^{162}Dy(^{16}O,4nγ) 1978Dr04,1976Wa16

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, Huo Junde	NDS 87, 15 (1999)	1-Nov-1998

Additional information 1.
Other reactions: ^{162}Dy(^{16}O,4nγ), ^{163}Dy(^{16}O,5nγ). Measured continuum γ-ray spectrum, see 1978Ne01, 1980Ne01.
1978Dr04: 96.3% enriched ^{162}Dy. E(^{16}O)=86 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma$(t), $\gamma(\theta)$, Ice. Detectors:Ge(Li), Si(Li).
1976Wa16: enriched ^{162}Dy. E(^{16}O)=74 to 91 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma$(t), $\gamma(\theta)$.

^{174}W Levels

E(level)	J$^{\pi}$[†]	T$_{1/2}$[‡]	Comments
0.0[#]	0$^+$		
113.0[#] *1*	2$^+$		
356.4[#] *2*	4$^+$		
705.95[#] *24*	6$^+$		
1138.9[#] *3*	8$^+$		
1364.7[&] *4*	(4$^-$)		
1381.7?			
1401.3[@] *4*	(5$^-$)	≤30 ns	
1628.5[&] *3*	(6)$^-$		
1637.5[#] *4*	10$^+$		
1672.0 *5*		≥187 ns	
1676.3[@] *3*	7$^-$	≤30 ns	
1705.5 *5*			
1919.7 *5*		187 ns *25*	T$_{1/2}$: from 1978Dr04.
1963.2[&] *3*	(8)$^-$		
1999.1[@] *3*	9$^-$	≤30 ns	
2138.3? *16*			
2139.5? *6*			
2189.4[#] *4*	12$^+$		
2329.9[&] *4*	(10)$^-$		
2370.1? *10*			
2396.4[@] *4*	11$^-$	≤30 ns	
2611.7? *9*			
2751.8[&] *5*	(12)$^-$		
2785.2[#] *5*	14$^+$		
2861.8[@] *4*	13$^-$	≤30 ns	
2862.2? *10*			
3124.7? *11*			
3242.6[&] *5*	(14)$^-$		
3388.6[@] *5*	15$^-$	≤30 ns	
3397.3[#] *6*	16$^+$		
3398.2? *13*			
3799.4[&] *7*	(16)$^-$		
3968.6[@] *6*	17$^-$	≤30 ns	
3977.7[#] *6*	18$^+$		
4415.6[&] *10*	(18$^-$)		
4588.6[@] *9*	(19$^-$)	≤30 ns	
4606.2[#] *7*	20$^+$		

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^{162}Dy(^{16}O,4nγ) 1978Dr04,1976Wa16 (continued)

^{174}W Levels (continued)

† From $\gamma(\theta)$ and DCO (directional correlation from oriented nuclei), see 1978Dr04.
‡ From $\gamma\gamma$(t) (1978Dr04).
# Band(A): $K^\pi=0^+$ g.s. rotational band.
@ Band(B): $K^\pi=(5^-)$ band.
& Band(C): $K^\pi=(4^-)$ band.

