Adopted Levels, Gammas

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

Q(β^-)=−2518.0 *24*; S(n)=8019.47 *14*; S(p)=7333.7 *10*; Q(α)=1309.6 *13* 2012Wa38

Note: Current evaluation has used the following Q record −2519.3 24 *8019.7 3* 7333.8 *10* 1310.2 *14* 1993Au05,1993Au07.

Other reaction: (n,n): 1986Ko07 at E=0.5 milliev. Measured cross section and neutron scattering lengths.

Hyperfine structure studies: 1992Ku21, 1991Ma48, 1991Ki14, 1991Ji06, 1991Ho27, 1990Sp05, 1990Bi08, 1985Ne09, 1983Ma49, 1982Bu21, 1979Gr17, 1973Le16.

Nuclear structure calculations (levels, moments, deformation, etc.):
1994Ze07, 1994Vo19, 1994Al23, 1994Mi14, 1994Co20, 1994Tr04, 1994Ku01, 1993El03, 1993Kn01, 1993Sa08, 1993Ba17, 1992Wo11, 1992Vo02, 1992So22, 1992Ch21, 1992Ca08, 1991Su08, 1991So11, 1991Ch09, 1990Zi05, 1990So16, 1990Sa42, 1989So11, 1988Pe06, 1988Du15, 1987Li11, 1986So09, 1986Ba56, 1985An12, 1982Zh03, 1981Ma17, 1979Si13, 1976Ne05, 1975Dz03, 1975An03, 1974Ma05, 1974Ha54, 1972Mo05, 1971Ha56, 1971Fr02, 1970Wa03, 1970Ne02, 1963Ya06.

Additional information 1.

^{172}Yb Levels

Levels marked with XREF=O correspond to the following reactions and level energies therein:
^{175}Lu(p,α): 0, 79, 261, 543, 1172, 1263, 1375, 1510, 1662, 1701, 1749, 1800, 1860, 1924, 2002, 2073, 2154, 2190, 2213, 2274, 2298, 2333, 2409, 2467, 2547, 2628, 2667, 2720, 2740, 2819, 2844.
^{173}Yb(p,d): 78, 260, 540, 1118, 1173, 1222, 1263, 1287, 1331, 1353, 1376, 1467, 1477, 1496, 1510, 1540, 1551, 1609, 1635, 1663, 1672, 1701, 1751, 1759, 1778, 1804, 1811, 1926, 1966, 2010.
^{172}Yb(d,d′): 0, 79, 260, 543, 1116, 1222, 1262, 1355, 1465, 1605, 1631, 1660, 1708, 1747, 1789, 1820, 2032, 2050.
^{170}Yb(t,p): 0, 78, 260, 1043, 1118, 1263, 1287, 1466, 1654, 1823, 1853, 2046, 2177, 2228, 2466.
Muonic atom: 0, 79, 260, 1043, 1118, 1155, 1172, 1757, 1821.
^{172}Yb(γ,γ) Mossbauer: 0, 79.

Cross Reference (XREF) Flags

A	^{172}Tm β^- decay (63.6 h)	I	^{172}Yb(^{3}He,^{3}He′γ)	Q	^{172}Yb(d,d′)
B	^{172}Lu ε decay (6.70 d)	J	^{172}Yb(α,α')	R	^{170}Yb(t,p)
C	^{170}Er(α,2nγ)	K	Coulomb excitation	S	Muonic atom
D	^{171}Yb(n,γ) E=thermal	L	^{173}Yb(d,t)	T	^{172}Yb(γ,γ):Mossbauer
E	^{171}Yb(n,γ) E=2 keV	M	^{173}Yb(^{3}He,α), (^{3}He,$\alpha\gamma$)	U	^{171}Yb(n,γ) E=res
F	^{171}Yb(d,p)	N	^{174}Yb(p,t)	V	^{172}Yb(pol p,p), (p,p′)
G	^{172}Yb(γ,γ')	O	^{175}Lu(p,α)		
H	^{172}Yb(n,n′γ)	P	^{173}Yb(p,d)		

E(level)†	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0#	0$^+$	stable	ABCDEFGHIJKL NO QRST	
78.7427# *6*	2$^+$	1.65 ns *5*	ABCDEFGHIJKLMNOPQRST	μ=+0.669 *16* (1989Ra17,1968Mu01) Q=2.16 *37* (1989Ra17,1970WaZS) μ: Mossbauer effect (1968Mu01,1966Mu04). Other: 1966Ti01. Q: DPAC method (1970WaZS). Other: −2.32 (1979Ho23). β_2=+0.21 *1* (α,α'); 0.284 (Coul. ex.). J$^\pi$: E2 γ to 0$^+$. T$_{1/2}$: from B(E2)=6.03 *6* in Coul. ex. (1975Wo08). Others: B(E2): 1.67 ns *14* (1970Sa09), 1.69 ns *7* (1960El07). γ(t) method: 1.80 ns *5* (1970Ra18), 1.61 ns *3* (1970He17), 1.69 ns *4* (1969FuZX), 1.67 ns *8* (1969Fo07), 1.58 ns *6* (1969Be34), 1.6 ns *4* (1968Ka01), 1.71 ns 5 (1966Ti01), 1.57 ns *4* (1964Gu01), 1.5 ns *1* (1963He01), 1.66 ns *14* (1962Bi05).

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)†	Jπ	$T_{1/2}$	XREF	Comments
				B(E2)(IS)=7.5 *9* (α,α′).
260.268# *5*	4+	0.122 ns *8*	ABCDEF HIJKLMNOPQRS	μ=+1.37 *5* (1989Ra17,1972Be94) Q=−2.3 *12* (1989Ra17,1970McZQ) μ: IPAC method (1972Be94). Q: Coulomb excitation (1970McZQ). $β_4$=−0.028 *4* (α,α′); −0.006 (Coul. ex.). B(E4)(IS)<0.010 (α,α′). B(E4)=0.05 *+7−4* (Coul. ex.). Jπ: ΔJ=2, E2 γ to 2+ and member of g.s. band. $T_{1/2}$: from B(E2)=3.24 *23* in Coul. ex. (1970Sa09).
539.977# *6*	6+	16.6 ps *15*	ABCD F HIJKLMNOPQ	Jπ: ΔJ=2, E2 γ to 4+ and member of g.s. band. $T_{1/2}$: B(E2) in Coul. ex. B(E6)(IS)<0.086 (α,α′).
912.12# *7*	8+	3.5 ps *3*	C IJKL N	Jπ: ΔJ=2, E2 γ to 6+ and member of g.s. band. $T_{1/2}$: Doppler broadening in Coul. ex. (1977Ke06).
1042.914@ *18*	0+	3.3 ps *9*	A CDEF HIJKL N RS	Jπ: L(p,t)=L(t,p)=0. $T_{1/2}$: B(E2) in Coul. ex.
1117.874@ *5*	2+	3.7 ps *4*	ABCDEF HIJKLMN PQRS	Jπ: E2 γ to 0+. $T_{1/2}$: B(E2)=0.0067 *3* in Coul. ex. B(E2)(IS)=0.0015 *5* (α,α′).
1154.935& *6*	1−		A CDE HIJK N S	Jπ: E1 γ to 0+.
1172.385a *6*	3+	8.14 ns *17*	ABCDEF HI LMNOP S	μ=+0.65 *4* (1989Ra17,1965Gu01) Q=2.87 *41* (1989Ra17,1970Wa25) μ: DPAC method (1965Gu01). Q: DPAC method (1970Wa25). Others: 1970Ra18, 1969Li08. Jπ: M1+E2 γ's to 2+ and 4+. $T_{1/2}$: weighted average of 8.33 ns *8* (γγ(t) in ^{172}Lu ε,1980En01) and 7.95 ns *9* (γγ(t) in ^{172}Tm β−,1970He17). Others: 8.3 ns *3* (γ(t) in (α,2nγ),1980Wa15); 8.14 ns *22* (γγ(t) in ^{172}Lu ε,1969Be34).
1198.472& *7*	2−		A CDE HI L	Jπ: E1 γ to 2+ and band member.
1221.720& *7*	3−		BCDE HIJKL N PQ	$β_3$=0.0132; B(E3)(IS)=0.016 *3* (α,α′). B(E3)(Coul. ex.)=0.045 *3*. Jπ: E1 γ's to 2+ and 4+.
1263.028a *6*	4+	0.49 ns *3*	ABCD F HIJ LmN PQR	Jπ: E2 γ's to 2+ and 6+. $T_{1/2}$: γγ(t) in ^{172}Lu ε (1969Be34). Other: 0.50 ns *10* γ(t) in (α,2nγ) (1980Wa15). B(E4)(IS)=0.036 *7* (α,α′).
1286.54@ *3*	4+		ABCD H LmN P R	Jπ: M1+E2 γ to 4+ and γ's to 2+ and 6+.
1330.693& *14*	4−		BCDE H LM P	Jπ: E1 γ to 4+, γ to 2− and band member.
1352.95& *9*	(5−)		CD F H JKLMN PQ	Jπ: γ to 4+, ΔJ=1 γ to 6+ and band member.
1370.07# *10*	10+	1.32 ps *8*	C K	Jπ: ΔJ=2, E2 γ to 8+ and band member. $T_{1/2}$: Doppler broadening in Coul. ex. (1977Ke06).
1375.815a *7*	5+	0.21 ns *6*	BCD F HI LM OP	ΔJ=2, E2 γ to 3+ and γ's to 4+ and 6+. $T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15,1983Ko28).
1405.008b *6*	0+	0.42 ns *6*	CDE H N	Jπ: E0 transition to 0+. $T_{1/2}$: centroid-shift method in (n,γ) E=th (1986An14).
1465.875c *4*	2+	0.47 ps *3*	ABCDEF HIJKL N PQR	Jπ: E2 γ to 0+. $T_{1/2}$: B(E2)=0.038 *3* in Coul. ex. B(E2)(IS)=0.041 *9* (α,α′).
1476.784b *17*	2+	48 ps *11*	ABCDE H KL P	Jπ: E2 γ to 0+. $T_{1/2}$: B(E2)=0.00021 *4* in Coul. ex.

