^{172}Yb(n,n′γ) 1986Yo08

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	NDS 75,199 (1995)	31-May-1995

E=fast neutrons from a reactor. Measured γ, γ(θ) at 90°, 114°, 125°, 135° and 145° relative to the incident neutron beam. Level spectrum is compared with predictions of IBA model.

Other:

1986Al07: E≈2 MeV. Measured γ, nγ coin.

^{172}Yb Levels

E(level)‡	Jπ†	E(level)‡	Jπ†	E(level)‡	Jπ†	E(level)‡	Jπ†
0.0	0^+	1221.8 *2*	3^-	1510.8 *3*	6^+	1750.2 *4*	4^+
78.7 *2*	2^+	1263.0 *2*	4^+	1549.8 *2*	3^+	1757.3 *2*	$(2)^-$
260.4 *2*	4^+	1286.9 *2*	4^+	1600.0 *1*	1^-	1794.0 *2*	0^+
540.5 *2*	6^+	1330.8 *2*	4^-	1608.9 *2*	2^+	1803.9 *2*	4^+
1042.9 *2*	0^+	1353.4 *2*	(5^-)	1633.6 *2*	$(4)^+$	1821.9 *3*	3^-
1117.9 *2*	2^+	1376.7 *2*	5^+	1640.9 *2*	4^-	1850.4 *3*	2^+
1155.0 *2*	1^-	1405.1 *2*	0^+	1662.9 *2*	3^+	2047.7 *2*	$(2)^+$
1172.4 *2*	3^+	1466.4 *2*	2^+	1700.9 *2*	3^+	2192.8 *3*	(1^+)
1198.3 *2*	2^-	1476.8 *2*	2^+	1711.4 *2*	$3^{(-)}$	2607.3 *2*	

† From Adopted Levels.

‡ From least-squares fit to Eγ′s.

γ(^{172}Yb)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ†	Comments
78.7 *2*		78.7	2^+	0.0	0^+			
90.5 *1*	61 *3*	1263.0	4^+	1172.4	3^+			
181.6 *1*	100 *4*	260.4	4^+	78.7	2^+			
204.3 *2*	8.9 *3*	1376.7	5^+	1172.4	3^+	Q		A_2=0.32 *9*, A_4=−0.11 *9*. δ(O/Q)=−0.04 *9*.
247.6 *3*	6.3 *9*	1510.8	6^+	1263.0	4^+			
264.2 *2*	1.8 *6*	1640.9	4^-	1376.7	5^+			
280.1 *1*	38.7 *16*	540.5	6^+	260.4	4^+			
287.2 *2*	2.3 *6*	1405.1	0^+	1117.9	2^+			
377.8 *2*	8.1 *2*	1640.9	4^-	1263.0	4^+	D		A_2=0.36 *4*, A_4=0.00 *4*. δ(Q/D)=+0.03 *8*.
399.8 *1*	25.7 *7*	1662.9	3^+	1263.0	4^+			
490.7 *3*	3.2 *8*	1662.9	3^+	1172.4	3^+			
528.4 *2*	5.1 *2*	1700.9	3^+	1172.4	3^+	D+Q	+0.09 *7*	A_2=0.34 *3*, A_4=−0.05 *3*. δ: other: +1.1 *2*.
539.5 *3*	5.3 *3*	1803.9	4^+	1263.0	4^+			E_γ: poor energy fit, deviates by≈1 keV. Placement is suspect.
558.9 *2*	3.1 *6*	1757.3	$(2)^-$	1198.3	2^-			
602.3 *2*	2.4 *4*	1757.3	$(2)^-$	1155.0	1^-			
631.2 *3*	1.2 *4*	1803.9	4^+	1172.4	3^+			
746.4 *3*	2.7 *5*	1286.9	4^+	540.5	6^+			
812.9 *2*	3.4 *6*	1353.4	(5^-)	540.5	6^+			
836.2 *2*	1.0 *3*	1376.7	5^+	540.5	6^+			
857.4 *1*	21.9 *6*	1117.9	2^+	260.4	4^+	Q		A_2=0.067 *20*, A_4=−0.030 *23*. δ(O/Q)=+0.02 *4*.
911.9 *1*	22.4 *6*	1172.4	3^+	260.4	4^+	D+Q	−1.5 *4*	A_2=0.26 *4*, A_4=0.06 *5*. δ: other: −0.52 *+10−20*.

