^{174}Yb(n,n′γ) 1986Yo08

History

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

Target: 98.6% enriched ^{174}Yb. Measured Eγ, Iγ at θ=90°, 125°, 135°, and 145°. Detector:Ge(Li).

^{174}Yb Levels

E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0@	0+	1572.3& 2	5−	1859.3c 2	(4+)#	2170.9g 2	2+
76.4@ 1	2+	1606.3b 1	3+	1884.9 2	(5−)	2320.6 3	(2,3,4)h
253.1@ 1	4+	1624.6c 1	1+	1886.0f 2	(0+)#	2350.3 2	(1,2)h
526.2@ 2	6+	1634.1d 1	2+	1934.3 2	(3−)	2361.5g 4	(4+)hi
890.1@ 3	8+	1675.1c 1	2+	1958.7f 4	2+	2377.9 2	
1318.3& 1	2−	1701.7b 1	4+	2016.0 2	(3+)	2436.4 3	(1,2)h
1382.3& 1	3−	1710.1d 1	3+	2050.0 2	(3+)h	2601.2 2	(2+)h
1468.3& 2	4−	1716.0a 1	4+	2068.2 2	(1+)#	2796.1 2	(2,3,4)h
1487.4a 2	0+	1733.9c 1	3+	2101.2 2	(1−,2−,3−)h	3402.9 2	(2,3,4)h
1518.3e 2	6+	1805.8d 2	4+	2113.9g 4	0+h	3427.0 2	(3,5−)
1561.0a 1	2+	1819.8b 4	5+	2123.5f 3	4+#		

† Deduced by evaluator from a least-squares fit to γ-ray energies.
‡ From γ(θ) and γ-ray decay patterns, unless otherwise specified.
# From Adopted Levels.
@ Band(A): Kπ=0+ g.s. rotational band.
& Band(B): Kπ=2− octupole-vibrational band.
a Band(C): Kπ=0+ band.
b Band(D): Kπ=3+ band.
c Band(E): Kπ=1+ band.
d Band(F): Kπ=2+ γ-vibrational band.
e Band(G): Kπ=6+ band.
f Band(H): Kπ=0+ band.
g Band(I): Kπ=0+ band.
h See Adopted Levels for evaluator′s assignments.
i From rotational structure.

γ(^{174}Yb)

Eγ	Iγ†	Ei(level)	Jiπ	Ef	Jfπ	Mult.	δ‡	Comments
76.5 2	105.5 16	76.4	2+	0.0	0+			
176.7 1	100.0 17	253.1	4+	76.4	2+			
224.0 2	5.9 8	1606.3	3+	1382.3	3−			
273.0 1	45.8 9	526.2	6+	253.1	4+			
288.0 1	23.9 4	1606.3	3+	1318.3	2−	D(+Q)	+0.04 3	
319.4 1	6.5 1	1701.7	4+	1382.3	3−	D(+Q)	−0.03 3	
363.9 2	3.8 5	890.1	8+	526.2	6+			
366.5# 1	6.4# 6	1884.9	(5−)	1518.3	6+			
366.5# 1	6.4# 6	2068.2	(1+)	1701.7	4+			
399.3 2	2.5 5	2101.2	(1−,2−,3−)	1701.7	4+			Iγ: value differs significantly from Iγ from ^{173}Yb(n,γ) E=thermal.

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^{174}Yb(n,n′γ) 1986Yo08 (continued)

γ(^{174}Yb) (continued)