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
1496.1 *10*			P	
1510.179[a] *8*	6^+		BC F HI L NOP	Jπ: ΔJ=2, E2 γ to 4^+ and M1+E2 γ to 5^+.
1537.50[@] *6*	6^+		C N	Jπ: ΔJ=0, M1+E2 γ to 6^+.
1540.61[&] *6*	6^-		C Lm P	Jπ: ΔJ=2, (E2) γ to 4^- and γ to 6^+.
1549.150[c] *16*	3^+		ABCDEF H Lmn p	Jπ: M1+E2 γ′s to 2^+ and 4^+.
1550.43[d] *6*	6^-	3.6 μs *1*	C mn p	Jπ: ΔJ=0, E1+M2 γ to 6^+. $T_{1/2}$: γ(t) in (α,2nγ) (1969No05).
1550.8 *7*			I mn p	
1557.58[&] *6*	7^-		C Lmn	Jπ: ΔJ=1, E1 γ to 6^+ and γ to 8^+.
1599.870[e] *12*	1^-	11 fs *3*	CDE GH	Jπ: ΔJ=1, E1 γ to 2^+ and ΔJ=1 γ to 0^+. $T_{1/2}$: from $\Gamma_{\gamma 0}$ in (γ,γ′). B(E1)(↑)=10.7×10^{-5} *32* (γ,γ′).
1608.490[f] *11*	2^+	1.1 ps *2*	ABCDEF H JKL N PQ	XREF: N(1604). Jπ: E2 γ to 0^+. $T_{1/2}$: from B(E2)=0.0109 *20* in Coul. ex. Other: 0.93 ps *25* from B(E2)(IS)=0.012 *3* (α,α′).
1633.14[b] *6*	$(4)^+$		BCD F H l N PQ	Jπ: M1,E2 γ′s to 2^+ and 4^+.
1640.557[g] *8*	4^-	0.5 ns *2*	BCD H l	Jπ: ΔJ=0, dipole γ to 4^+ and E1 γ′s to 4^+ and 5^+. $T_{1/2}$: αγ(t) in (α,2nγ) (1983Ko28).
1657.790[c] *24*	$(4)^+$	0.05 ps *3*	BC F IJK n QR	Jπ: E2 γ to 2^+, M1+E2 γ to 4^+ and band member. $T_{1/2}$: B(E2) in Coul. ex. B(E4)(IS)=0.006 *2* (α,α′).
1662.810[h] *8*	3^+		ABCD H LmnOP	Jπ: M1 γ′s to 3^+ and 4^+; E2 γ′s to 2^+ and 4^+. J=4 not allowed by γ(θ,t) in ^{172}Lu ε.
1666.12[a] *5*	(7^+)		C	Jπ: ΔJ=2, (E2) γ to 5^+ and ΔJ=1 γ to 6^+.
1670.55[d] *11*	(7^-)		C Lm P	Jπ: ΔJ=1, D+Q γ to 6^-.
1700.639[f] *9*	3^+		ABCD F H LMnOP	Jπ: M1 γ′s to 3^+ and 4^+; E2 γ′s to 2^+ and 4^+ and ΔJ=0 γ to 3^+.
1706.447[g] *13*	5^-		BC n	Jπ: E1 γ′s to 6^+ and 4^+.
1707.8? *3*			C	
1710.480[e] *18*	$3^{(-)}$		CD H JK Q	β_3=0.0092; B(E3)(IS)=0.0078 *16* (α,α′). B(E3)=0.025 *6* (Coul. ex.). Jπ: ΔJ=1, dipole γ′s to 2^+ and 4^+ and band member.
1720 *5*			L	
1749.205[h] *9*	4^+		BC F H LM OPQ	Jπ: E2 γ to 2^+ and γ to 6^+.
1757.367[i] *5*	$(2)^-$		CDE HI L N P S	Q=−3.44 *10* (1989Ra17,1979Ho23) Q: muonic atom x-ray study (1979Ho23). Jπ: M1+E2 γ to 1^- and M1 γ to 2^-. Probable γ to 3^+.
1778.86[c] *5*	5^+		BC L P	Jπ: 1239γ M1(+E2) to 6^+, 1519γ M1,E2 to 4^+.
1789 *5*	(4^+)		F Q	Jπ: from comparison between theoretical and experimental cross sections in (d,p) and (d,d′).
1794.08[j] *5*	0^+	<0.15 ns	CDE H N	XREF: N(1791). Jπ: L(p,t)=0. $T_{1/2}$: centroid-shift method in (n,γ) E=th (1986An14).
1802.65[g] *5*	6^-		C	Jπ: from γ(θ) and band member.
1803.108[f] *8*	4^+		BC HIJ Lm OP	Jπ: 1263γ E2 to 6^+, 1724γ E2 to 2^+. B(E4)(IS)≤0.012 (α,α′).
1810.32[d] *12*	(8^-)		C Lm P	Jπ: ΔJ=(2) γ to 6^-.
1821.583[i] *9*	3^-		BCD HIJKl N QRS	Q=1.97 *10* (1989Ra17,1979Ho23) Q: muonic atom x-ray study (1979Ho23).

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
				β_3=0.023; B(E3)(IS)=0.065 *13* (α,α'). B(E3)=0.033 *7* (Coul. ex.). Jπ: band member.
1828.76[&] *15*	8^-		C lM	XREF: M(1838). Jπ: ΔJ=2, (E2) to 6^-, ΔJ=1, E1 to 8^+.
1839.80[&] *11*	9^-		C	Jπ: ΔJ=1, E1 γ to 8^+, γ to 10^+.
1841.84[a] *8*	(8^+)		C	Jπ: ΔJ=2, (E2) to 6^+, γ to 7^+.
1849.173[j] *22*	2^+	0.8 ps *5*	CDEF H K N R	XREF: R(1853). Jπ: M1+E2+E0 γ to 2^+. $T_{1/2}$: B(E2)=0.0041 *21* in Coul. ex.
1853.46[@] *11*	8^+		C	Jπ: ΔJ=0, (M1) γ to 8^+, γ to 10^+.
1862.799[h] *15*	$(5)^+$		BC L O	Jπ: E2 to 3^+ and 6^+; probable band assignment.
1869.634 *12*	$(4,5)^-$		BC	Jπ: M1(+E2) γ′s to 4^- and 5^-.
1887 *5*			LM	XREF: M(1879).
1894.616[k] *25*	0^+	<0.15 ns	DEF N	XREF: N(1892). Jπ: L(p,t)=0. $T_{1/2}$: centroid-shift method in (n,γ) E=th (1986An14).
1899.30? *20*			C	
1907.48[#] *14*	(12^+)	0.52 ps *7*	C K	$T_{1/2}$: Doppler broadening in Coul. ex. (1977Ke06). Jπ: ΔJ=2, E2 γ to 10^+.
1919.84 *8*	(5,6)		C F lMN	XREF: M(1916). Population in (d,t) is uncertain. Jπ: γ′s to 6^+ and 4^+.
1921.80[g] *20*	(7^-)		C l	Population in (d,t) is uncertain. Jπ: γ(θ) in (α,2nγ).
1927.016[f] *12*	5^+		BC L OP	Jπ: M1 γ to 6^+ and 4^+, E2+M1 γ to 4^+.
1956.351[k] *25*	2^+	0.29 ps *15*	CDE KL N	Jπ: M1+E2+E0 γ to 2^+. $T_{1/2}$: from B(E2)=0.0095 *49* in Coul. ex.
1968.20[d] *14*	(9^-)		C F LM P	Jπ: ΔJ=1 γ to 8^-, γ to 7^-.
1975.63[j] *14*	(4^+)		C	Jπ: γ′s to 2^+ and 6^+.
2007.98[h] *14*	(6^+)		C no	Jπ: γ′s to 4^+ and 6^+ and band member.
2009.80[l] *3*	1^+		CDE LMnoP	XREF: L(2009)M(2007). Jπ: E2 γ to 2^+ and (M1) γ to 0^+.
2030 *5*	3^-		J N Q	Jπ: from comparison of experimental cross sections in (α,α') with calculated cross sections and shapes of σ(θ) distributions. β_3=0.0194; B(E3)(IS)=0.058 *12* (α,α').
2039.38[a] *22*	(9^+)		C	Jπ: ΔJ=2, (E2) γ to 7^+, γ to 8^+.
2046.99[l] *3*	$(2)^+$		CDE H LMN QR	XREF: M(2055)N(2041). Jπ: E2 γ to 2^+, γ′s to 4^+ and 1^-.
2064.04[g] *20*	(8^-)		C	Jπ: γ′s to 7^+, 7^-, and 6^-. Band member.
2073.114[m] *7*	4^+		BC NO	XREF: N(2060). Jπ: M1 γ′s to 5^+ and 3^+.
2075.27[f] *11*	(6^+)		C L	XREF: L(2075). Jπ: γ′s to 4^+ and 6^+.
2076.172 *13*	$(1)^-$		DE	Jπ: E2 γ to 3^-, γ′s to 1^-, 2^-, 2^+.
2084.81? *20*			C	
2100.22[k] *17*	(4^+)		C f l N	XREF: N(2098). Jπ: γ′s to 4^+ and 6^+; probable band assignment.
2102.944 *24*	1^-		DEf l	Jπ: E1 γ to 2^+, γ to 0^+.
2108[l] *5*	(3^+)		LM	Jπ: comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α). Also band member.