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^{172}Yb(n,n′γ) 1986Yo08 (continued)

γ(^{172}Yb) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	δ†	Comments
961.4 *1*	21.6 *6*	1221.8	3^-	260.4	4^+	D		A_2=−0.09 *3*, A_4=0.01 *3*. δ(Q/D)=+0.01 *3*.
964.2 *1*	22.7 *10*	1042.9	0^+	78.7	2^+			A_2=0.03 *5*, A_4=0.02 *6*.
994.7 *3*	1.8 *4*	2192.8	(1^+)	1198.3	2^-			
1002.5 *1*	10.1 *3*	1263.0	4^+	260.4	4^+	D+Q		A_2=0.24 *8*, A_4=−0.09 *8*. δ: −0.17 *12* or +1.4 *3*.
1026.5 *1*	8.5 *3*	1286.9	4^+	260.4	4^+	D+Q	+0.78	A_2=0.38 *8*, A_4=−0.10 *9*. δ: quoted as +0.78 *+32*−?. Other: +0.10 +?−17.
1039.3 *1*	21.7 *6*	1117.9	2^+	78.7	2^+	D+Q	+2.3 *+5−3*	A_2=0.18 *4*, A_4=−0.06 *4*. δ: other: −0.02 *7*.
1070.4 *1*	15.8 *6*	1330.8	4^-	260.4	4^+	D		A_2=0.35 *10*, A_4=−0.02 *11*. δ(Q/D)=+0.02 *+38−16*.
1076.3 *1*	31.7 *9*	1155.0	1^-	78.7	2^+	D		A_2=−0.02 *3*, A_4=0.01 *3*. δ(Q/D)=+0.01 *15*.
1093.0 *1*	7.4 *7*	1353.4	(5^-)	260.4	4^+			
1093.6 *1*	83.6 *23*	1172.4	3^+	78.7	2^+	D+Q	−7.2 *+9−14*	A_2=−0.09 *3*, A_4=0.08 *4*. δ: other: +0.11 *3*.
1116.3 *2*	1.0 *3*	1376.7	5^+	260.4	4^+			
1117.9 *2*	7.1 *5*	1117.9	2^+	0.0	0^+			
1119.6 *1*	40.4 *12*	1198.3	2^-	78.7	2^+	D		A_2=0.17 *5*, A_4=−0.04 *6*. δ(Q/D)=−0.02 *10*.
1143.1 *1*	14.9 *6*	1221.8	3^-	78.7	2^+	D		A_2=−0.19 *4*, A_4=0.01 *5*. δ(Q/D)=+0.02 *3*.
1155.1 *2*	6.0 *2*	1155.0	1^-	0.0	0^+	D		A_2=−0.13 *5*, A_4=0.02 *6*.
1184.0 *3*	1.7 *4*	1263.0	4^+	78.7	2^+			
1208.2 *2*	2.5 *4*	1286.9	4^+	78.7	2^+			
1216.5 *3*	1.6 *3*	1476.8	2^+	260.4	4^+			
x1239.4 *3*	5.5 *6*							
1289.3 *2*	2.6 *4*	1549.8	3^+	260.4	4^+			
1373.3 *2*	4.6 *5*	1633.6	$(4)^+$	260.4	4^+			
1387.7 *1*	13.8 *4*	1466.4	2^+	78.7	2^+	D+Q	−4.6 *+13−20*	A_2=−0.21 *4*, A_4=−0.06 *4*. δ: other: −0.73 *+3−12*.
1398.0 *2*	13.4 *4*	1476.8	2^+	78.7	2^+	D+Q		A_2=0.34 *5*, A_4=−0.06 *5*. δ: +0.15 *+12−8* or +1.5 *3*.
1402.7 *2*	1.4 *4*	1662.9	3^+	260.4	4^+			
1408.8 *3*	2.2 *4*	2607.3		1198.3	2^-			
1434.5 *3*	1.2 *4*	2607.3		1172.4	3^+			
1450.9 *3*	3.7 *2*	1711.4	$3^{(-)}$	260.4	4^+	D		A_2=−0.08 *3*, A_4=0.04 *4*. δ(Q/D)=−0.02 *3*.
1466.4 *3*	11.1 *4*	1466.4	2^+	0.0	0^+	Q		A_2=0.32 *7*, A_4=−0.04 *8*.
1471.1 *1*	11.7 *3*	1549.8	3^+	78.7	2^+	D+Q	−7.0 *+15−20*	A_2=−0.11 *4*, A_4=0.11 *5*. δ: other: +0.10 *4*.
1476.8 *2*	4.7 *2*	1476.8	2^+	0.0	0^+	Q		A_2=0.28 *5*, A_4=−0.07 *6*.
1489.8‡ *3*	2.7‡ *4*	1750.2	4^+	260.4	4^+			
1489.8‡ *3*	2.7‡ *4*	2607.3		1117.9	2^+			
1521.2 *1*	6.7 *2*	1600.0	1^-	78.7	2^+	D		A_2=−0.011 *20*, A_4=0.017 *23*. δ(Q/D)=−0.04 *7*.
1530.2 *2*	4.7 *2*	1608.9	2^+	78.7	2^+	D+Q	+5.7 *+18−11*	A_2=0.052 *25*, A_4=−0.05 *3*. δ: other: −0.37 *8*.
1543.7 *3*	2.0 *4*	1803.9	4^+	260.4	4^+			
1554.8 *2*	1.2 *3*	1633.6	$(4)^+$	78.7	2^+			
1584.4 *3*	4.2 *5*	1662.9	3^+	78.7	2^+			
1600.0 *2*	3.7 *1*	1600.0	1^-	0.0	0^+	D		A_2=−0.15 *4*, A_4=0.02 *5*.
1608.8 *3*	4.2 *4*	1608.9	2^+	0.0	0^+			
1622.2 *2*	2.4 *4*	1700.9	3^+	78.7	2^+			

