^{154}Sm(^{16}O,4nγ),^{159}Tb(^{11}B,4nγ) 1981Wa23,1967Ne02

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Coral M. Baglin	NDS 109, 1103 (2008)	1-Mar-2008

Other measurements: 1965St03; ^{159}Tb(^{11}B,4nγ), E=56 MeV, measured Eγ.
Includes ^{154}Sm(^{16}O,4nγ), ^{159}Tb(^{14}N,$\alpha\gamma$), ^{159}Tb(^{14}N,X), ^{158}Dy(^{12}C,4nγ), ^{159}Tb(^{11}B,4nγ). 1977HaYI (^{158}Dy(^{12}C,4nγ))
1977InZV (^{159}Tb(^{14}N,X), E=95 MeV), 1978KaZK (^{159}Tb(^{14}N,$\alpha\gamma$), E=115 MeV),
1981Si02: ^{154}Sm(^{16}O,4nγ), E=73, 85 MeV; measured Eγ, Iγ, $\gamma\gamma$ coin, γ multiplicity.
1981Wa23: ^{154}Sm(^{16}O,4nγ), E(^{16}O)=80 MeV; measured $\gamma\gamma$-coin, Eγ, Iγ, $\gamma(\theta)$, unenumerated Ice.
1967Ne02: ^{159}Tb(^{11}B,4nγ), E=54 MeV; measured Eγ, Iγ, $\gamma(\theta)$.

^{166}Yb Levels

J(Z),$T_{1/2}$(Z) from Adopted Levels.

E(level)†	Jπ‡	$T_{1/2}$	E(level)†	Jπ‡	E(level)†	Jπ‡
0.0#	0^+	56.7 h *1*	2150.7@ *7*	9^+	3353.9& *7*	15^-
102.1# *4*	2^+		2175.2# *6*	12^+	3489.1# *7*	16^+
330.2# *5*	4^+		2209.0& *7*	9^-	3665.6a *9*	16^-
667.7# *5*	6^+		2232.5 *7*	(7^-)	3782.1b *8*	18^+
932.1@ *4*	2^+		2360.9a *7*	10^-	3878.8c *11*	(16^-)
1038.6@ *6*	3^+		2417.2& *7*	11^-	3892.1& *8*	17^-
1097.9# *6*	8^+		2491.5c *7*	(10^-)	4190.1# *9*	18^+
1327.5@ *6*	5^+		2531.2b *7*	12^+	4218.4a *10*	18^-
1605.6# *6*	10^+		2647.4@ *8*	(11^+)	4370.5b *9*	20^+
1616.8 *7*	(4^-)		2728.5a *7*	12^-	4470.8c *12*	(18^-)
1704.8@ *7*	7^+		2778.8# *7*	14^+	4478.3& *9*	19^-
1789.9& *6*	(5^-)		2863.0& *7*	13^-	4818.5a *12*	20^-
1835.5c *7*	(6^-)		2891.9c *8*	(12^-)	5037.5b *10*	22^+
1865.1a *6*	6^-		2897.2b *6*	14^+	5108.3& *11*	21^-
1956.5 *7*	(6^+)		3166.1a *7*	14^-	5119.8c *13*	(20^-)
1957.9& *6*	(7^-)		3197.4@ *10*	(13^+)	5467.5a *13*	22^-
2071.5a *7*	8^-		3273.1b *7*	16^+	5776.5b *11*	24^+
2137.0c *7*	(8^-)		3351.3c *9*	(14^-)	5782.3& *11*	23^-

† From least-squares fit to Eγ.
‡ From table I of 1981Wa23.
# Band(A): K=0^+ g.s. band.
@ Band(B): K=2^+ γ-vibrational band.
& Band(C): K$^\pi$=5^-, α=1 band.
a Band(D): K$^\pi$=5^-, α=0 band.
b Band(E): super band. Becomes yrast for J≥16.
c Band(F): K$^\pi$=(2^-) band. Although No parity assignment is indicated In fig. 3 of 1981Wa23, π=(−) is assigned In table I.

^{154}Sm(^{16}O,4nγ),^{159}Tb(^{11}B,4nγ) 1981Wa23,1967Ne02 (continued)

$\gamma(^{166}Yb)$

$\gamma(\theta)$: A_2,A_4, extracted by 1967Ne02, 1981Wa23.