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
2115.8 *8*	(0⁻,1⁻,2⁻)		EF L	XREF: F(2121)L(2119). Jπ: (M1) primary γ from 0⁻, 1⁻ in (n,γ) E=2 keV.
2145.03[d] *22*	(10⁻)		C	Jπ: ΔJ=2, (E2) γ to 8⁻, γ to 9⁻.
2154.30 *21*	(7)	0.17 ns *10*	C o	$T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15). Jπ: ΔJ=1 γ to 6⁻.
2156.43[j] *3*	(6⁺)		C o	Jπ: γ to 6⁺ and band member.
2160.7 *8*	(0⁻,1⁻,2⁻)		E	Jπ: (M1) primary f from 0⁻, 1⁻ in (n,γ) E=2 keV.
2175.059[n] *12*	3⁺		BC f	Jπ: M1+E2 to 2⁺ and 4⁺.
2176.20 *5*	(1)⁻		DEf	Jπ: M1+E2 γ to 1⁻ and possible γ to 0⁺.
2180[o] *5*	(6⁻)		LM	Jπ: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α), and band member.
2181.97 *3*	(4,5,6)⁺		B n	Jπ: M1(+E2) γ to 5⁺.
2184 *7*	(2⁺)		J n R	XREF: R(2177). Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.0019 *4* (α,α′).
2192.130[m] *11*	5⁺		B O	Jπ: M1 γ′s to 4⁺ and 6⁺.
2193.02[&] *24*	(10⁻)		C	Jπ: ΔJ=2, (E2) γ to (8⁻), 823γ to 10⁺.
2193.16[l] *12*	(4⁺)		C L	XREF: L(2193). Jπ: γ′s to 4⁺ and 6⁺; probable band assignment.
2194.331[p] *14*	(1⁺)		DE H	XREF: H(2192.8). Jπ: γ′s to 2⁺ and 2⁻; strong primary (E1) γ from 0⁻,1⁻.
2195.03 *5*	(1,2⁺)		D	Jπ: γ′s to 0⁺, 2⁺, and 2⁻.
2199.47[&] *21*	(11⁻)		C	Jπ: ΔJ=1 γ to 10⁺.
2210 *1*	1(−)[‡]	4.6[‡] fs *9*	G o	B(E1)(↑)=10.5×10⁻⁵ *20* (γ,γ′).
2212.52[@] *24*	(10⁺)		C	Jπ: γ′s to 8⁺ and 10⁺. Band member.
2213.307 *23*	3⁺,4⁺		B f l o	Jπ: M1 γ to 3⁺ and log *ft*=7.9 from 4⁻.
2214.06 *8*	(1⁻)		DEf l o	Jπ: (M1) primary γ from 0⁻,1⁻ in (n,γ) E=2 keV, γ to 0⁺.
2225.3[g] *3*	9⁻		C l	Jπ: ΔJ=1 γ to 8⁻, γ to 7⁻.
2228.63[p] *4*	2⁺		DE l N R	Jπ: L(t,p)=2.
2248.19 *14*			C	
2255 *5*	(2⁺)		J MN	XREF: M(2249). Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.0029 *6* (α,α′).
2256.3[a] *3*	(10⁺)		C	Jπ: ΔJ=(2) γ to 8⁺ and band member.
2272			L N	
2285.399[n] *11*	4⁺		B F M	Jπ: M1 γ to 3⁺ and M1+E2 γ to 5⁺.
2293.4 *10*	(0⁻,1⁻,2⁻)		E l	Jπ: (M1) primary γ from 0⁻, 1⁻ in (n,γ) E=2 keV.
2299.29 *23*		0.15 ns *10*	C l O	$T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15).
2306.20 *22*	(0⁻,1⁻,2⁻)		E	Jπ: (M1) primary γ from 0⁻,1⁻ in (n,γ) E=2 keV.
2307.786 *20*	3⁺,4⁺		B	Jπ: M1 γ to 3⁺; log *ft*=7.8 (log $f^{1u}t$=6.9) from 4⁻.
2312.90 *8*	(2⁺)		DE	Jπ: γ′s to 0⁺ and 4⁺.
2316.97 *10*	1,2(+)		D L	Jπ: primary γ from 0⁻, 1⁻ in (n,γ) and possible γ′s to 0⁺ and 2⁺.
2327.58 *7*	(2⁺)		DEF L	Jπ: (E2) γ to 0⁺.
2333[m] *5*	(6⁺)		NO	XREF: N(2337). Jπ: from comparison between experimental and

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
				theoretical cross sections in (p,α); and probable band assignment.
2340.7[d] *3*	(11⁻)		C	Jπ: ΔJ=1 γ to (10⁻) and band member.
2341.86 *3*	(0⁺,1⁺,2⁺)		DEf	Jπ: (E1) primary γ from 0⁻,1⁻ in (n,γ) E=2 keV.
2343.715[q] *15*	4⁺		B f	Jπ: M1+E2 γ's to 4⁺ and 5⁺, γ to 2⁺.
2346[o] *5*	(7⁻)		f LM	Jπ: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2352.6 *8*	(0⁻,1⁻,2⁻)		E	Jπ: (M1) primary γ from 0⁻, 1⁻ in (n,γ).
2356.59 *11*	(0⁻,1⁻,2⁻)		E L	XREF: L(2360). Jπ: (M1) primary γ from 0⁻, 1⁻ in (n,γ).
2367 *5*	(2⁺)		J N	XREF: N(2364). Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.005 *1* (α,α′).
2369.2 *8*	(0⁻,1⁻,2⁻)		Ef	Jπ: (M1) primary γ from 0⁻, 1⁻ in (n,γ).
2375.37 *3*	(1⁺,2)		DEf	Jπ: γ's to 3⁺, 1⁺, and 1⁻.
2387.706 *15*	(1⁺,2⁺)		DE N	XREF: N(2396). Jπ: γ's to 0⁺ and 3⁺.
2392.3 *4*			C	
2404.8 *10*	(0⁻,1⁻,2⁻)		E l O	XREF: O(2409). Jπ: (M1) primary γ from 0⁻, 1⁻ in (n,γ).
2411.4[g] *3*	(10⁻)		C l	Jπ: γ(θ).
2439.2 *8*	(0,1,2)		E n	Jπ: primary γ from 0⁻, 1⁻ in (n,γ).
2444.2 *8*	(0,1,2)		E n	Jπ: primary γ from 0⁻, 1⁻ in (n,γ).
2456			LMn	
2464.09 *8*	(2⁺)		DE J nO R	Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.010 *2* (α,α′).
2465.22 *21*	(7,8)	0.13 ns *10*	C	$T_{1/2}$: γ(t) in (α,2nγ) (1980Wa15). Jπ: from γ(θ).
2480.037 *20*	(1⁺,2⁺)		DE L n	XREF: L(2476). Jπ: (E2) γ to 2⁺, γ's to 0⁺ and 3⁺.
2488.7 *5*			E n	
2492.2[a] *4*	(11⁺)		C	Jπ: ΔJ=2, (E2) γ to (9⁺).
2503.9 *3*			DE	
2515.1 *4*			E	
2518.7[#] *4*	(14⁺)	0.29 ps *4*	C K	Jπ: ΔJ=2, (E2) γ to (12⁺). $T_{1/2}$: from B(E2) in Coul. ex.
2524.1 *3*			DE	
2534.9 *3*	(0⁺)		DE N	XREF: N(2540). Jπ: L(p,t)=(0).
2539.2 *4*			D	
2545[o] *5*	(8⁻)		LM o	Jπ: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2547.0 *6*			DE l o	
2554.2[d] *3*	(12⁻)		C l	Jπ: from γ(θ) in (α,2nγ).
2559.5 *3*			DE L	
2567.6 *5*			E	
2573 *1*	1[‡]	12[‡] fs *3*	G	This level may be the same as 2575.7 from (n,γ). B(E1)(↑)=4.3×10^{-5} *11*. B(M1)(↑)=0.93 *10*.
2575.6 *3*	(2⁺)		DE j mn	XREF: j(2580).

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
				Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.0034 *7* (α,α′).
2582.8 *4*			De j Lmn	XREF: j(2580).
2588.5 *4*			De L n	
2598.9 *5*			D	
2599.7[r] *5*	(4+)		L	Jπ: from a comparison between experimental and theoretical cross sections in (d,t).
2607.2[@] *4*	(12+)		C	Jπ: from γ(θ).
2607.3 *2*			DE H	
2609.2[g] *4*	(11−)		C	Jπ: ΔJ=2, (E2) γ to (9−).
2612 *1*	1[‡]	12[‡] fs *3*	G	B(E1)(↑)=3.6×10^{-5} *10*. B(M1)(↑)=0.33 *9*.
2627.9 *3*			D L O	XREF: L(2622).
2629.8[&] *4*	(12−)		C	Jπ: ΔJ=2 γ to (10−).
2636.1[&] *3*	(13−)		C	Jπ: from γ(θ).
2650.0 *4*	(2+)		E J LM	Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.0038 *8* (α,α′).
2653.3 *3*			C	
2668.1 *3*			DE LM O	
2676.0 *15*			DE L	
2689.8[s] *4*	(9−)	0.7 ns *1*	C L	$T_{1/2}$: γ(t) in (α,2nγ) (1983Ko28). Jπ: from γ(θ).
2697[r] *5*	(5+)		LM	Jπ: from comparison between experimental and theoretical cross sections in (d,t).
2700.3 *3*			DE	
2713.6 *7*			E l o	
2721.0 *8*			E l o	
2732.8 *3*			DE L n	
2738 *5*	(2+)		J nO	Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.012 *3* (α,α′).
2741[o] *5*	(9−)		LM	Jπ: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2746.5[a] *5*	(12+)		C	Jπ: ΔJ=2 γ to (10+).
2747.3 *6*			DE	
2766.3 *4*			DE L	
2776.8 *6*			DE L	
2781.4 *14*			D L n	
2786.8[d] *4*	(13−)		C	Jπ: from γ(θ).
2787[t] *5*	(8+)		LM	Jπ: from comparison between experimental and theoretical cross sections in (d,t) and (^{3}He,α).
2787.6 *4*			DE l n	
2795.9 *5*			E l n	
2808.0 *4*			DE L n	
2818.5[r] *7*	(6+)		DE L nO	Jπ: from a comparison between experimental and theoretical cross sections in (d,t).
2831 *5*			LMn	
2834.6 *5*	(2+)		DE J n	XREF: J(2836). Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.0072 *15* (α,α′).
2840.8[g] *5*	(12−)		C	Jπ: ΔJ=2, (E2) γ to (12−).
2844.3 *5*			DE O	