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^{172}Yb(n,n′γ) 1986Yo08 (continued)

γ(^{172}Yb) (continued)

E_γ	I_γ	E_i(level)	J_i^π	E_f	J_f^π	Mult.	Comments
1632.7 *2*	4.6 *2*	1711.4	$3^{(-)}$	78.7	2^+	D	A_2=−0.20 *5*, A_4=0.00 *5*. δ(Q/D)=+0.03 *4*.
1715.3 *2*	3.7 *5*	1794.0	0^+	78.7	2^+		
1725.7 *2*	4.4 *5*	1803.9	4^+	78.7	2^+		
1743.2 *2*	2.9 *4*	1821.9	3^-	78.7	2^+		
1771.5 *3*	2.1 *4*	1850.4	2^+	78.7	2^+		
1787.6 *3*	1.3 *4*	2047.7	$(2)^+$	260.4	4^+		
[x]1812.5 *3*	6.2 *7*						
1850.6 *3*	1.8 *4*	1850.4	2^+	0.0	0^+		
[x]1919.2 *2*	3.2 *5*						
1968.8 *2*	2.8 *4*	2047.7	$(2)^+$	78.7	2^+		
2113.9 *3*	1.6 *4*	2192.8	(1^+)	78.7	2^+		

[†] Generally two values are possible from $\gamma(\theta)$ data, the one consistent with that in adopted gammas is given here, the other δ (possible from $\gamma(\theta)$ but less likely from adopted gammas) is given under comments.
[‡] Multiply placed with undivided intensity.
[x] γ ray not placed in level scheme.