$\gamma(^{174}W)$

E_γ†	I_γ†	E_i(level)	J_i^π	E_f	J_f^π	Mult.†‡	Comments
113.0 *1*	35 *3*	113.0	2^+	0.0	0^+		
x199.2 *6*	≤0.9						
214.3 *3*	1.8 *4*	1919.7		1705.5			
217.0# *5*	≤0.9	2138.3?		1919.7			
219.8 *3*	≤2.5	2139.5?		1919.7			
230.7# *3*	≤2.0	2370.1?		2139.5?			
241.6 *4*	≤1.5	2611.7?		2370.1?			
243.4 *1*	100	356.4	4^+	113.0	2^+	E2	
247.6 *3*	≤1.5	1919.7		1672.0			
250.5 *4*	≤1.4	2862.2?		2611.7?			
262.5 *5*	≤0.7	3124.7?		2862.2?			
263.8 *4*	1.5 *4*	1628.5	$(6)^-$	1364.7	(4^-)		
273.5 *6*	≤0.6	3398.2?		3124.7?			
275.0 *3*	≤2.2	1676.3	7^-	1401.3	(5^-)		
287.2 *3*	≤1.3	1963.2	$(8)^-$	1676.3	7^-		
289.8# *6*	≤0.7	1672.0		1381.7?			
322.7 *3*	4.3 *8*	1999.1	9^-	1676.3	7^-	(E2)	Mult.: stretched E2 from DCO ratios.
330.9# *4*	≤1.0	2329.9	$(10)^-$	1999.1	9^-		
334.5 *3*	6.3 *4*	1963.2	$(8)^-$	1628.5	$(6)^-$	(E2)	Mult.: stretched E2 from DCO ratios.
349.5 *2*	100 *5*	705.95	6^+	356.4	4^+	E2	
361.4 *3*	≤0.8	1999.1	9^-	1637.5	10^+		
366.7 *2*	7 *2*	2329.9	$(10)^-$	1963.2	$(8)^-$	(E2)	Mult.: from DCO ratios (1978Dr04).
397.3 *2*	10.1 *6*	2396.4	11^-	1999.1	9^-	(E2)	Mult.: from $\gamma(\theta)$ and DCO ratios (1978Dr04).
421.9 *2*	4.9 *3*	2751.8	$(12)^-$	2329.9	$(10)^-$	(E2)	Mult.: stretched E2 from $\gamma(\theta)$ (1978Dr04).
433.0 *2*	73.6 *37*	1138.9	8^+	705.95	6^+	E2	
465.4 *2*	6.1 *6*	2861.8	13^-	2396.4	11^-	(E2)	Mult.: stretched E2 from $\gamma(\theta)$ (1978Dr04).
472.2 *7*	≤0.5	2611.7?		2139.5?			
x477.9 *3*	1.2 *5*						
x481.7 *7*	≤0.5						
490.8 *2*	2.6 *3*	3242.6	$(14)^-$	2751.8	$(12)^-$	(E2)	Mult.: stretched E2 from $\gamma(\theta)$ (1978Dr04).
498.6 *2*	56.6 *28*	1637.5	10^+	1138.9	8^+	E2	
526.8 *3*	4.5 *6*	3388.6	15^-	2861.8	13^-	(E2)	Mult.: from DCO ratios (1978Dr04).
537.5 *2*	3.9 *7*	1676.3	7^-	1138.9	8^+		
551.9 *2*	26.5 *13*	2189.4	12^+	1637.5	10^+	E2	
556.8 *5*	1.2 *3*	3799.4	$(16)^-$	3242.6	$(14)^-$		
580.0 *2*	≤8.7	3968.6	17^-	3388.6	15^-	(E2)	I_γ: intensity for doublet =8.7 *6*. Mult.: stretched E2 from $\gamma(\theta)$ and DCO ratios (1978Dr04).
580.4 *2*	≤8.7	3977.7	18^+	3397.3	16^+	E2	I_γ: intensity for doublet =8.7 *6*.
595.8 *3*	21.8 *12*	2785.2	14^+	2189.4	12^+	E2	
612.1 *3*	7.0 *5*	3397.3	16^+	2785.2	14^+	E2	
616.2 *7*	1.0 *3*	4415.6	(18^-)	3799.4	$(16)^-$		
620.0 *7*	2.6 *9*	4588.6	(19^-)	3968.6	17^-		
628.5 *3*	2.4 *5*	4606.2	20^+	3977.7	18^+	(E2)	Mult.: stretched E2 from DCO ratios (1978Dr04).
x632.4 *4*	1.2 *4*						

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^{162}Dy(^{16}O,4nγ) 1978Dr04,1976Wa16 (continued)

$\gamma(^{174}W)$ (continued)