E_γ[‡]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
102.2 *5*		102.1	2^+	0.0	0^+	(E2)	2.95 *7*	E_γ: from 1973Sa14. other Eγ: 102.2 *3* (1972Li34). A_2=+0.27 *3*, A_4=−0.06 *3* (1981Wa23); A_2=+0.063 *9*, A_4=−0.027 *12* (1967Ne02).
114.0 *5*		2071.5	8^-	1957.9	(7^-)			
152.0 *5*		2360.9	10^-	2209.0	9^-			
206.0 *5*	16	2071.5	8^-	1865.1	6^-	[E2]	0.243	A_2=+0.21 *7*, A_4=−0.05 *8* (1981Wa23) for possible doublet.
228.1 *2*	987	330.2	4^+	102.1	2^+	(E2)	0.1743	A_2=+0.30 *3*, A_4=−0.09 *3* (1981Wa23); A_2=+0.210 *7*, A_4=−0.061 *9* (1967Ne02).
248.0 *5*	8	1865.1	6^-	1616.8	(4^-)			E_γ,I_γ: for possible doublet.
274.0 *5*		2232.5	(7^-)	1957.9	(7^-)			I_γ: weak (1981Wa23).
276.0 *5*		2232.5	(7^-)	1956.5	(6^+)			I_γ: weak (1981Wa23).
289.0 *5*		1616.8	(4^-)	1327.5	5^+			
289.4 *2*	55	2360.9	10^-	2071.5	8^-	(E2)	0.0824	A_2=+0.30 *2*, A_4=−0.10 *2* (1981Wa23).
301.4 *5*	14	2137.0	(8^-)	1835.5	(6^-)	(E2)	0.0729	A_2=+0.42 *5*, A_4=+0.02 *5* (1981Wa23).
337.5 *2*	1000	667.7	6^+	330.2	4^+	(E2)	0.0521	A_2=+0.32 *3*, A_4=−0.11 *3* (1981Wa23); A_2=+0.233 *10*, A_4=−0.069 *13* (1967Ne02).
341.0 *5*		2491.5	(10^-)	2150.7	9^+			I_γ: weak.
354.4 *5*	28	2491.5	(10^-)	2137.0	(8^-)	(E2)	0.0453	A_2=+0.28 *3*, A_4=−0.03 *4* (1981Wa23).
356.0 *5*	16	2531.2	12^+	2175.2	12^+			E_γ,I_γ: for possible doublet.
366.0 *5*	5	2897.2	14^+	2531.2	12^+			
367.6 *2*	65	2728.5	12^-	2360.9	10^-	(E2)	0.0408	A_2=+0.29 *2*, A_4=−0.15 *2* (1981Wa23) for doublet dominated by this transition.
368.0 *5*		2232.5	(7^-)	1865.1	6^-			
375.8 *5*	37	3273.1	16^+	2897.2	14^+	(E2)	0.0383	A_2=+0.27 *2*, A_4=−0.12 *3* (1981Wa23).
400.4 *2*	51	2891.9	(12^-)	2491.5	(10^-)	(E2)	0.0321	A_2=+0.34 *3*, A_4=−0.10 *3* (1981Wa23).
403.0 *5*	17	3892.1	17^-	3489.1	16^+			E_γ,I_γ: for possible doublet.