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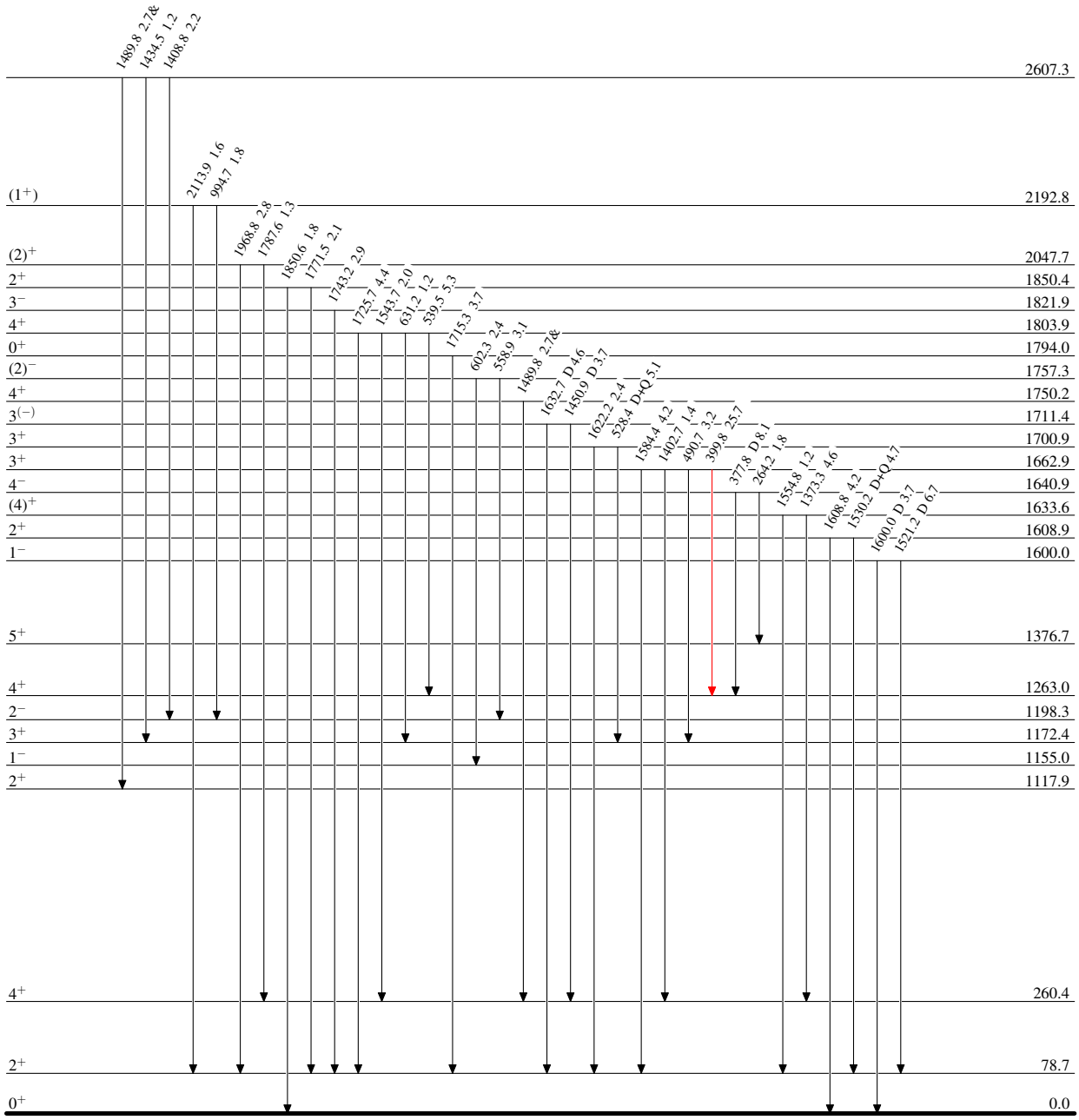
Level Scheme