E_γ	I_γ[†]	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ[‡]	Comments
409.7 *1*	5.0 *2*	2016.0	(3$^+$)	1606.3	3$^+$	D(+Q)		δ=−0.06 *15* or +1.5 *+6−4*.
416.7 *2*	3.0 *5*	1884.9	(5$^-$)	1468.3	4$^-$			
443.7 *2*	5.1 *5*	2050.0	(3$^+$)	1606.3	3$^+$			
532.8 *2*	5.0 *2*	2601.2	(2$^+$)	2068.2	(1$^+$)	D+Q	+1.1 *3*	
661.9 *2*	3.3 *4*	2377.9		1716.0	4$^+$			
885.3 *2*	1.2 *3*	2601.2	(2$^+$)	1716.0	4$^+$			
992.1 *1*	10.7 *2*	1518.3	6$^+$	526.2	6$^+$	D+Q	−1.6 *+4−3*	
[x]1089.4 *2*	4.4 *3*							
1094.4 *2*	4.7 *3*	2796.1	(2,3,4)	1701.7	4$^+$			
1128.9 *1*	6.9 *1*	1382.3	3$^-$	253.1	4$^+$	D(+Q)	+0.05 *4*	
1189.4 *4*	1.4 *3*	1716.0	4$^+$	526.2	6$^+$			
1215.2 *1*	13.8 *3*	1468.3	4$^-$	253.1	4$^+$	D(+Q)	+0.04 *10*	
1242.0 *1*	64.8 *11*	1318.3	2$^-$	76.4	2$^+$	D(+Q)	−0.04 *7*	
[x]1267.3 *3*	4.6 *3*							
1293.6 *3*	5.1 *1*	1819.8	5$^+$	526.2	6$^+$	D+Q	−0.43 *4*	
1306.0 *1*	30.3 *8*	1382.3	3$^-$	76.4	2$^+$	D(+Q)	+0.01 *6*	
1307.4 *2*	10.4 *2*	1561.0	2$^+$	253.1	4$^+$	(Q)		E2+M3, δ=+0.04 *7*. Decay scheme requires Q.
1319.2 *1*	6.2 *2*	1572.3	5$^-$	253.1	4$^+$	D(+Q)	−0.03 *4*	
1333.1 *3*	2.0 *3*	1859.3	(4$^+$)	526.2	6$^+$			
1353.2 *2*	1.5 *3*	1606.3	3$^+$	253.1	4$^+$			
1411.0 *2*	8.4 *3*	1487.4	0$^+$	76.4	2$^+$			
1448.6 *1*	3.7 *1*	1701.7	4$^+$	253.1	4$^+$	D+Q	+0.93 *17*	
1456.3 *2*	2.2 *3*	1710.1	3$^+$	253.1	4$^+$			
1463.0 *1*	7.7 *2*	1716.0	4$^+$	253.1	4$^+$	D(+Q)	−0.03 *+25−16*	
1484.7 *1*	6.3 *1*	1561.0	2$^+$	76.4	2$^+$	D+Q		δ=+0.12 *+12−10* or +1.7 *4*.
1529.8 *1*	6.4 *2*	1606.3	3$^+$	76.4	2$^+$	D+Q		δ=−0.02 *6* or −3.7 *+10−7*.
1548.2 *1*	9.2 *3*	1624.6	1$^+$	76.4	2$^+$			
1552.7 *1*	5.6 *3*	1805.8	4$^+$	253.1	4$^+$			
1557.9 *1*	11.1 *2*	1634.1	2$^+$	76.4	2$^+$	D+Q		δ=−0.48 *8* or pure quadrupole.
1598.7 *1*	5.5 *1*	1675.1	2$^+$	76.4	2$^+$	D+Q		δ=−0.23 *5* or +5.2 *+18−11*.
1624.7[#] *2*	2.8[#] *3*	1624.6	1$^+$	0.0	0$^+$			
1624.7[#] *2*	2.8[#] *3*	1701.7	4$^+$	76.4	2$^+$			
1633.8 *1*	8.2 *4*	1710.1	3$^+$	76.4	2$^+$	D+Q	−3.8 *+14−8*	
1634.0 *1*	20.6 *9*	1634.1	2$^+$	0.0	0$^+$			
1657.5 *1*	6.9 *1*	1733.9	3$^+$	76.4	2$^+$	D+Q		δ=+0.50 *5* or +4.6 *+14−10*.
1675.1 *1*	10.0 *2*	1675.1	2$^+$	0.0	0$^+$	Q		
1681.0 *3*	2.8 *3*	1934.3	(3$^-$)	253.1	4$^+$			
1711.0 *1*	15.7 *3*	3427.0	(3,5$^-$)	1716.0	4$^+$	D+Q		δ=+0.11 *5* if J(3427)=3; δ=+0.03 *3* if J(3427)=5.
1763.5 *2*	1.3 *3*	2016.0	(3$^+$)	253.1	4$^+$			
1783.0 *2*	4.8 *3*	1859.3	(4$^+$)	76.4	2$^+$			
1809.6 *2*	6.8 *4*	1886.0	(0$^+$)	76.4	2$^+$			
1858.2 *3*	1.9 *3*	1934.3	(3$^-$)	76.4	2$^+$			
1870.4 *2*	3.5 *4*	2123.5	4$^+$	253.1	4$^+$			
1882.3 *3*	6.6 *1*	1958.7	2$^+$	76.4	2$^+$	D+Q		δ=+0.01 *8* or +2.2 *5*.
1919.0 *3*	2.3 *3*	2170.9	2$^+$	253.1	4$^+$			
1934.5 *3*	1.7 *3*	3402.9	(2,3,4)	1468.3	4$^-$			
1991.5 *3*	1.7 *4*	2068.2	(1$^+$)	76.4	2$^+$			
2025.0 *2*	5.2 *1*	2101.2	(1$^-$,2$^-$,3$^-$)	76.4	2$^+$	D(+Q)	−0.01 *7*	
2037.5 *3*	2.7 *4*	2113.9	0$^+$	76.4	2$^+$			
2044.7 *4*	2.1 *4*	3427.0	(3,5$^-$)	1382.3	3$^-$			
2067.5 *3*	4.2 *4*	2320.6	(2,3,4)	253.1	4$^+$			
2084.6 *2*	5.2 *4*	3402.9	(2,3,4)	1318.3	2$^-$			
2094.4 *2*	4.2 *4*	2170.9	2$^+$	76.4	2$^+$			