E_γ[†]	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†‡]	δ	Comments
675.8[#] *5*	1.3 *4*	1381.7?		705.95	6^+			
[x]679.5 *5*	1.7 *5*							
695.1 *4*	3.3 *7*	1401.3	(5^-)	705.95	6^+			
[x]724.8 *6*	3.0 *7*							
[x]748.2 *4*	3.1 *2*							
759.0 *3*	4.4 *3*	2396.4	11^-	1637.5	10^+	(E1)		Mult.: from α(K)exp≤0.0047 (consistent with E1 or M1), $\gamma(\theta)$ (if $J_1=J_2+1$), and DCO ratios (1978Dr04).
824.2 *2*	2.0 *3*	1963.2	$(8)^-$	1138.9	8^+			
[x]859.0 *4*	≤0.6							
860.2 *2*	8.0 *5*	1999.1	9^-	1138.9	8^+	E1		Mult.: from α(K)exp=0.0023 *5* (1978Dr04). $\gamma(\theta)$ (if $J_1=J_2-1$) and DCO ratios are consistent with stretched E1 (1978Dr04).
[x]917 *1*	≈1.8							
922.4 *2*	6.1 *4*	1628.5	$(6)^-$	705.95	6^+	E1+M2	≤0.38	Mult.: from $\gamma(\theta)$ if $J_1=J_2=6$ and assuming small δ. Other possible allowed spins are $J_1=5$, $J_2=6$; and $J_1=7$, $J_2=6$. DCO ratios are not consistent with stretched quadrupole. δ: from α(K)exp≤0.0042 (1978Dr04).
965.3 *7*	≈0.7	1672.0		705.95	6^+			
970.5 *3*	2.3 *8*	1676.3	7^-	705.95	6^+			
999.8 *4*	2.2 *8*	1705.5		705.95	6^+			
1008.3 *4*	4.2 *3*	1364.7	(4^-)	356.4	4^+			
1046 *1*	2.3 *6*	1401.3	(5^-)	356.4	4^+			
[x]1175.0 *6*	2.8 *13*							
1432.3 *15*	2.0 *7*	2138.3?		705.95	6^+			

[†] From 1978Dr04.
[‡] Angular distribution is characteristic of that for stretched quadrupole. DCO ratio is consistent with a cascade of E2 transitions (1978Dr04), except as noted.
[#] Placement of transition in the level scheme is uncertain.
[x] γ ray not placed in level scheme.

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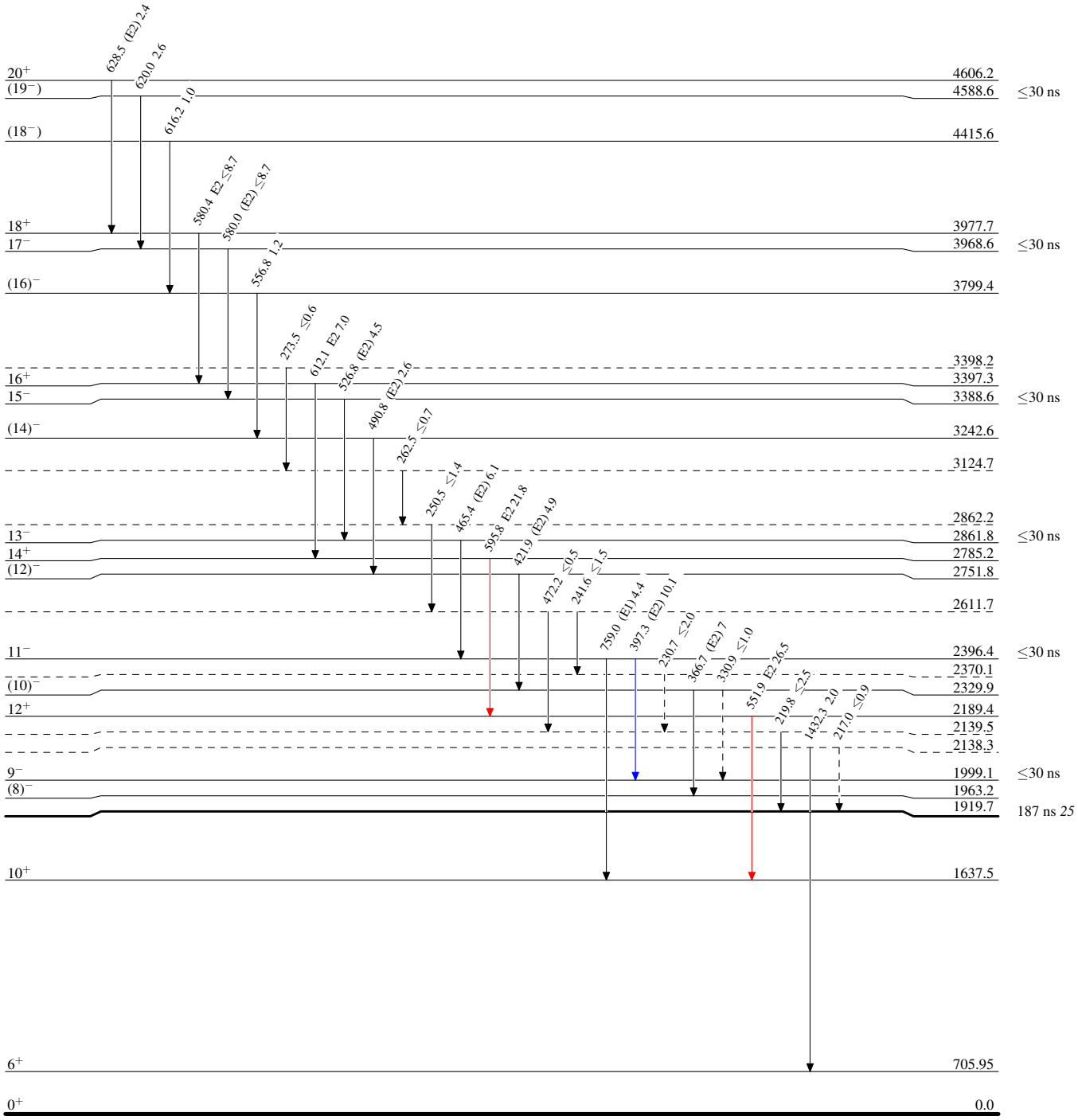
Level Scheme

