

$^{186}\text{W}(\alpha,2n\gamma)$  1974Ya03,1984Go06

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	F. G. Kondev, S. Juutinen, D. J. Hartley		NDS 150, 1 (2018)	1-Feb-2018

1974Ya03: E=24 MeV, measured  $\gamma$ ,  $\gamma\gamma$ . See also 1974HoZO from the same group.

1984Go06:  $^{186}\text{W}(\alpha,2n\gamma)$  E=27 MeV. Measured  $\gamma(\theta,H,t)$ , g factor by differential PAD method.

1979WiZS:  $^{186}\text{W}(\alpha,2n\gamma)$ , measured  $\gamma(t)$ . A  $T_{1/2}$  value for a proposed  $9^-$  level (energy not given) given as 9 ns. Details of this work are not available. The proposed  $9^-$  level has not been reported in any other study.

1978Sh21:  $^{186}\text{W}(\alpha,2n\gamma)$  E=28 MeV, measured  $\gamma$ ,  $\gamma(\theta)$ ,  $\gamma(t)$ .

Others: 1984Go06, 1979WiZS, 1978Sh21, 1974MaZI, 1973Wa15, 1973Ya05, 1967Ne03, 1967Ne02, 1965La02.

 $^{188}\text{Os}$  Levels

E(level) <sup>†</sup>	$J\pi^{\ddagger}$	$T_{1/2}$	Comments
0.0@	0 <sup>+</sup>		
155.0@ 2	2 <sup>+</sup>		
477.9@ 3	4 <sup>+</sup>		
632.8& 3	2 <sup>+</sup>		
789.7& 3	3 <sup>+</sup>		
940.1@ 3	6 <sup>+</sup>		
965.5& 3	4 <sup>+</sup>		
1180.9& 4	5 <sup>+</sup>		
1278.7 <sup>a</sup> 3	(4 <sup>+</sup> )		
1413.6# 3	(3 <sup>-</sup> )		
1424.9& 3	(6 <sup>+</sup> )		
1514.5@ 5	8 <sup>+</sup>		
1515.8 <sup>a</sup> 4	(5 <sup>+</sup> )		
1668.3# 3	(5 <sup>-</sup> )		
1685.6?& 6	(7 <sup>+</sup> )		E(level): Level suggested by 1974MaZI.
1770.6# 5	(7 <sup>-</sup> )	13.9 ns 8	g=-0.025 15 $T_{1/2}$ : from $\gamma(t)$ in 1984Go06. Others: 14.0 ns 10 using 155 $\gamma(t)$ and 102.2 $\gamma(t)$ in 1978Sh21 and 14 ns in 1979WiZS. g factor: differential PAD method in 1984Go06.
1993.3 6			
2054.6 7			
2169.6@ 6	10 <sup>+</sup>		
2855.5?@ 12	(12 <sup>+</sup> )		E(level): Level proposed by 1973Wa15.

<sup>†</sup> From least-squares fit to  $E\gamma$ 's.

<sup>‡</sup> From 1974Ya03.

# Band(A): negative-parity band (1978Sh21,1974Ya03).

@ Band(B):  $K^\pi=0^+$ , g.s. band (1974Ya03,1967Ne03).

& Band(C):  $K^\pi=2^+$ ,  $\gamma$  band (1974Ya03,1973Ya05).

<sup>a</sup> Band(D):  $K^\pi=4^+$ , 2-phonon  $\gamma$  band (1974Ya03,1973Ya05).

$^{186}\text{W}(\alpha,2n\gamma)$  **1974Ya03,1984Go06 (continued)** $\gamma(^{188}\text{Os})$ 