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
2856.4[s] *5*	(10⁻)		C	Jπ: ΔJ=1 γ to (9⁻).
2861.8 *9*			DE l	
2864.6 *6*			E l	
2872.2 *5*			DE M	
2881.0 *6*			E L	
2887.3 *8*	(2⁺)		DE J L	Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.017 *4* (α,α′).
2904.2 *10*			E LM	
2916.4 *8*			DE L	
2943.0 *6*			DE Lm	XREF: L(2936).
2959.8 *6*			DE Lm	
2967.7 *7*			E	
2985.4 *8*			DE	
2991.7 *6*	(2⁺)		E j lm	Jπ: from comparison of experimental cross sections in (α,α′) with calculated cross sections and shapes of σ(θ) distributions. B(E2)(IS)=0.0087 *17* (α,α′).
2993.8 *9*			D j lm	
3002 *1*	1‡	8.7‡ fs *24*	DE G l	B(E1)(↑)=3.7×10⁻⁵ *10*; B(M1)(↑)=0.34 *9* (in γ,γ′).
3012.7 *6*			E l	
3017 *1*	1‡	18‡ fs *9*	G l	This level may be the same as 3020.2 from (n,γ). B(E1)(↑)=1.0×10⁻⁵ *5* or B(E1)(↑)=1.2×10⁻⁵ *5*; B(M1)(↑)=0.11 *4*.
3020.0[a] *5*	(13⁺)		C	Jπ: from γ(θ).
3020.2 *6*			DE	
3034.2[d] *4*	(14⁻)		C	Jπ: γ(θ).
3036.8 *6*			DE	
3043.9[@] *5*	(14⁺)		C	Jπ: probable band member.
3044.5[s] *6*	(11⁻)		C	Jπ: ΔJ=1 γ to (10⁻).
3058.0 *13*			E lM	XREF: l(3067)M(3062).
3072 *1*	1(−)‡	6.1‡ fs *20*	G l	XREF: l(3067). This level may be the same as 3074.8 from (n,γ). B(E1)(↑)=3.2×10⁻⁵ *10* (γ,γ′).
3074.8 *6*			D L	XREF: L(3072).
3081 *6*			L	
3085 *6*			L	
3096 *1*	1‡	17‡ fs *9*	G lm	This level may be the same as 3098.7 from (n,γ). B(E1)(↑)=0.9×10⁻⁵ *5* or B(E1)(↑)=1.0×10⁻⁵ *4*; B(M1)(↑)=0.09 *3*. $T_{1/2}$: 30 fs *9* for Iγ(3017)/Iγ(3096)=0.46 *12*.
3098.7 *6*			DE lm	
3106.3 *6*			E L	
3118 *1*	1(−)‡	8‡ fs *4*	G l	This level may be the same as 3120.1 from (n,γ). B(E1)(↑)=2.2×10⁻⁵ *10*.
3120.1 *6*			DE l	
3130.6 *6*			D L	XREF: L(3127).
3134.6[&] *5*	(14⁻)		C	Jπ: probable band member.
3141.3 *6*			D Lm	XREF: L(3138).
3146 *5*			Lm	
3155.9 *7*			E	
3160 *1*	1(−)‡	3.4‡ fs *10*	G	B(E1)(↑)=4.3×10⁻⁵ *13*.
3170.8 *7*			E	

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
3174 *1*	1(−)‡	3.7‡ fs *11*	G	This level may be the same as 3175.6 from (n,γ). B(E1)(↑)=3.4×10^{-5} *10*. $T_{1/2}$: 4.8 fs *14* for Iγ(3096)/Iγ(3174)=1.86 *40*.
3175.6 *7*			D	
3198.4[#] *6*	(16+)		C	Jπ: probable band member.
3205.5 *7*			D	
3246 *1*	1(−)‡	5.6‡ fs *23*	G	B(E1)(↑)=2.9×10^{-5} *12*.
3251.6 *11*			E	
3252.9[s] *7*	(12−)		C	Jπ: probable band member.
3253 *1*	1‡	12‡ fs *4*	G	This level may be the same as 3251.6 from (n,γ). B(E1)(↑)=2.1×10^{-5} *7*. B(M1)(↑)=0.19 *6*.
3254.4 *7*			D	
3258.4 *8*			E	
3260.2 *5*			D	
3283.6 *6*			DE	
3289.2 *8*			D	
3300.2 *6*			DE	
3308.5 *7*			DE	
3309.5[a] *6*	(14+)		C	Jπ: probable band member.
3332.6 *5*			E	
3334.6 *9*			D	
3346.6 *5*			D	
3360.7 *7*			DE	
3366.7 *7*			DE	
3381.5 *5*			DE	
3387.6 *5*			D	
3393 *1*	1(−)‡	2.7‡ fs *7*	G	B(E1)(↑)=4.5×10^{-5} *11*.
3404.6 *6*			E	
3407.9 *9*			D	
3426.4 *7*			D	
3437.0 *7*			E	
3465.1 *6*			D	
3481.6[s] *8*	(13−)		C	Jπ: probable band member.
3490.3 *12*			D	
3494.7 *6*			DE	
3506.0 *6*			D	
3543.4 *6*			DE	
3545 *1*	1(−)‡	1.6‡ fs *5*	G	This level may be the same as 3543.4 from (n,γ). B(E1)(↑)=5.1×10^{-5} *17*.
3557.3 *5*			DE	
3570.0 *6*			DE	
3586.9 *7*			DE	
3604 *1*	1‡	2.9‡ fs *8*	G	B(E1)(↑)=5.4×10^{-5} *14*. B(M1)(↑)=0.49 *12*.
3607.6 *7*			E	
3620.8 *6*			E	
3627.5 *9*			D	
3634.3 *7*			D	
3635 *1*	1(−)‡	1.3‡ fs *3*	G	This level may be the same as 3634.3 from (n,γ). B(E1)(↑)=8.1×10^{-5} *19*.
3640.4 *6*			D	
3657.0 *6*			D	
3669.7 *6*			D	
3680.9 *6*			D	
3714.2 *6*			D	

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

E(level)[†]	Jπ	$T_{1/2}$	XREF	Comments
3719.2 *6*			D	
3740.9 *5*			D	
3747.6 *5*			D	
3754.7 *10*			D	
3766.5 *7*			D	
3777.0 *6*			E	
3786.3 *7*			D	
3799.0 *6*			D	
3819.5 *9*			D	
3829.1 *7*			E	
3856.3 *6*			D	
3863 *1*	1[‡]	2.1[‡] fs *6*	G	B(E1)(↑)=5.0×10^{-5} *15*. B(M1)(↑)=0.45 *14*.
3876.4 *6*			D	
3880.5 *7*			E	
3901.6 *8*			E	
3908.3 *7*			DE	
3917.3 *6*			DE	
3927.6 *6*			DE	
3955.7 *7*			D	
3963.0 *7*			D	
3984.9 *7*			D	
3990.7 *7*			D	
4008.8 *7*			D	
4020.8 *7*			D	
4043.4 *7*			D	
4056.2 *11*			D	
4062.1 *6*			D	
4078.2 *7*			D	
4162.8 *6*			D	
4251.5 *6*			D	
4351.5 *7*			D	

[†] From least-squares fit to Eγ′s for levels populated in γ-ray studies. For other levels weighted averages are taken from different reaction studies.

[‡] Spin is from γγ(θ) data in (γ,γ′). Parity is from a comparison of reduced transition probabilities with Alaga′s rules. $T_{1/2}$(level) is deduced from $\Gamma_{\gamma 0}$ (1990Zi01) and branching ratio. It is assumed that the level deexcites only to g.s. and first 2$^+$ level.

[#] Band(A): Kπ=0$^+$ g.s. band. variations in g factors are deduced from γ(θ,H) data in Coul. ex. for levels of J^π=2$^+$ to 10$^+$ (1979Wa15). Deviation from rotational behavior is expressed in terms of g factor variation: g(J)=g(0)(1+αJ^2). 1979Wa15 deduce α=+0.0010 *15* from γ(θ,H) data.

[@] Band(B): Kπ=0$^+$ β-band. Configuration=((ν 5/2[512])(ν 5/2[512]))(44%) + ((ν 1/2[521]) (ν 1/2[521]))(18%) + ((ν 7/2[633])(ν 7/2[633]))(13%). The 5/2[512] and 1/2[521] components are seen in (d,t), (^{3}He,α), and (d,p). The 7/2[633] component and the % amplitudes are quoted by 1980Wa15 from a calculation by Grigoriev and Soloviev.

[&] Band(C): Kπ=1$^-$ octupole band. Configuration=((ν 7/2[633])(ν 5/2[512])) (94%). The amplitude is quoted by 1972On01 from a calculation by Neergard. Cross section data in (d,t) and (^{3}He,α) are consistent with this configuration as the dominant (almost pure) component.

[a] Band(D): Kπ=3$^+$ band. Configuration=((ν 5/2[512])(ν 1/2[521]))(81%) + ((π 7/2[404])(π 1/2[411])) (19%) (1980Wa15,1972On01,1967Bu21). From (p,α); 1982Bu23 suggest 27% *10* admixture of the latter configuration. Strong population of 4$^+$ member (1263 level) of this band in (d,d′) suggests hexadecapole vibrational nature.

[b] Band(E): Kπ=0$^+$ band.

[c] Band(F): Kπ=2$^+$ γ band.

[d] Band(G): Kπ=(6$^-$) band. probable configuration=((ν 7/2[633])(ν 5/2[512])) (1972On01).

[e] Band(H): Kπ=0$^-$ octupole band.