430.2 *2*	856	1097.9	8^+	667.7	6^+	(E2)	0.0264	A_2=+0.31 *3*, A_4=−0.13 *3* (1981Wa23); A_2=+0.242 *16*, A_4=−0.073 *20* (1967Ne02).
432.0 *5*		2137.0	(8^-)	1704.8	7^+			I_γ: weak.
437.6 *2*	63	3166.1	14^-	2728.5	12^-	(E2)	0.0252	A_2=+0.27 *3*, A_4=−0.08 *3* (1981Wa23).
445.8 *5*	33	2863.0	13^-	2417.2	11^-			A_2=+0.14 *9*, A_4=−0.02 *7* (1981Wa23) for doublet. I_γ: for 446.0γ+445.8γ doublet.
446.0 *5*	33	2150.7	9^+	1704.8	7^+	[E2]	0.0240	I_γ: for 446.0γ+445.8γ doublet. A_2=+0.14 *9*, A_4=−0.02 *7* (1981Wa23) for doublet.
459.4 *5*	27	3351.3	(14^-)	2891.9	(12^-)	(E2)	0.0222	A_2=+0.36 *5*, A_4=−0.19 *5* (1981Wa23).
490.8 *5*	43	3353.9	15^-	2863.0	13^-	(E2)	0.0187	A_2=+0.32 *6*, A_4=−0.07 *9* (1981Wa23).
494.3 *2*	128	3273.1	16^+	2778.8	14^+	(E2)	0.0184	A_2=+0.35 *1*, A_4=−0.09 *1* (1981Wa23).
496.7 *5*	22	2647.4	(11^+)	2150.7	9^+	(E2)	0.0181	A_2=+0.38 *4*, A_4=−0.18 *5* (1981Wa23).
499.5 *5*	45	3665.6	16^-	3166.1	14^-	(E2)	0.0179	A_2=+0.33 *3*, A_4=−0.13 *3*(1981Wa23).
507.7 *2*	645	1605.6	10^+	1097.9	8^+	(E2)	0.01716	A_2=+0.32 *8*, A_4=−0.09 *1* (1981Wa23); A_2=+0.217 *17*, A_4=−0.058 *22* (1967Ne02).
508.0 *5*		1835.5	(6^-)	1327.5	5^+			I_γ: weak or doublet.
509.0 *5*	160	3782.1	18^+	3273.1	16^+	(E2)	0.01705	A_2=+0.23 *3*, A_4=−0.11 *3* (1981Wa23).
527.5 *5*	14 *1*	3878.8	(16^-)	3351.3	(14^-)	(E2)	0.01559	A_2=+0.26 *7*, A_4=−0.01 *11* (1981Wa23).
538.0 *5*	19	1865.1	6^-	1327.5	5^+	D		A_2=−0.26 *24*, A_4=−0.16 *25* (1981Wa23).
538.2 *5*	35	3892.1	17^-	3353.9	15^-	(E2)	0.01483	A_2=+0.47 *13*, A_4=+0.04 *14* (1981Wa23).
550.0 *5*	15	3197.4	(13^+)	2647.4	(11^+)	[E2]	0.01405	A_2=+0.22 *4*, A_4=+0.03 *7* (1981Wa23) for possible doublet. E_γ,I_γ: for possible doublet.
552.8 *5*	32	4218.4	18^-	3665.6	16^-	(E2)	0.01388	A_2=+0.20 *5*, A_4=−0.03 *8* (1981Wa23).