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^{174}Yb(n,n′γ) 1986Yo08 (continued)

γ(^{174}Yb) (continued)

E_γ	I_γ †	E_i(level)	J_i^π	E_f	J_f^π	E_γ	I_γ †	E_i(level)	J_i^π	E_f	J_f^π
2124.7 *2*	4.1 *4*	2377.9		253.1	4^+	2350.5 *3*	3.8 *6*	2350.3	(1,2)	0.0	0^+
2171.0 *2*	2.5 *3*	2170.9	2^+	0.0	0^+	2360.0 *3*	2.3 *4*	2436.4	(1,2)	76.4	2^+
2244.2 *3*	4.2 *4*	2320.6	(2,3,4)	76.4	2^+	2436.4 *4*	2.9 *6*	2436.4	(1,2)	0.0	0^+
2273.8 *3*	2.8 *4*	2350.3	(1,2)	76.4	2^+	2524.8 *3*	4.1 *6*	2601.2	(2^+)	76.4	2^+
2285.1 *3*	3.5 *5*	2361.5	(4^+)	76.4	2^+	2719.7 *4*	4.2 *8*	2796.1	(2,3,4)	76.4	2^+

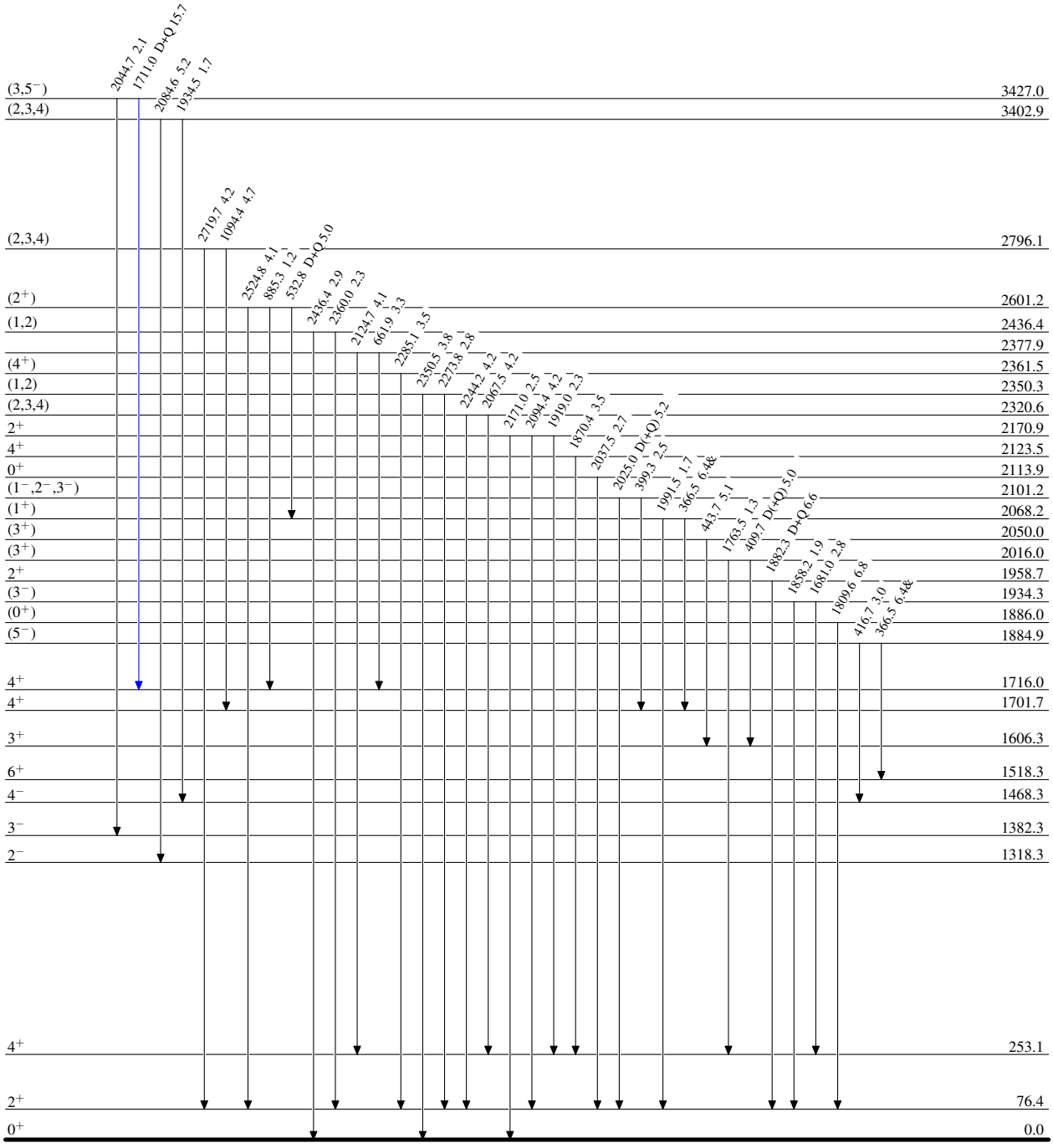
† Measured at θ=125°.
‡ From $\gamma(\theta)$.
# Multiply placed with undivided intensity.
x γ ray not placed in level scheme.