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Adopted Levels, Gammas (continued)

^{172}Yb Levels (continued)

[f] Band(I): $K^{\pi}=2^{+}$ band. Configuration=((ν 5/2[512])(ν 1/2[521])) + 26% *10* of configuration=((π 7/2[404])(π 1/2[411])) (1982Bu23).
[g] Band(J): $K^{\pi}=(4^{-})$ band. probable configuration=((ν 7/2[633])(ν 1/2[521])) (1980Wa15).
[h] Band(K): $K^{\pi}=3^{+}$ band. Configuration=((ν 11/2[505])(ν 5/2[512])) + (26±10)% of configuration=((π 7/2[404])(π 1/2[411])) (1982Bu23).
[i] Band(L): $K^{\pi}=2^{-}$ octupole band.
[j] Band(M): $K^{\pi}=0^{+}$ band.
[k] Band(N): $K^{\pi}=0^{+}$ band.
[l] Band(O): $K^{\pi}=(1^{+})$ band. probable configuration=((ν 5/2[512])(ν 3/2[521])).
[m] Band(P): $K^{\pi}=(4^{+})$ band. probable configuration=((π 7/2[404])(π 1/2[411])).
[n] Band(Q): $K^{\pi}=(3^{+})$ band member.
[o] Band(R): $K^{\pi}=(5^{-})$ band. probable configuration=((ν 5/2[512])(ν 5/2[642])). The 5^{-} member is not reported.
[p] Band(S): $K^{\pi}=(1^{+})$ band.
[q] Band(T): $K^{\pi}=(4^{+})$ band.
[r] Band(U): $K^{\pi}=(4^{+})$ band. probable configuration=((ν 5/2[512])(ν 3/2[521])).
[s] Band(V): $K^{\pi}=(9^{-})$ band. Probable configuration=((ν 7/2[633])(ν 11/2[505])) (1980Wa15).
[t] Band(W): $K^{\pi}=(8^{+})$ band. probable configuration=((ν 5/2[512])(ν 11/2[505])).

Adopted Levels, Gammas (continued)

γ(^{172}Yb)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
78.7427	2^+	78.7426 *6*	100	0.0	0^+	E2		8.4		B(E2)(W.u.)=212 *2*
260.268	4^+	181.528 *4*	100	78.7427	2^+	E2		0.376		B(E2)(W.u.)=301 *20*
539.977	6^+	279.717 *5*	100	260.268	4^+	E2		0.092		B(E2)(W.u.)=3.2×10^2 *3*
912.12	8^+	372.06 *10*	100	539.977	6^+	E2				B(E2)(W.u.)=4.0×10^2 *4*
1042.914	0^+	964.09 *5*	100	78.7427	2^+	[E2]				B(E2)(W.u.)=3.6 *10*
		1042.926 *22*		0.0	0^+	E0			0.173 *16*	X(E0/E2)=0.029 *2* (1988Su01). ρ(E0)=0.049 *8* (1988Su01).
1117.874	2^+	857.636 *7*	100 *3*	260.268	4^+	E2				B(E2)(W.u.)=2.5 *3*
		1039.149 *10*	100 *3*	78.7427	2^+	M1+E2+E0	+2.3 *+5−3*			B(E2)(W.u.)=0.79 *12*; B(M1)(W.u.)=0.00036 *9* δ: from (n,n′γ). Other: +5.0 *+25−16* from (α,2nγ).
		1117.94 *3*	36 *3*	0.0	0^+	E2				B(E2)(W.u.)=0.24 *1*
1154.935	1^-	1076.240 *18*	100.0 *5*	78.7427	2^+	E1				
		1154.980 *15*	18.9 *7*	0.0	0^+	E1				
1172.385	3^+	912.125 *25*	24.5 *7*	260.268	4^+	M1+E2	−2.36 *15*			B(M1)(W.u.)=1.07×10^{-7} *13*; B(E2)(W.u.)=0.000325 *15* δ: other: −3.7 *+1−3* (α,2nγ), −1.5 *4* (n,n′γ), −2.7 *7* (^{172}Tm β$^-$).
		1093.657 *13*	100 *2*	78.7427	2^+	M1+E2	−4.0 *3*			B(M1)(W.u.)=9.8×10^{-8} *15*; B(E2)(W.u.)=0.000591 *21* δ: others: −14.6 *+21−26* (α,2nγ), −2.7 *6* (^{172}Tm β$^-$), −7.2 *+9−14* (n,n′γ).
1198.472	2^-	1119.780 *13*	100	78.7427	2^+	E1				
1221.720	3^-	961.478 *12*	100 *3*	260.268	4^+	E1				
		1143.020 *15*	84 *7*	78.7427	2^+	E1				
1263.028	4^+	90.6440 *17*	89 *3*	1172.385	3^+	M1+E2	−1.64 *2*	4.72		B(M1)(W.u.)=0.00233 *21*; B(E2)(W.u.)=3.5×10^2 *3* δ: other: −2.33 *15* (^{172}Tm β$^-$).
		723.02 *2*	8.5 *3*	539.977	6^+	E2				B(E2)(W.u.)=0.00140 *11*
		1002.75 *2*	100 *2*	260.268	4^+	M1+E2	+13 *+76−6*			B(M1)(W.u.)<1.5×10^{-7}; B(E2)(W.u.)=0.0032 *4*
		1184.28 *3*	6.7 *24*	78.7427	2^+	E2				B(E2)(W.u.)=9.E−5 *4*
1286.54	4^+	746.60 *3*	35 *5*	539.977	6^+					
		1026.27 *6*	100 *3*	260.268	4^+	M1+E2(+E0)	+0.87 *13*			
		1208.0 *3*	29 *5*	78.7427	2^+					
1330.693	4^-	132.227 *13*	1.8 *9*	1198.472	2^-					
		1070.40 *3*	100 *2*	260.268	4^+	E1				
1352.95	(5^-)	812.96 *10*	55 *3*	539.977	6^+					
		1092.90 *25*	100 *10*	260.268	4^+					
1370.07	10^+	457.86 *10*	100	912.12	8^+	E2				B(E2)(W.u.)=375 *23*
1375.815	5^+	112.778 *3*	25 *1*	1263.028	4^+	M1+E2	1.43 *3*	2.19		B(M1)(W.u.)=0.0027 *8*; B(E2)(W.u.)=1.9×10^2 *6*

$^{172}_{70}Yb_{102}$-12

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
1375.815	5^+	203.438 *5*	100 *2*	1172.385	3^+	E2		0.26		B(E2)(W.u.)=60 *18*
		835.85 *7*	10 *2*	539.977	6^+	M1+E2	1.0 *6*			B(M1)(W.u.)=4.E−6 *3*; B(E2)(W.u.)=0.0026 *18*
		1115.54 *5*	9.3 *10*	260.268	4^+	E2				B(E2)(W.u.)=0.0011 *4*
1405.008	0^+	250.035 *7*	6.0 *4*	1154.935	1^-	[E1]				B(E1)(W.u.)=9.7×10^{-7} *17*
		287.139 *3*	100 *14*	1117.874	2^+	[E2]				B(E2)(W.u.)=5.9 *13*
		362.1		1042.914	0^+	E0			7.2 *3*	X(E0/E2)=15.6 *12*, ρ(E0)=0.043 *5* (1988Su01).
		1326.10 *7*	88 *5*	78.7427	2^+	[E2]				B(E2)(W.u.)=0.0025 *4*
		1405.04 *2*		0.0	0^+	E0			4.5 *2*	X(E0/E2)=2.93 *20*, ρ(E0)=0.014 *2* (1988Su01).
1465.875	2^+	267.14 *20*	0.04 *1*	1198.472	2^-	[E1]		0.027		B(E1)(W.u.)=5.4×10^{-6} *14*
		293.61 *6*	0.20 *2*	1172.385	3^+	[M1,E2]				B(M1)(W.u.)=0.00102 *13*; B(E2)(W.u.)=5.4 *7*
		348.04 *6*	0.30 *2*	1117.874	2^+	[M1,E2]		0.08 *3*		B(M1)(W.u.)=0.00092 *10*; B(E2)(W.u.)=3.4 *4*
		423.04 *6*	0.28 *2*	1042.914	0^+	[E2]		0.028		B(E2)(W.u.)=2.42 *24*
		1205.62 *8*	2.8 *1*	260.268	4^+	(E2)				B(E2)(W.u.)=0.129 *10*
		1387.093[@] *4*	100 *3*	78.7427	2^+	M1+E2(+E0)	−5.1 *+11−16*			B(M1)(W.u.)=0.0094 *8* δ: others: −5.0 *5* (^{172}Tm β$^-$), −4.6 *+13−20* (n,n′γ).
		1465.93 *4*	77 *3*	0.0	0^+	E2				B(E2)(W.u.)=1.33 *11*
1476.784	2^+	321.82 *11*	0.60 *16*	1154.935	1^-	E1		0.017		B(E1)(W.u.)=5.5×10^{-7} *20*
		358.86 *6*	1.22 *15*	1117.874	2^+	(E2)		0.044		B(E2)(W.u.)=0.28 *8*
		1216.35 *11*	12 *2*	260.268	4^+					
		1397.92 *5*	100 *3*	78.7427	2^+	M1+E2(+E0)	0.8 *5*			B(M1)(W.u.)=7.E−5 *4*; B(E2)(W.u.)=0.010 *7* X(E0/E2)<0.04 (1988Su01).
		1476.77 *7*	36 *1*	0.0	0^+	E2				B(E2)(W.u.)=0.0071 *17*
1510.179	6^+	134.363 *18*	10.5 *7*	1375.815	5^+	M1+E2	1.3 *3*	1.23 *6*		
		247.155 *6*	100 *4*	1263.028	4^+	E2		0.136		
		969.81 *18*	6.9 *5*	539.977	6^+					
1537.50	6^+	251.43[@] *12*	8.2 *19*	1286.54	4^+					
		625.1 *5*	9.4 *19*	912.12	8^+					
		997.42 *6*	100 *4*	539.977	6^+	M1+E2	+0.63 *7*			
1540.61	6^-	187.5[b] *3*	5 *3*	1352.95	(5^-)					
		209.96 *10*	24.1 *11*	1330.693	4^-	(E2)				
		1000.62 *6*	100 *4*	539.977	6^+	E1				
1549.150	3^+	286.30 *20*	0.34 *6*	1263.028	4^+	(M1)		0.183		
		431.29 *8*	0.32 *3*	1117.874	2^+	(M1)		0.062		
		1288.82 *3*	29 *1*	260.268	4^+	M1+E2	2.8 *+7−10*			
		1470.42 *3*	100 *3*	78.7427	2^+	M1+E2	−7.6 *+19−36*			δ: others: −7.2 *+17−28* (^{172}Tm β$^-$); −11.4 *+26−8* (α,2nγ), −7.0 *+15−20* (n,n′γ).
1550.43	6^-	174.7 *10*	100 *4*	1375.815	5^+	(E1)		0.079		B(E1)(W.u.)=7.6×10^{-9} *5*
		197.6 *3*	7 *1*	1352.95	(5^-)	[M1,E2]				B(M1)(W.u.)=1.9×10^{-8} *3*; B(E2)(W.u.)=0.00021 *4*