Intensities: Relative I_γ

Legend

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



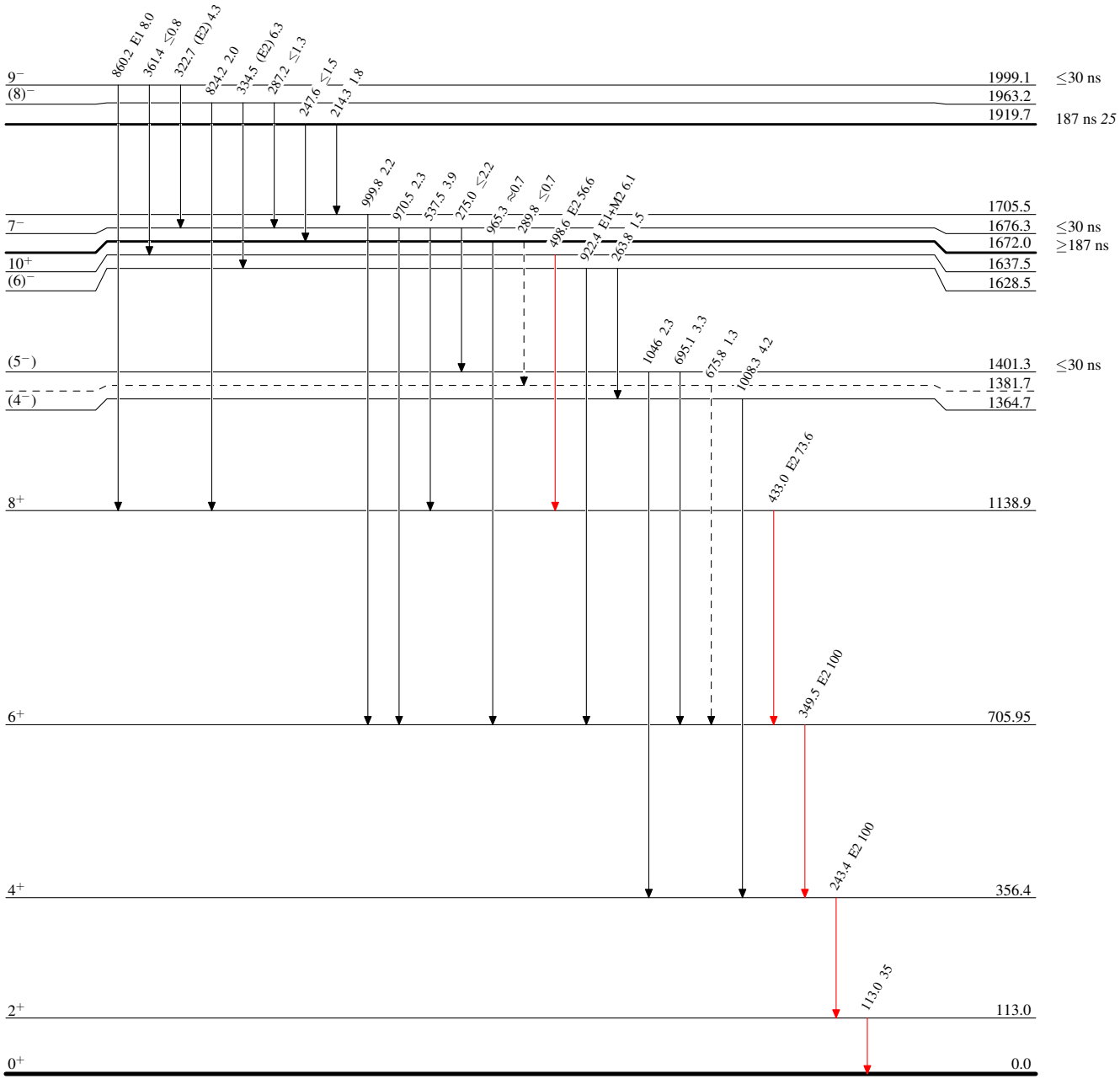
$^{174}_{74}W_{100}$

^{162}Dy(^{16}O,4nγ) 1978Dr04,1976Wa16

Level Scheme (continued)