^{174}Yb(n,n′γ) 1986Yo08

Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



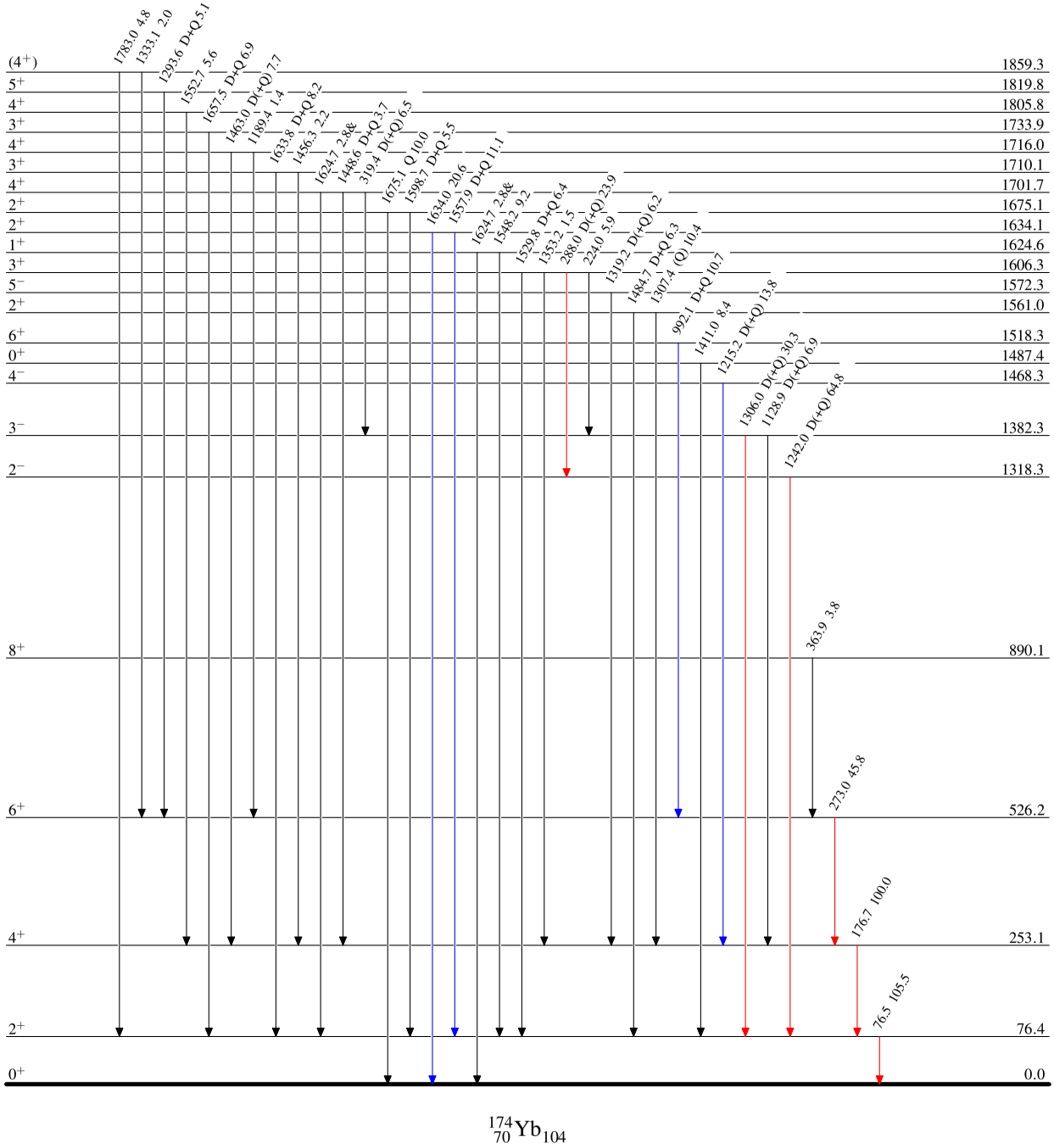
$^{174}_{70}Yb_{104}$