$^{172}_{70}Yb_{102}$-13

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	Comments
1550.43	6^-	1010.45 *6*	34.8 *14*	539.977	6^+	E1+M2	−0.38 *5*		B(E1)(W.u.)=1.20×10^{-11} *8*; B(M2)(W.u.)=7.8×10^{-6} *19*
1550.8		1290.5 *7*	100	260.268	4^+				
1557.58	7^-	645.41 *10*	45 *6*	912.12	8^+				
		1017.63 *6*	100 *4*	539.977	6^+	E1			
1599.870	1^-	401.429 *16*	1.19 *8*	1198.472	2^-				
		1521.114 *24*	100 *3*	78.7427	2^+	E1			B(E1)(W.u.)=0.00122938 *6*
		1599.79 *7*	65 *5*	0.0	0^+	[E1]			B(E1)(W.u.)=0.0018 *5*
1608.490	2^+	131.83 *4*	0.20 *2*	1476.784	2^+	[M1,E2]		1.4 *2*	
		142.56 *2*	2.0 *1*	1465.875	2^+	[M1,E2]		1.1 *2*	
		436.102 *16*	4.9 *2*	1172.385	3^+				
		565.56 *5*	0.81 *5*	1042.914	0^+				
		1348.13 *7*	3.4 *2*	260.268	4^+				
		1529.72 *4*	100 *5*	78.7427	2^+	E2+M1(+E0)	+10 *3*		B(E2)(W.u.)=0.55 *3*; B(M1)(W.u.)=2.9×10^{-5} *15*
		1608.56 *15*	83 *5*	0.0	0^+	E2			B(E2)(W.u.)=0.35 *6*
1633.14	$(4)^+$	1372.88 *6*	100 *5*	260.268	4^+	M1,E2			
		1554.38 *15*	27 *4*	78.7427	2^+	M1,E2			
1640.557	4^-	264.738 *9*	22.4 *6*	1375.815	5^+	E1(+M2)	−0.09 *6*	0.035 *14*	B(E1)(W.u.)=(4.2×10^{-6} *17*); B(M2)(W.u.)=(2 *3*)
		377.540 *8*	100 *2*	1263.028	4^+	E1(+M2)	−0.05 *4*	0.012 *2*	B(E1)(W.u.)=(6.E−6 *3*); B(M2)(W.u.)=(0.5 *9*)
		1380.23 *10*	1.2 *4*	260.268	4^+	[E1]			B(E1)(W.u.)=1.6×10^{-9} *9*
1657.790	$(4)^+$	1397.50 *3*	100 *10*	260.268	4^+	M1+E2	−1.1 *+2−5*		B(M1)(W.u.)=0.05 *3*; B(E2)(W.u.)=13 *9*
		1578.87 *12*	55 *10*	78.7427	2^+	E2			B(E2)(W.u.)=7 *5*
1662.810	3^+	186.11 *20*	0.38 *13*	1476.784	2^+	[M1,E2]		0.5 *1*	
		197.02 *6*	1.04 *10*	1465.875	2^+	[M1,E2]		0.4 *1*	
		399.750[@] *15*	21 *1*	1263.028	4^+	M1(+E2)	−0.07 *7*	0.075	
		490.444 *8*	71 *2*	1172.385	3^+	M1(+E2)	+0.04 *4*	0.044	δ: other: 0.8 *3* (from ce in (n,γ)).
		544.82 *20*	0.97 *21*	1117.874	2^+				
		1402.53 *3*	28 *1*	260.268	4^+	E2(+M1)	+12 *+9−4*		
		1584.08 *10*	100 *2*	78.7427	2^+	E2(+M1)	+55 *+94−22*		
1666.12	(7^+)	155.99 *8*	15.5 *17*	1510.179	6^+				
		290.28 *6*	100 *5*	1375.815	5^+	(E2)			
1670.55	(7^-)	120.21 *10*	100	1550.43	6^-	D+Q			
1700.639	3^+	151.55 *6*	0.99 *17*	1549.150	3^+	[M1,E2]		0.88 *18*	
		437.60 *2*	5.8 *2*	1263.028	4^+	M1(+E2)	+0.09 *10*	0.059	
		528.260 *14*	100 *2*	1172.385	3^+	M1(+E2)	+0.01 *3*	0.037	δ: others: +0.09 *7* (n,n′γ), <0.4 (n,γ).
		1440.38 *3*	14.8 *5*	260.268	4^+	E2+M1	+6.5 *+22−14*		
		1621.92 *3*	53 *1*	78.7427	2^+	E2+M1	+17 *4*		
1706.447	5^-	65.8 *3*	6 *3*	1640.557	4^-	[M1,E2]		14 *3*	
		196.38 *4*	19 *1*	1510.179	6^+	(E1)		0.058	
		330.619 *21*	100 *5*	1375.815	5^+	E1(+M2)	<0.13	0.020 *4*	
		443.29[@] *4*	26 *1*	1263.028	4^+	E1			

$^{172}_{70}Yb_{102}$-14

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
1706.447	5⁻	1166.50 *5*	13 *1*	539.977	6⁺	E1				
		1446.20 *6*	6.6 *6*	260.268	4⁺					
1707.8?		1447.51 *25*	100	260.268	4⁺					
1710.480	3(−)	538.126 *23*	9.1 *6*	1172.385	3⁺					
		1450.24 *7*	59 *7*	260.268	4⁺	D				
		1631.67 *6*	100 *7*	78.7427	2⁺	D				
1749.205	4⁺	200.5[a] *4*	<4[a]	1549.150	3⁺	E2		0.27		
		373[b]		1375.815	5⁺					
		486.160 *18*	58 *3*	1263.028	4⁺	M1+E2	+0.41 *14*	0.041 *2*		
		576.835 *18*	26.3 *12*	1172.385	3⁺	M1+E2	0.24 *6*	0.0284		
		1209.13 *10*	4.5 *4*	539.977	6⁺	(E2)				
		1488.94 *3*	100 *2*	260.268	4⁺	E2(+M1)	<−6			δ: other:0.0 *+13−3* (α,2nγ).
		1670.49 *3*	46 *1*	78.7427	2⁺	E2				
1757.367	(2)⁻	208.305[b] *10*	8.3 *11*	1549.150	3⁺					
		291.470 *4*	30 *4*	1465.875	2⁺					
		535.696 *12*	19.3 *14*	1221.720	3⁻					
		558.931 *10*	68 *5*	1198.472	2⁻	M1(+E2)	<0.7			
		602.472[@] *6*	100 *7*	1154.935	1⁻	M1+E2	1.0 *4*			
		1678.5[b] *3*	42 *9*	78.7427	2⁺					Reported in (α,2nγ) only.
1778.86	5⁺	1238.73 *8*	100 *12*	539.977	6⁺	M1(+E2)	<0.8			
		1518.68 *6*	79 *6*	260.268	4⁺	M1,E2				
1794.08	0⁺	317.04 *14*	0.81 *17*	1476.784	2⁺					
		389.1		1405.008	0⁺	E0			0.31 *1*	X(E0/E2)=0.19 *2* (1988Su01).
		751.22		1042.914	0⁺	E0			0.012 *2*	X(E0/E2)=0.043 *14* (1988Su01).
		1715.37 *5*	100 *7*	78.7427	2⁺	E2				B(E2)(W.u.)>0.0044
		1794.04 *9*		0.0	0⁺	E0			0.28 *1*	X(E0/E2)=0.38 *3* (1988Su01). Other: 0.34 *4* (1978La14,1985Ge02).
1802.65	6⁻	95.9 *3*	17 *6*	1706.447	5⁻	D+Q				
		161.8 *3*	11 *6*	1640.557	4⁻					
		292.2 *3*	100 *11*	1510.179	6⁺					
		426.5 *3*	50 *11*	1375.815	5⁺	D+Q				
1803.108	4⁺	145.21 *5*	2.6 *5*	1657.790	(4)⁺	M1(+E2)	<1.4	1.07 *13*		
		162.20[b] *25*		1640.557	4⁻					γ in (α,2nγ) only.
		337.85[@] *9*	3.3 *5*	1465.875	2⁺	(E2)		0.052		
		427.19 *5*	8.8 *5*	1375.815	5⁺	M1+E2	1.6 *6*	0.037 *8*		
		540.187[@] *16*	100 *3*	1263.028	4⁺	M1(+E2)	−0.03 *+10−8*	0.035		
		630.706 *17*	31 *1*	1172.385	3⁺	M1(+E2)	−0.10 *+14−17*	0.023		
		1263.16 *9*	3.1 *4*	539.977	6⁺	(E2)				
		1542.850 *23*	73 *2*	260.268	4⁺	E2(+M1)	+9 *+11−3*			
		1724.35 *3*	31 *1*	78.7427	2⁺	E2				