Continued on next page (footnotes at end of table)

^{154}Sm(^{16}O,4nγ),^{159}Tb(^{11}B,4nγ) 1981Wa23,1967Ne02 (continued)

γ(^{166}Yb) (continued)

E_γ[‡]	I_γ[#]	E_i(level)	J_i^π	E_f	J_f^π	Mult.[†]	α[@]	Comments
569.7 *2*	480	2175.2	12^+	1605.6	10^+	(E2)	0.01290	A_2=+0.33 *3*, A_4=−0.11 *3* (1981Wa23); A_2=+0.26 *4*, A_4=−0.05 *5* (1967Ne02).
575.1 *5*	17	3353.9	15^-	2778.8	14^+	D(+Q)		A_2=−0.30 *18*, A_4=+0.15 *17* (1981Wa23).
586.2 *5*	30	4478.3	19^-	3892.1	17^-	[E2]	0.01204	E_γ,I_γ,Mult.: A_2=+0.22 *7*, A_4=+0.34 *9* (1981Wa23) for possible doublet.
588.4 *2*	69	4370.5	20^+	3782.1	18^+	(E2)	0.01193	A_2=+0.36 *5* , A_4=−0.02 *8* (1981Wa23).
592.0 *5*	14	3489.1	16^+	2897.2	14^+			A_2=+0.27 *17*, A_4=−0.07 *22* (1981Wa23) for doublet.
592.0 *5*	10	4470.8	(18^-)	3878.8	(16^-)			A_2=+0.27 *17*, A_4=−0.07 *22* (1981Wa23) for doublet.
600.1 *5*	25	4818.5	20^-	4218.4	18^-	(E2)	0.01138	A_2=+0.25 *12*, A_4=+0.05 *13* (1981Wa23).
603.5 *2*	250	2778.8	14^+	2175.2	12^+	(E2)	0.01123	Mult.: A_2=+0.31 *2*, A_4=−0.13 *2* (1981Wa23); A_2=+0.19 *7*, A_4=−0.02 *9* (1967Ne02).
629.0 *5*	24	1956.5	(6^+)	1327.5	5^+			E_γ,I_γ: for 629.0γ+630.0γ doublet. A_2=+0.29 *3*, A_4=−0.05 *7* (1981Wa23) for doublet.
630.0 *5*	25 *7*	5108.3	21^-	4478.3	19^-			I_γ: for 629.0γ+630.0γ doublet. A_2=+0.29 *3*, A_4=−0.05 *7* (1981Wa23) for doublet.
649.0 *5*		5119.8	(20^-)	4470.8	(18^-)			I_γ: weak.
649.0 *5*	10	5467.5	22^-	4818.5	20^-			E_γ: for doublet.
660.0 *5*	7	1327.5	5^+	667.7	6^+			E_γ,I_γ: for possible doublet.
667.0 *5*	25	5037.5	22^+	4370.5	20^+			
674.0 *2*	13	5782.3	23^-	5108.3	21^-	[E2]	0.00868	A_2=+0.13 *9*, A_4=−0.33 *9* (1981Wa23) for possible doublet.
687.8 *5*	45	2863.0	13^-	2175.2	12^+	D		A_2=−0.21 *2*, A_4=+0.10 *3* (1981Wa23).
701.0 *5*		4190.1	18^+	3489.1	16^+			
709.0 *5*	4	1038.6	3^+	330.2	4^+			
710.3 *5*	39	3489.1	16^+	2778.8	14^+	(E2)	0.00770	A_2=+0.34 *3*, A_4=−0.02 *5* (1981Wa23).
722.0 *2*	69	2897.2	14^+	2175.2	12^+	Q		A_2=+0.35 *1*, A_4=−0.05 *2* (1981Wa23).
739.0 *5*		5776.5	24^+	5037.5	22^+			
811.6 *5*	39	2417.2	11^-	1605.6	10^+	D	0.00223	A_2=−0.15 *7*, A_4=+0.01 *6* (1981Wa23).
830.0 *5*	22	932.1	2^+	102.1	2^+			
860.0 *5*	10	1957.9	(7^-)	1097.9	8^+			
925.6 *5*	15	2531.2	12^+	1605.6	10^+			A_2=+0.27 *5*, A_4=−0.16 *7* (1981Wa23).
932.0 *5*	21	932.1	2^+	0.0	0^+			
936.0 *5*	16	1038.6	3^+	102.1	2^+			
997.3 *5*	38	1327.5	5^+	330.2	4^+	D+Q		Mult.: A_2=−0.19 *3*, A_4=+0.15 *7* (1981Wa23).
1037.0 *5*	22	1704.8	7^+	667.7	6^+	D+Q		A_2=−0.31 *6*, A_4=+0.05 *7* (1981Wa23).
1053.0 *5*	16	2150.7	9^+	1097.9	8^+	D+Q		Mult.: from A_2=−0.31 *7*, A_4=+0.03 *8* (1981Wa23).
1111.2 *5*	19	2209.0	9^-	1097.9	8^+	E1	1.24×10^{-3}	Mult.: from A_2=−0.22 *4*, A_4=+0.04 *5* and conversion coefficient measurements of 1981Wa23.
1122.0 *5*	8	1789.9	(5^-)	667.7	6^+			
1290.0 *5*	25	1957.9	(7^-)	667.7	6^+	D		A_2=−0.19 *4*, A_4=+0.06 *4* (1981Wa23).
1460.0 *5*		1789.9	(5^-)	330.2	4^+			