^{174}Yb(n,n′γ) 1986Yo08

Level Scheme (continued)

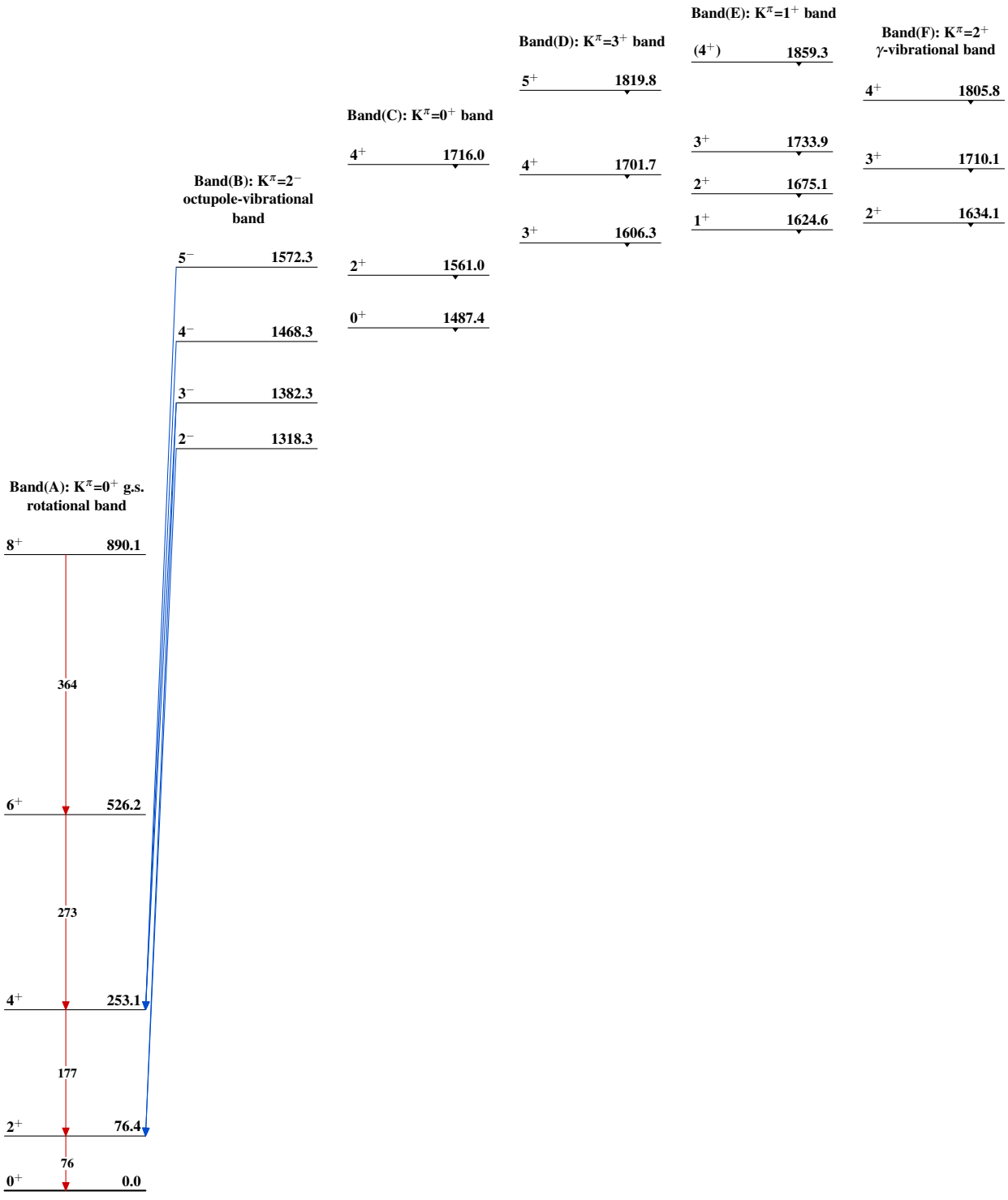
Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