$^{172}_{70}Yb_{102}$-15

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	$I_{(\gamma+ce)}$	Comments
1810.32	(8$^-$)	139.87 *6*	100 *10*	1670.55	(7$^-$)	D+Q				
		259.3 *3*	11 *1*	1550.8						
1821.583	3$^-$	272.31[@] *3*	10 *5*	1549.150	3$^+$					
		490 *1*		1330.693	4$^-$					
		599.862 *19*	11 *1*	1221.720	3$^-$					
		623.114 *7*	18 *2*	1198.472	2$^-$					
		649.26 *3*	10 *1*	1172.385	3$^+$					
		666.08[@] *12*	30 *6*	1154.935	1$^-$					
		1743.27 *15*	100 *14*	78.7427	2$^+$					
1828.76	8$^-$	288.0 *3*	87 *38*	1540.61	6$^-$	(E2)				
		916.66 *16*	100 *8*	912.12	8$^+$	E1				
1839.80	9$^-$	282.3 *2*	7 *3*	1557.58	7$^-$					
		469.75 *20*	15 *5*	1370.07	10$^+$					
		927.68 *10*	100 *5*	912.12	8$^+$	E1				
1841.84	(8$^+$)	175.2 *3*		1666.12	(7$^+$)					
		331.67 *8*	100 *4*	1510.179	6$^+$	(E2)				
1849.173	2$^+$	1589.03 *7*	51 *5*	260.268	4$^+$					
		1770.9 *4*	100 *7*	78.7427	2$^+$	M1+E2+E0				
		1849.06 *3*	63 *4*	0.0	0$^+$	(E2)				B(E2)(W.u.)=0.17 *11*
1853.46	8$^+$	316.3 *3*	35 *8*	1537.50	6$^+$					
		483.26 *12*	73 *7*	1370.07	10$^+$					
		941.37 *10*	100 *6*	912.12	8$^+$	(M1)				
1862.799	(5)$^+$	200.5[a] *4*	<17[a]	1662.810	3$^+$	E2		0.27		
		352.55 *4*	21 *3*	1510.179	6$^+$	E2(+M1)	>2.7	0.050 *4*		
		599.86 *4*	46 *6*	1263.028	4$^+$	E2+M1	>1			
		1322.66 *9*	33 *3*	539.977	6$^+$	E2(+M1)	>1.6			
		1602.54 *3*	100 *3*	260.268	4$^+$	E2(+M1)	+21 *+45−9*			
1869.634	(4,5)$^-$	163.165 *20*	19 *1*	1706.447	5$^-$	M1(+E2)	<0.8	0.80 *7*		
		229.080 *10*	100 *3*	1640.557	4$^-$	M1(+E2)	<1.4	0.28 *6*		
		493.89 *9*	19 *4*	1375.815	5$^+$					
		1329.72[b] *7*	10 *1*	539.977	6$^+$					
1894.616	0$^+$	739.60 *4*	1.7 *6*	1154.935	1$^-$					
		776.71 *7*	2.1 *4*	1117.874	2$^+$	(E2)				B(E2)(W.u.)>0.0047
		1815.70 *7*	100 *7*	78.7427	2$^+$	E2				B(E2)(W.u.)>0.0032
		1894.53 *8*		0.0	0$^+$	E0			0.073 *2*	X(E0/E2)=0.14 *1*(1988Su01).
1899.30?		1639.03 *20*	100	260.268	4$^+$					
1907.48	(12$^+$)	537.4 *1*	100	1370.07	10$^+$	(E2)				B(E2)(W.u.)=4.3×10^2 *6*
1919.84	(5,6)	253.75 *10*	39 *7*	1666.12	(7$^+$)					
		410.8[@] *3*	41 *4*	1510.179	6$^+$					
		1379.76 *14*	100 *11*	539.977	6$^+$					

$^{172}_{70}Yb_{102}$-16

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	Comments
1919.84	(5,6)	1658.86 *25*	37 *12*	260.268	4^+				
1921.80	(7^-)	119.3 *5*	33 *8*	1802.65	6^-				
		215.4 *5*	100 *17*	1706.447	5^-				
		255.7 *5*	42 *8*	1666.12	(7^+)				
		411.4 *5*	92 *17*	1510.179	6^+				
1927.016	5^+	416.65[a] *8*	<21[a]	1510.179	6^+	M1(+E2)	<0.7	0.061 *7*	
		551.078[@] *19*	100 *4*	1375.815	5^+	M1+E2	+1.5 *5*	0.020 *4*	
		664.07 *5*	26 *2*	1263.028	4^+	M1(+E2)	<1.2	0.017 *4*	
		1387.18[@] *2*	<30	539.977	6^+				
		1666.38 *20*	68 *2*	260.268	4^+	E2+M1	+6.9 *+19−12*		
1956.351	2^+	734.77 *4*	6.7 *13*	1221.720	3^-				
		839.4 *4*	6.43 *16*	1117.874	2^+				
		1696.00 *10*	81 *5*	260.268	4^+				
		1877.89 *16*	100 *9*	78.7427	2^+	M1+E2+E0			
		1956.90[@] *18*	75 *9*	0.0	0^+	[E2]			B(E2)(W.u.)=0.33 *16*
1968.20	(9^-)	157.92 *8*	100 *9*	1810.32	(8^-)	D+Q			
		297.1 *3*	29 *3*	1670.55	(7^-)				
1975.63	(4^+)	1435.23 *25*	36 *6*	539.977	6^+				
		1714.95 *25*	100 *19*	260.268	4^+				
		1897.42 *20*	53 *6*	78.7427	2^+				
2007.98	(6^+)	350.65 *20*	100 *11*	1657.790	$(4)^+$				
		1468.42 *25*	80 *7*	539.977	6^+				
		1746.58[@] *25*	38 *4*	260.268	4^+				
2009.80	1^+	811.6[b] *4*	9 *4*	1198.472	2^-				
		854.435[@b] *16*	27 *4*	1154.935	1^-				
		892.11[@] *4*	5.0 *4*	1117.874	2^+				
		1931.28 *9*	94 *7*	78.7427	2^+	E2			
		2009.92 *15*	100 *11*	0.0	0^+	(M1)			
2039.38	(9^+)	197.2 *3*		1841.84	(8^+)				
		373.6 *3*	100	1666.12	(7^+)	(E2)			
2046.99	$(2)^+$	90.645 *4*	16 *3*	1956.351	2^+				
		892.11 *4*	6.0 *4*	1154.935	1^-				
		1787.85[@] *20*	44 *5*	260.268	4^+				
		1968.19 *9*	100 *20*	78.7427	2^+	E2			
2064.04	(8^-)	142.3 *3*	28 *6*	1921.80	(7^-)				
		261.6 *3*	100 *11*	1802.65	6^-				
		397.7 *3*	17 *6*	1666.12	(7^+)				
2073.114	4^+	146.03 *4*	0.25 *3*	1927.016	5^+	M1(+E2)	<1.4	1.05 *13*	
		210.28 *3*	0.30 *2*	1862.799	$(5)^+$	M1(+E2)	<1.1	0.37 *6*	

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]
2073.114	4^+	270.028 *8*	6.48 *15*	1803.108	4^+	M1+E2	+0.79 *+21−31*	0.172 *15*
		323.889 *15*	5.03 *8*	1749.205	4^+	M1+E2	+0.40 *8*	0.121 *4*
		366.684 *24*	0.97 *4*	1706.447	5^-	E1		0.0123
		372.507 *12*	8.93 *17*	1700.639	3^+	M1+E2	+0.71 *7*	0.073 *2*
		410.308 *12*	6.62 *10*	1662.810	3^+	M1+E2	+0.74 *9*	0.056 *2*
		415.7 *4*	0.17 *8*	1657.790	$(4)^+$	(M1,E2)		0.048 *20*
		432.549 *13*	5.49 *15*	1640.557	4^-	E1(+M2)	+0.04 *+9−7*	
		524.05 *4*	0.75 *3*	1549.150	3^+	E2+M1	+2.8 *5*	0.018
		607.141[@] *18*	1.66 *17*	1465.875	2^+	E2		0.0112
		697.300 *16*	20.6 *4*	1375.815	5^+	M1(+E2)	−0.014 *10*	0.0181
		810.064 *15*	55.8 *8*	1263.028	4^+	M1+E2	−0.08 *4*	0.0124
		900.724 *20*	100.0 *13*	1172.385	3^+	M1+E2	+0.068 *9*	
		1533.27 *12*	0.09 *1*	539.977	6^+			
		1812.85 *4*	0.65 *3*	260.268	4^+	E2+M1	+6.0 *+57−19*	
		1994.36 *6*	0.50 *3*	78.7427	2^+	E2		
2075.27	(6^+)	565.6 *3*	72 *19*	1510.179	6^+			
		1535.18 *12*	100 *10*	539.977	6^+			
		1815.2 *3*	38 *6*	260.268	4^+			
2076.172	$(1)^-$	365.72 *3*	4.7 *23*	1710.480	$3^{(-)}$			
		476.329 *18*	29 *3*	1599.870	1^-			
		610.963[@b] *23*	7.1 *12*	1465.875	2^+			
		854.435 *16*	46 *7*	1221.720	3^-	E2		
		877.65 *3*	12.7 *7*	1198.472	2^-			
		1997.39 *15*	100 *12*	78.7427	2^+			
2084.81?		708.99 *20*	100	1375.815	5^+			
2100.22	(4^+)	1560.09 *20*	48 *19*	539.977	6^+			
		1840.3 *3*	100 *19*	260.268	4^+			
2102.944	1^-	208.315 *10*	3.0 *4*	1894.616	0^+			
		697.86 *16*	1.6 *3*	1405.008	0^+			
		2024.38 *18*	100 *11*	78.7427	2^+	E1		
		2102.4 *3*	49 *3*	0.0	0^+			
2145.03	(10^-)	176.9 *3*	100 *8*	1968.20	(9^-)			
		334.8 *3*	47 *5*	1810.32	(8^-)	(E2)		
2154.30	(7)	483.6 *3*	100 *21*	1670.55	(7^-)			
		603.7 *3*	71 *14*	1550.43	6^-			
2156.43	(6^+)	1616.45 *3*	100	539.977	6^+			
2175.059	3^+	517.29 *10*	4.9 *8*	1657.790	$(4)^+$			
		566.49 *5*	9.4 *8*	1608.490	2^+	E2(+M1)	>0.8	
		625.95 *4*	37.9 *16*	1549.150	3^+	E2(+M1)	>3	
		709.133 *17*	100 *4*	1465.875	2^+	E2+M1	+4.9 *+10−8*	
		1002.74 *2*	31 *15*	1172.385	3^+			