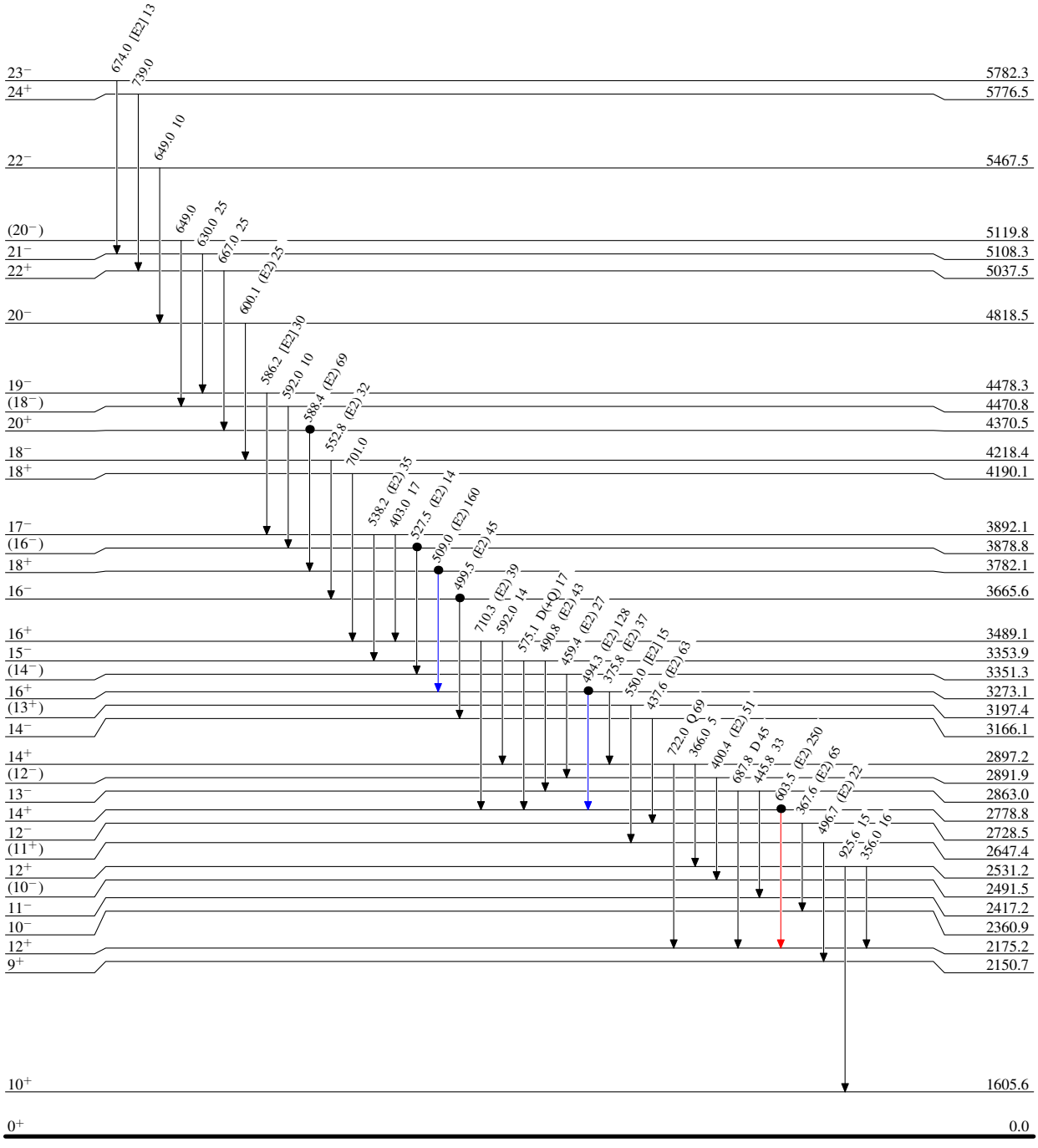
[†] From $\gamma(\theta)$, assigning $\Delta\pi$=(no) for stretched Q intraband transitions, unless otherwise noted.
[‡] From 1981Wa23, unless otherwise noted. ΔE=0.2 keV if I$\gamma\geq$50 but ΔE rises to 0.5 keV for weaker transitions.
[#] From ^{154}Sm(^{16}O,4nγ), E(^{16}O)=80 MeV (1981Wa23). Uncertainties unstated by the authors.
[@] Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

