed: undivided intensity given

Legend

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

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

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



$^{189}_{76}Os_{113}$

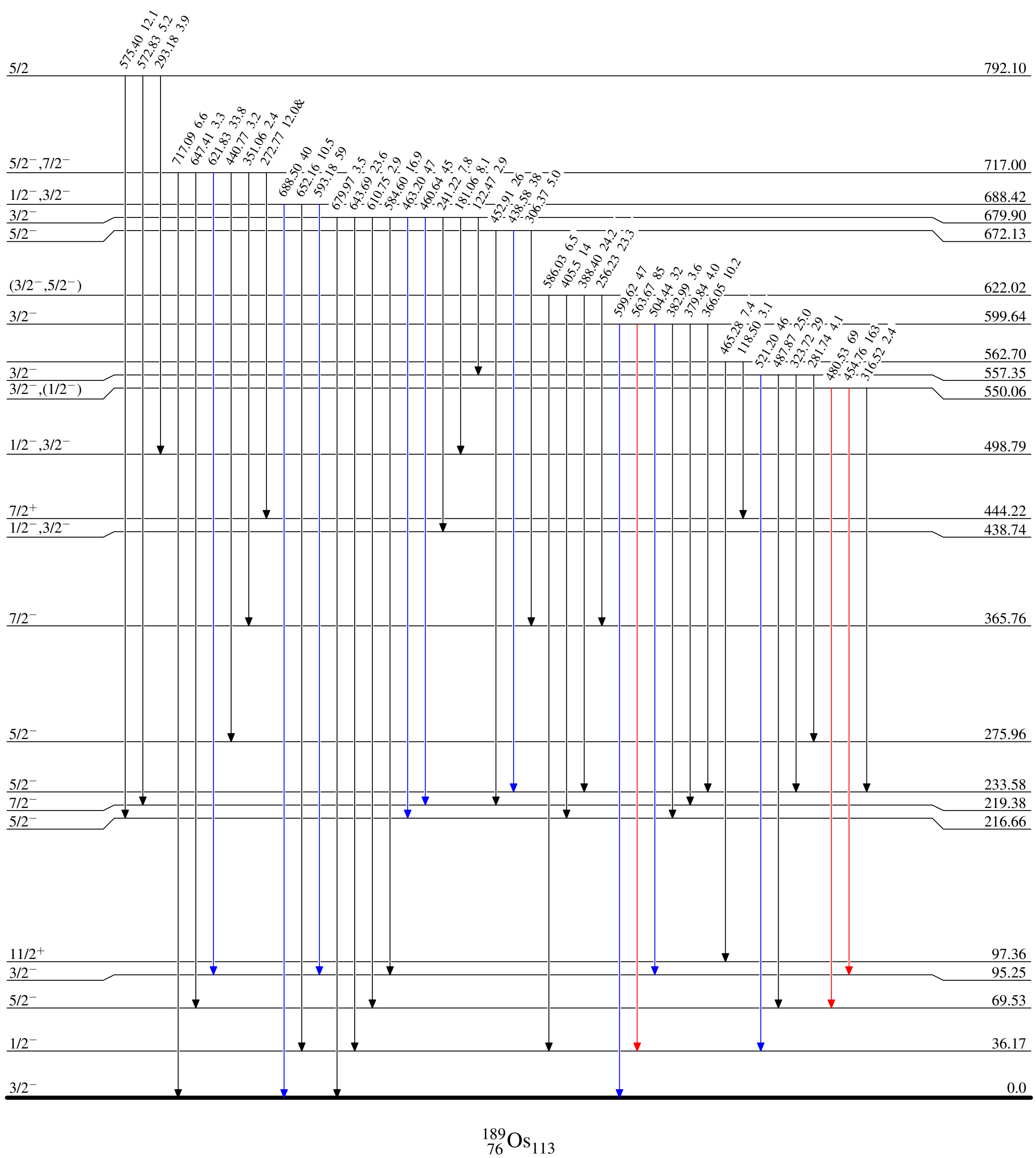
^{188}Os(n,γ) E=thermal 1992Br17

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

Legend

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



$^{189}_{76}Os_{113}$

$^{188}Os(n,\gamma)$ E=thermal 1992Br17

Level Scheme (continued)

Intensities: Relative I_γ

& Multiply placed: undivided intensity given