$E_\gamma^\dagger$	$I_\gamma^\dagger$	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$	Mult. <sup>†</sup>	Comments
102.3 4	6.7 14	1770.6	(7 <sup>-</sup> )	1668.3	(5 <sup>-</sup> )	E2	$A_2=0.23$ 9 (1978Sh21).
155.0 2	126 13	155.0	2 <sup>+</sup>	0.0	0 <sup>+</sup>		
<sup>x</sup> 169.3 4	3.0 6						
<sup>x</sup> 215.1 4	2.7 5						
222.7 3	9.3 19	1993.3		1770.6	(7 <sup>-</sup> )	M1	$A_2=-0.71$ 17 (1978Sh21).
243.5 4	2.0 4	1668.3	(5 <sup>-</sup> )	1424.9	(6 <sup>+</sup> )		
<sup>x</sup> 248.6 4	1.5 3						
254.8 4	4.7 9	1668.3	(5 <sup>-</sup> )	1413.6	(3 <sup>-</sup> )		
284.0 4	9.2 23	2054.6		1770.6	(7 <sup>-</sup> )		$A_2=0.16$ 9 (1978Sh21).
<sup>x</sup> 285.5 4	2.3 6						
312.0 <sup>‡</sup> 10	2.1 <sup>‡</sup> 7	789.7	3 <sup>+</sup>	477.9	4 <sup>+</sup>		This placement favored over that at 1279 level.
312.0 <sup>‡#</sup> 10	2.1 <sup>‡</sup> 7	1278.7	(4 <sup>+</sup> )	965.5	4 <sup>+</sup>		$E_\gamma$ : Placement of this gamma ray is uncertain. See also the 790 keV level.
<sup>x</sup> 314.0 5	3.4 12						
<sup>x</sup> 317.5 5	6.7 23						
322.9 2	100	477.9	4 <sup>+</sup>	155.0	2 <sup>+</sup>		
332.6 3	8.2 16	965.5	4 <sup>+</sup>	632.8	2 <sup>+</sup>		
<sup>x</sup> 355.4 4	1.4 3						
389.5 4	18 5	1668.3	(5 <sup>-</sup> )	1278.7	(4 <sup>+</sup> )		$I_\gamma$ : see comment for 391.2 $\gamma$ .
391.2 4	8.7 22	1180.9	5 <sup>+</sup>	789.7	3 <sup>+</sup>		$I_\gamma$ : unresolved from 389.5 $\gamma$ from 1668 level. Divided intensity given.
<sup>x</sup> 406.4 4	1.0 2						
448.3 4	2.3 5	1413.6	(3 <sup>-</sup> )	965.5	4 <sup>+</sup>		
459.3 4	9 3	1424.9	(6 <sup>+</sup> )	965.5	4 <sup>+</sup>		
462.3 2	40 6	940.1	6 <sup>+</sup>	477.9	4 <sup>+</sup>		
<sup>x</sup> 471.0 4	0.6 2						
477.9 3	17.0 17	632.8	2 <sup>+</sup>	155.0	2 <sup>+</sup>		
485.0 4	5.4 16	1424.9	(6 <sup>+</sup> )	940.1	6 <sup>+</sup>		
487.5 4	23 5	965.5	4 <sup>+</sup>	477.9	4 <sup>+</sup>		
489.0 4	9 3	1278.7	(4 <sup>+</sup> )	789.7	3 <sup>+</sup>		
504.6 <sup>#</sup> 5	5.0 10	1685.6?	(7 <sup>+</sup> )	1180.9	5 <sup>+</sup>		$E_\gamma$ : $\gamma$ unplaced by 1974Ya03.
<sup>x</sup> 522.7 4	0.4 1						
<sup>x</sup> 527.5 4	1.4 3						
550.3 4	4.4 9	1515.8	(5 <sup>+</sup> )	965.5	4 <sup>+</sup>		
<sup>x</sup> 557.9 4	0.6 2						
<sup>x</sup> 567.2 5	2.2 7						
<sup>x</sup> 568.4 5	1.4 4						
<sup>x</sup> 570.5 4	5.2 16						
574.4 3	11.2 17	1514.5	8 <sup>+</sup>	940.1	6 <sup>+</sup>		
<sup>x</sup> 583.6 4	2.7 6						
<sup>x</sup> 615.0 4	1.7 4						
623.8 4	6.6 14	1413.6	(3 <sup>-</sup> )	789.7	3 <sup>+</sup>		
632.7 4	24 6	632.8	2 <sup>+</sup>	0.0	0 <sup>+</sup>		
634.7 4	39 10	789.7	3 <sup>+</sup>	155.0	2 <sup>+</sup>		
645.9 2	18.9 20	1278.7	(4 <sup>+</sup> )	632.8	2 <sup>+</sup>		
655.1 4	3.5 7	2169.6	10 <sup>+</sup>	1514.5	8 <sup>+</sup>		
685.9 <sup>#</sup>		2855.5?	(12 <sup>+</sup> )	2169.6	10 <sup>+</sup>		$E_\gamma$ : Reported only by 1973Wa15.
702.8 4	8.0 24	1668.3	(5 <sup>-</sup> )	965.5	4 <sup>+</sup>		
703.0 4	10 3	1180.9	5 <sup>+</sup>	477.9	4 <sup>+</sup>		
726.2 4	5.3 20	1515.8	(5 <sup>+</sup> )	789.7	3 <sup>+</sup>		
728.1 4	6.5 20	1668.3	(5 <sup>-</sup> )	940.1	6 <sup>+</sup>		
744.5 <sup>#</sup>		1685.6?	(7 <sup>+</sup> )	940.1	6 <sup>+</sup>		$E_\gamma$ : $\gamma$ from 1974MaZI only.
780.7 4	1.3 3	1413.6	(3 <sup>-</sup> )	632.8	2 <sup>+</sup>		
<sup>x</sup> 798.9 4	1.6 3						