Intensities: Relative I_γ

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



$^{174}_{74}W_{100}$

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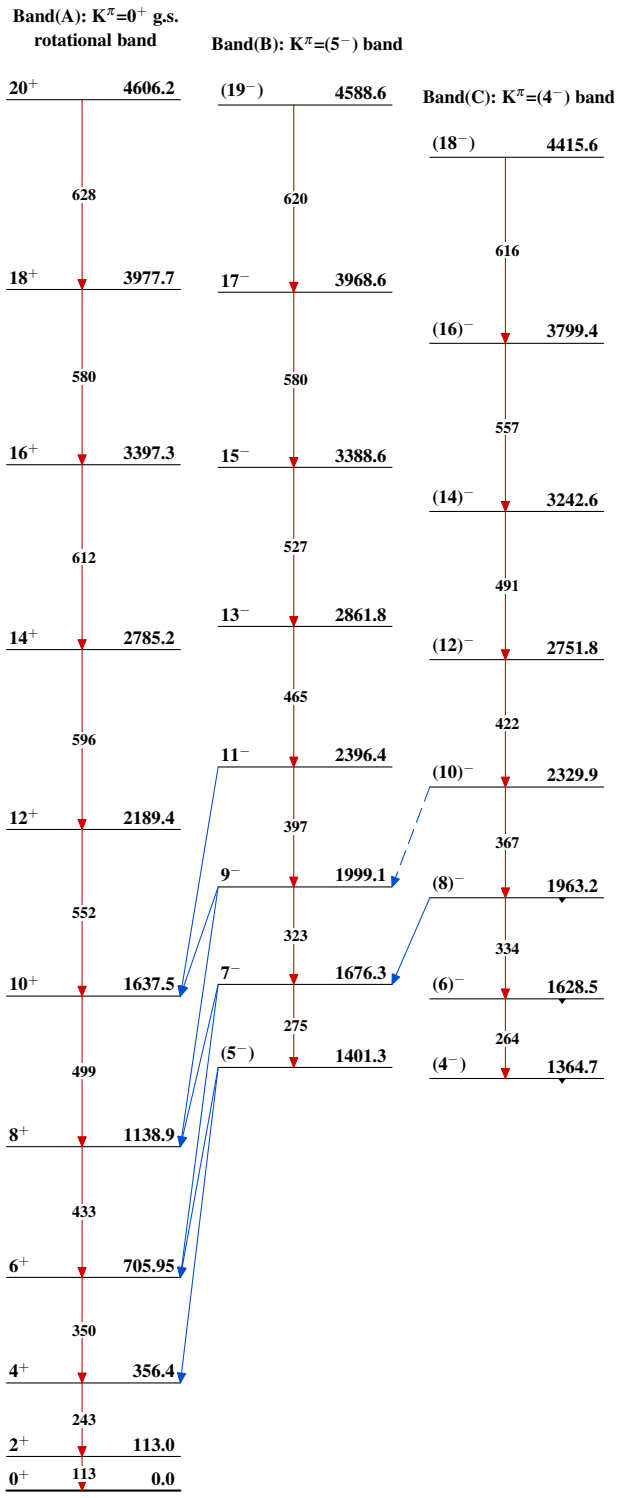

$^{174}_{74}W_{100}$