$^{154}Sm(^{16}O,4n\gamma),^{159}Tb(^{11}B,4n\gamma)$ 1981Wa23,1967Ne02

Level Scheme

Intensities: Relative I_γ

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



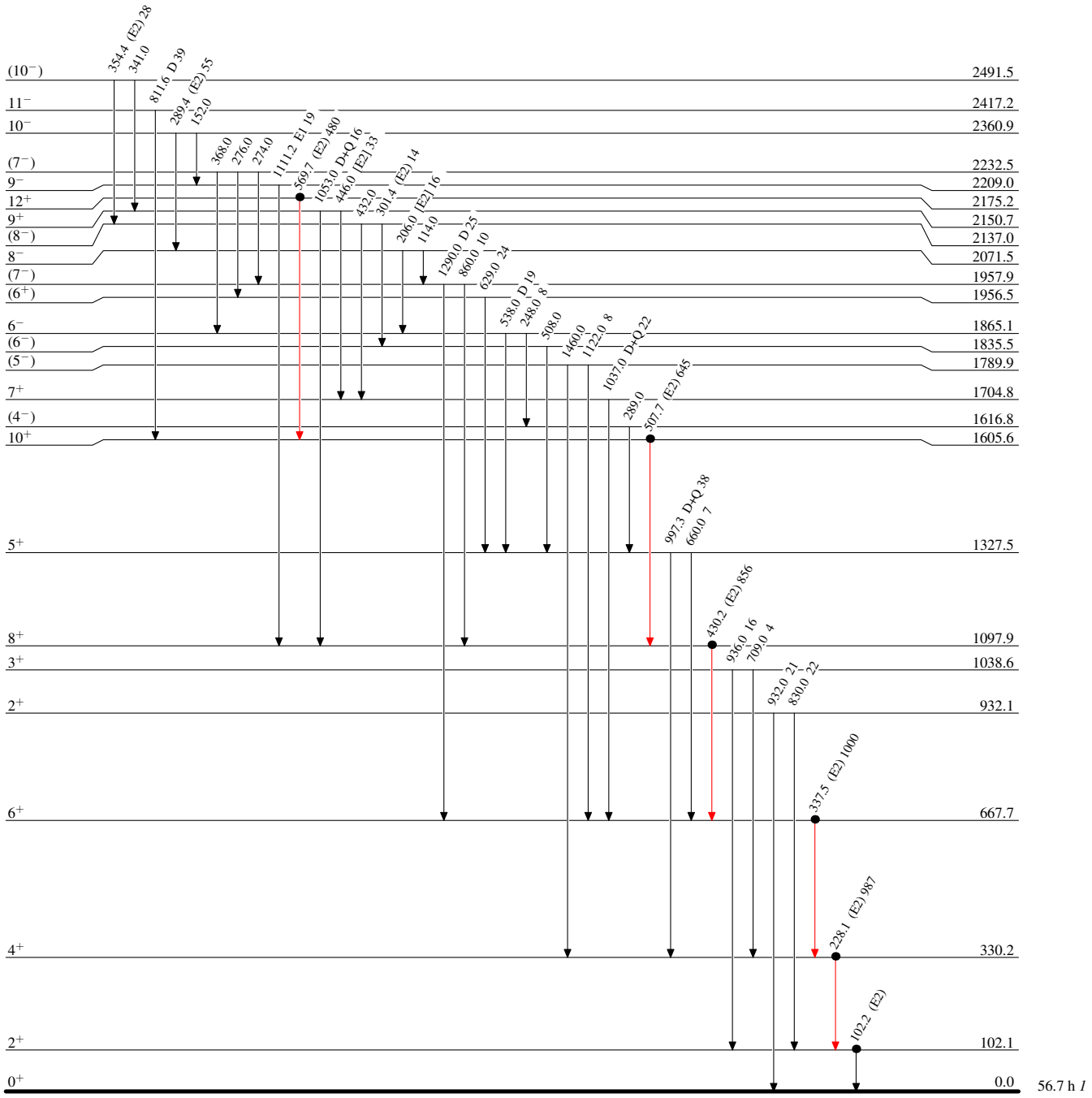
$^{166}_{70}Yb_{96}$

^{154}Sm(^{16}O,4nγ),^{159}Tb(^{11}B,4nγ) 1981Wa23,1967Ne02

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

Level Scheme (continued)

Intensities: Relative I_γ



$^{166}_{70}Yb_{96}$

^{154}Sm(^{16}O,4nγ),^{159}Tb(^{11}B,4nγ) 1981Wa23,1967Ne02