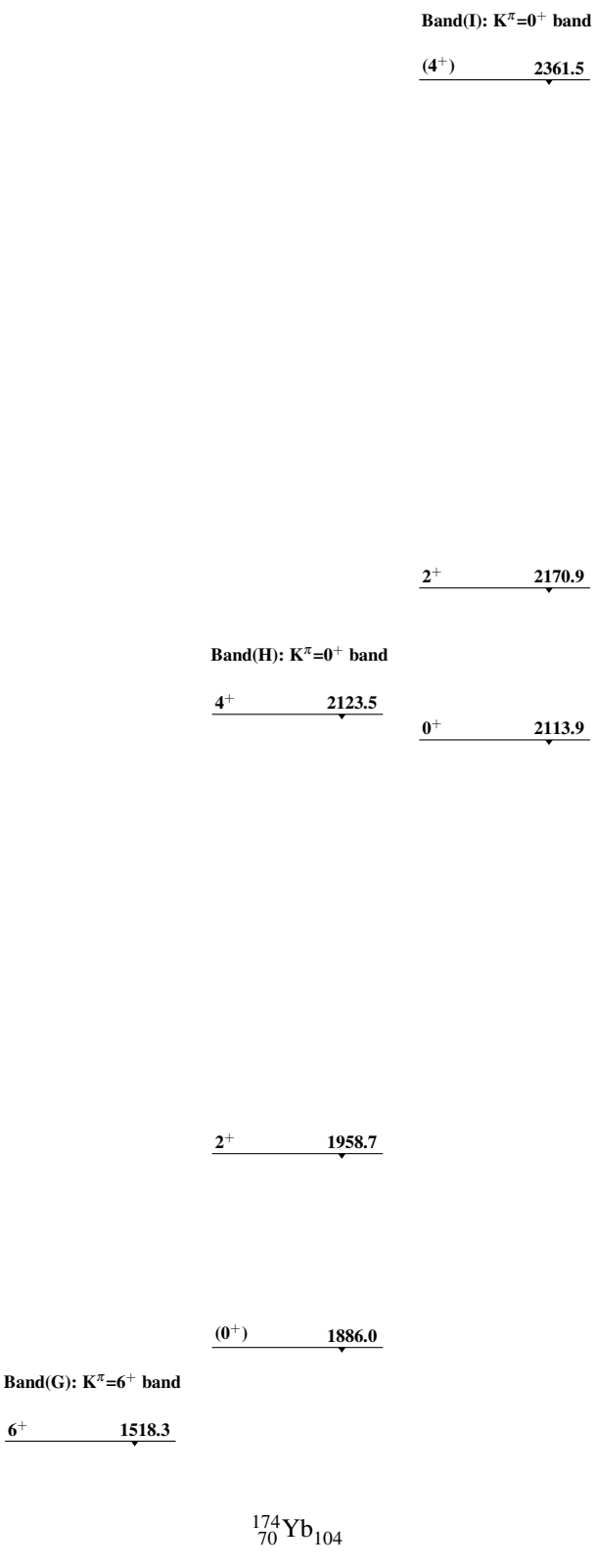
$^{174}_{70}Yb_{104}$

^{174}Yb(n,n′γ) 1986Yo08



$^{174}_{70}Yb_{104}$

^{174}Yb(n,n′γ) 1986Yo08 (continued)



$^{174}_{70}Yb_{104}$