Continued on next page (footnotes at end of table)

$^{186}\text{W}(\alpha,2n\gamma)$  [1974Ya03,1984Go06](#) (continued) $\gamma(^{188}\text{Os})$  (continued)

$E_\gamma$ †	$I_\gamma$ †	$E_i(\text{level})$	$J_i^\pi$	$E_f$	$J_f^\pi$
810.5 3	12.6 14	965.5	4 <sup>+</sup>	155.0	2 <sup>+</sup>
<sup>x</sup> 829.0 10	1.2 3				
<sup>x</sup> 926.2 5	1.2 3				
947.1 4	1.0 3	1424.9	(6 <sup>+</sup> )	477.9	4 <sup>+</sup>
<sup>x</sup> 998.3 4	1.0 3				
<sup>x</sup> 1148.8 4	2.1 4				

† From [1974Ya03](#), unless otherwise stated.

‡ Multiply placed with undivided intensity.

# Placement of transition in the level scheme is uncertain.

<sup>x</sup>  $\gamma$  ray not placed in level scheme.

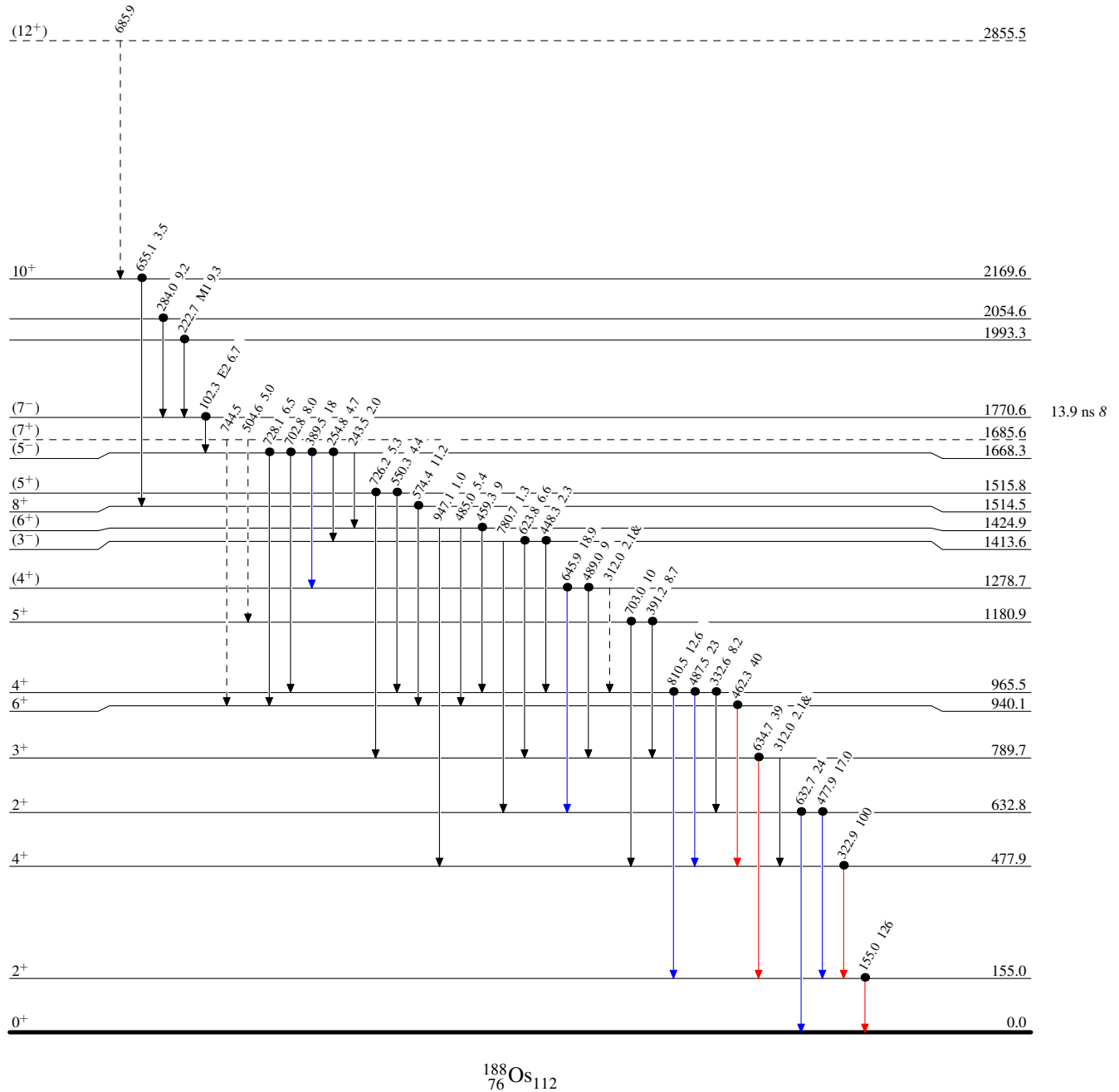
$^{186}\text{W}(\alpha,2n\gamma)$  1974Ya03,1984Go06