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



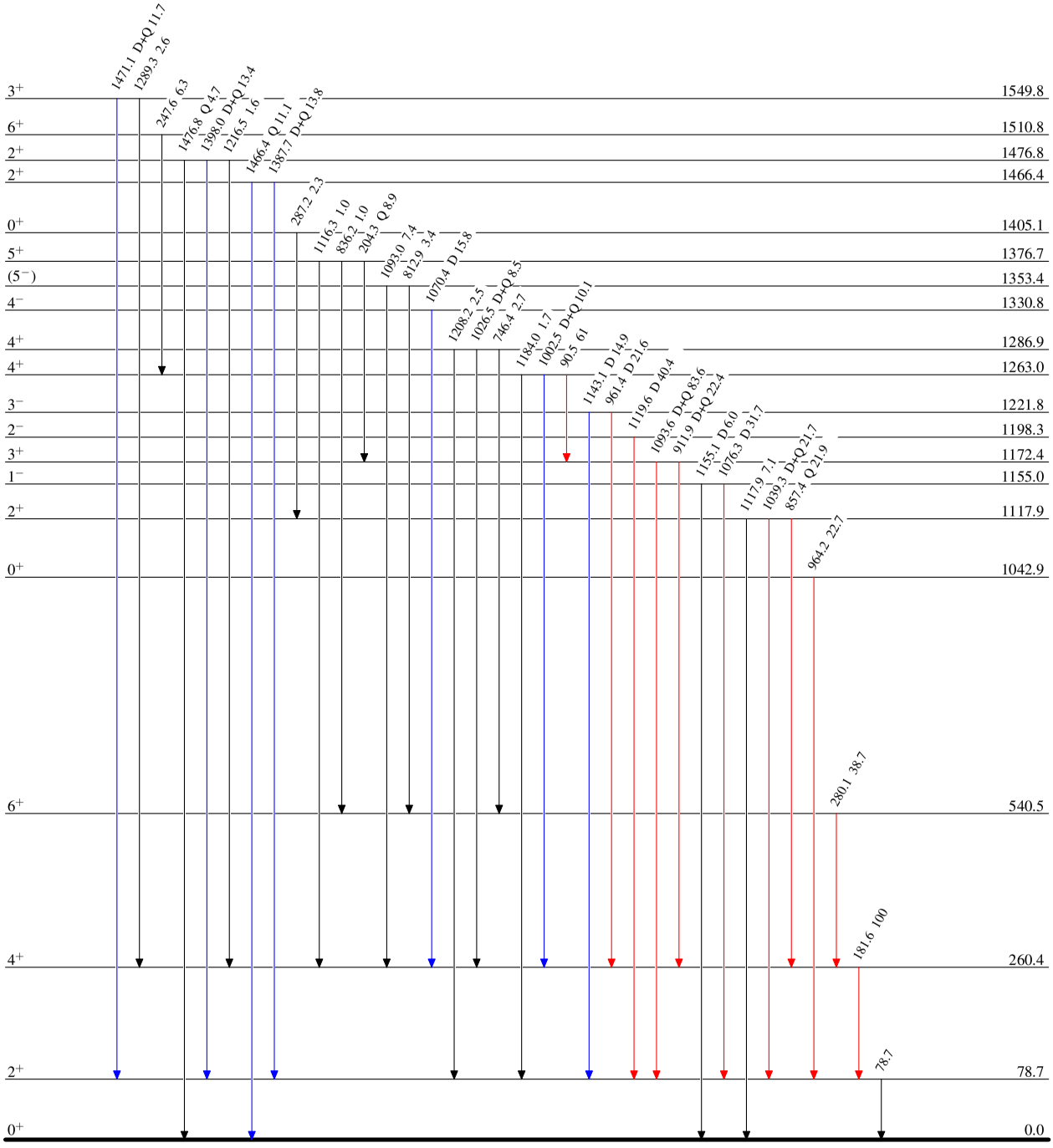
$^{172}_{70}Yb_{102}$

^{172}Yb(n,n′γ) 1986Yo08

Level Scheme (continued)

Intensities: Relative I_γ
& Multiply placed: undivided intensity given

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



$^{172}_{70}Yb_{102}$