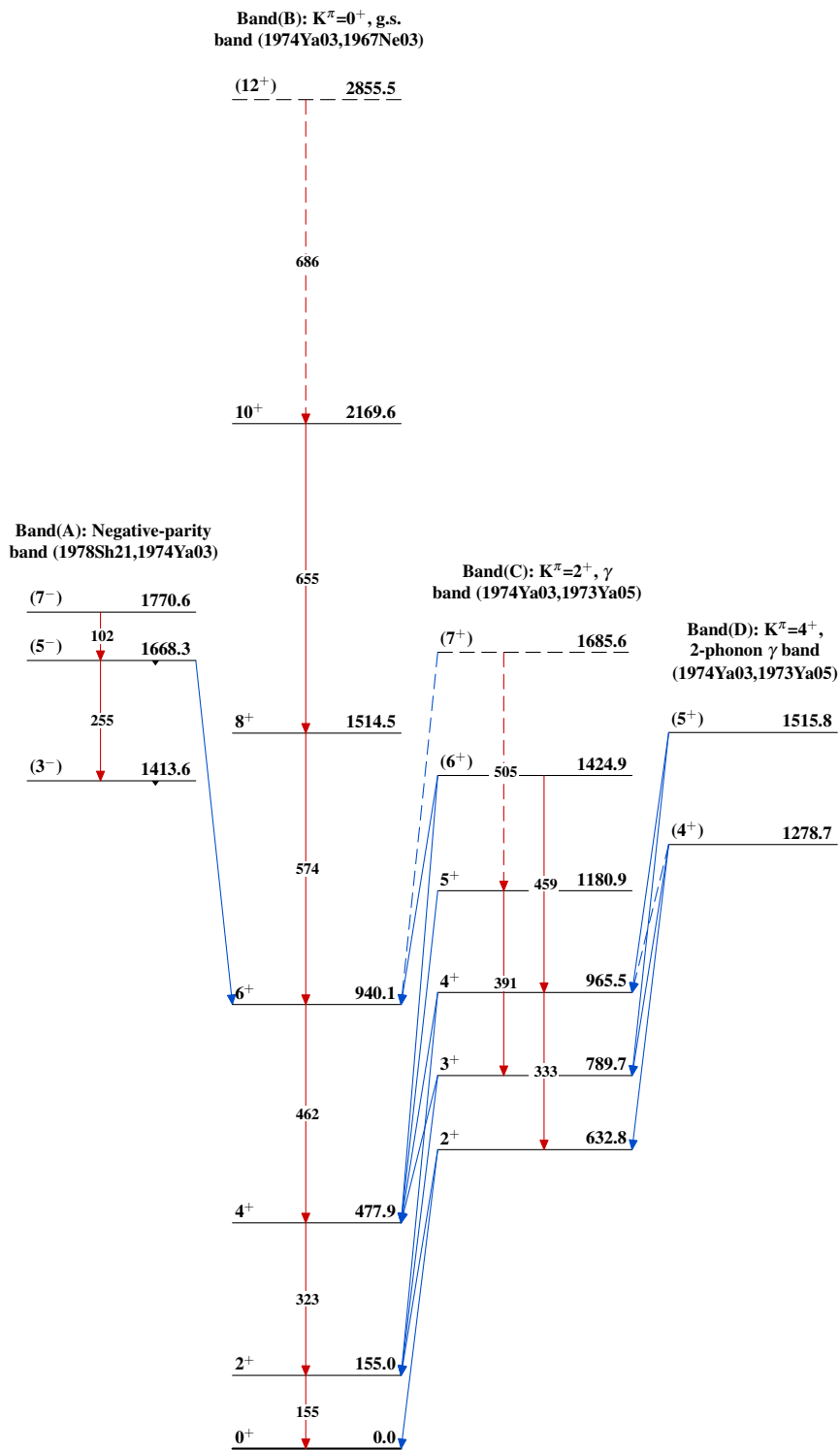
Legend

## Level Scheme

Intensities: Relative  $I_\gamma$   
& Multiply placed: undivided intensity given

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



$^{186}\text{W}(\alpha,2n\gamma)$  1974Ya03,1984Go06 $^{188}_{76}\text{Os}_{112}$