$^{172}_{70}Yb_{102}$-18

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]	Comments
2175.059	3+	1634.78[b] *20*		539.977	6+				E_γ: from (α,2nγ) only. It is suspect since a transition with ΔJ=3 is not expected.
		1914.80 *3*	72.9 *14*	260.268	4+	M1+E2	−0.291 *24*		
		2096.33 *5*	8.5 *4*	78.7427	2+	M1+E2	+0.68 *+16−11*		
2176.20	(1)−	576.31 *7*	100 *8*	1599.870	1−	M1+E2	0.8 *4*		
		1021.27 *5*	90 *8*	1154.935	1−				
		1133.56[@b] *5*	67 *8*	1042.914	0+				
2181.97	(4,5,6)+	254.39 *24*	41 *12*	1927.016	5+				
		319.174 *22*	100 *7*	1862.799	(5)+	M1(+E2)	<0.5		
		524.05[b] *6*		1657.790	(4)+				
2192.130	5+	119.023 *15*	1.0 *2*	2073.114	4+	[M1,E2]		1.9 *2*	
		329.39 *5*	4.5 *4*	1862.799	(5)+	M1(+E2)	<1	0.108 *18*	
		389.44 *5*	2.3 *3*	1802.65	6−				Mult=E1 from ce data is in conflict with ΔJ^π.
		413.2 *3*	1.2 *5*	1778.86	5+	[M1,E2]		0.049 *20*	
		534.29 *7*	4.1 *6*	1657.790	(4)+	M1(+E2)	<2	0.027 *9*	
		681.82 *4*	22.8 *8*	1510.179	6+	M1+E2	+0.10 *7*	0.0191	
		816.327 *20*	37.8 *8*	1375.815	5+	M1+E2	+0.20 *14*	0.0120 *5*	
		929.106 *20*	100.0 *23*	1263.028	4+	M1+E2	−0.066 *9*		
		1019.79 *4*	3.8 *3*	1172.385	3+	(E2)			
		1652.32 *10*	0.47 *10*	539.977	6+				
		1931.76 *7*	1.23 *12*	260.268	4+	(M1,E2)			
2193.02	(10−)	364.2 *3*	100 *7*	1828.76	8−	(E2)			
		823.0 *3*	22 *7*	1370.07	10+				
2193.16	(4+)	816.95 *25*	23 *8*	1375.815	5+				
		930.13 *16*	100 *8*	1263.028	4+				
		1653.64 *25*	75 *14*	539.977	6+				
2194.331	(1+)	585.71[@] *3*	4.7 *7*	1608.490	2+				
		717.502 *18*	17.3 *19*	1476.784	2+				
		728.20 *10*	5.9 *7*	1465.875	2+				
		995.740[@] *21*	52 *4*	1198.472	2−				
		2115.5[b] *3*	100 *15*	78.7427	2+				
2195.03	(1,2+)	437.67 *6*	2.5 *4*	1757.367	(2)−				
		728.8 *3*	5.0 *13*	1465.875	2+				
		1152.08 *10*	32 *3*	1042.914	0+				
		2195.4 *3*	100 *13*	0.0	0+				
2199.47	(11−)	359.9 *3*	19 *6*	1839.80	9−				
		829.2 *3*	100 *8*	1370.07	10+				
2210	1(−)	2131	100	78.7427	2+				
		2210	65 *6*	0.0	0+	[E1]			B(E1)(W.u.)=0.00175 *33*
2212.52	(10+)	358.9 *3*	81 *13*	1853.46	8+				

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]
2212.52	(10$^+$)	842.6 *3*	100 *19*	1370.07	10$^+$			
2213.307	3$^+$,4$^+$	512.54 *5*	56 *4*	1700.639	3$^+$	M1+E2	0.6 *3*	0.034 *5*
		664.07 *5*	31 *2*	1549.150	3$^+$	M1(+E2)	<1.2	0.017 *4*
		950.37 *7*	16 *3*	1263.028	4$^+$			
		1040.99 *3*	100 *3*	1172.385	3$^+$	M1(+E2)	<0.9	
2214.06	(1$^-$)	319.74 *12*	2.6 *16*	1894.616	0$^+$			
		605.7[b] *4*	28 *10*	1608.490	2$^+$			
		746.598[@b] *16*	18 *7*	1465.875	2$^+$			
		2135.14 *14*	100 *9*	78.7427	2$^+$			
2225.3	9$^-$	161.3 *3*	25 *6*	2064.04	(8$^-$)			
		303.4 *3*	100 *19*	1921.80	(7$^-$)			
2228.63	2$^+$	272.31 *3*	3.8 *21*	1956.351	2$^+$			
		565.02[@b] *3*	14.4 *9*	1662.810	3$^+$			
		1185.60 *12*	12.1 *4*	1042.914	0$^+$			
		1968.19 *9*	100 *20*	260.268	4$^+$			
2248.19		1336.06 *12*	100	912.12	8$^+$			
2256.3	(10$^+$)	414.5 *3*	100	1841.84	(8$^+$)			
2285.399	4$^+$	358.45 *3*	7.3 *4*	1927.016	5$^+$	M1+E2	1.3 *2*	0.065 *5*
		422.61 *3*	8.3 *4*	1862.799	(5)$^+$	(M1,E2)		0.046 *19*
		482.23 *4*	35 *2*	1803.108	4$^+$	M1+E2	−0.10 *7*	0.046
		536.194 *19*	39 *2*	1749.205	4$^+$	M1+E2	−0.17 *7*	0.035
		584.725 *17*	20.7 *6*	1700.639	3$^+$	M1(+E2)	+0.06 *9*	0.0282
		622.605 *22*	9.7 *7*	1662.810	3$^+$	M1(+E2)	<0.4	0.023 *1*
		644.86 *6*	7.1 *6*	1640.557	4$^-$			
		909.70 *6*	39 *3*	1375.815	5$^+$	E2(+M1)	>1.3	
		1022.370 *21*	85 *2*	1263.028	4$^+$	M1+E2	+0.75 *17*	
		1113.05 *5*	100 *5*	1172.385	3$^+$	M1+E2	−0.18 *4*	
		2024.9 *3*	3.4 *4*	260.268	4$^+$	M1(+E2)	+0.46 *44*	
		2206.72[b] *15*	0.5 *3*	78.7427	2$^+$	(E2)		
2299.29		489.2 *3*	56 *22*	1810.32	(8$^-$)			
		628.4 *3*	100 *22*	1670.55	(7$^-$)			
2307.786	3$^+$,4$^+$	607.141 *18*	100 *10*	1700.639	3$^+$	E2		
		649.6 *5*	8.7 *25*	1657.790	(4)$^+$			
		758.74 *8*	14 *3*	1549.150	3$^+$	M1		
		2047.55 *15*	2.2 *5*	260.268	4$^+$			
2312.90	(2$^+$)	1026.43 *8*	36 *3*	1286.54	4$^+$			
		1269.71 *24*	25 *15*	1042.914	0$^+$			
		2233.6[b] *3*	100 *25*	78.7427	2$^+$			
2316.97	1,2$^{(+)}$	422.351[b] *16*	5.5 *20*	1894.616	0$^+$			
		2238.52[b] *20*	100 *20*	78.7427	2$^+$			

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Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	δ[#]	α[&]
2327.58	(2$^+$)	850.69 *9*	2.9 *3*	1476.784	2$^+$			
		861.7[b] *3*	9 *3*	1465.875	2$^+$			
		1172.68 *11*	14 *8*	1154.935	1$^-$			
		2327.3 *3*	100 *17*	0.0	0$^+$	(E2)		
2340.7	(11$^-$)	195.7 *3*	100 *8*	2145.03	(10$^-$)			
		372.3 *3*	60 *8*	1968.20	(9$^-$)			
2341.86	(0$^+$,1$^+$,2$^+$)	294.819[b] *17*	2.0 *6*	2046.99	(2)$^+$			
		733.360 *25*	7.1 *8*	1608.490	2$^+$			
		2263.75[@] *20*	100 *25*	78.7427	2$^+$			
2343.715	4$^+$	151.55 *6*	4.4 *8*	2192.130	5$^+$	[M1,E2]		0.88 *18*
		416.65[a] *8*	<9.5[a]	1927.016	5$^+$	M1(+E2)	<0.7	0.061 *7*
		480.84 *10*	13.5 *14*	1862.799	(5)$^+$	M1(+E2)	<1.3	0.038 *9*
		540.187[@b] *16*		1789	(4$^+$)			
		594.538 *19*	46 *3*	1749.205	4$^+$	M1(+E2)	+0.23 *+18−31*	0.026
		643.04 *3*	25.0 *13*	1700.639	3$^+$	M1(+E2)	<0.6	0.0222
		680.7[b] *4*	12 *5*	1662.810	3$^+$			
		703.06[b] *8*	15.0 *16*	1640.557	4$^-$			
		967.89 *5*	21.0 *10*	1375.815	5$^+$	M1+E2	−0.93 *13*	
		1080.68 *4*	100 *3*	1263.028	4$^+$	M1+E2	−0.22 *12*	
		1171.31 *11*	2.8 *7*	1172.385	3$^+$			
		1803.97[b] *15*	1.3 *2*	539.977	6$^+$			
		2083.41 *6*	24.0 *8*	260.268	4$^+$	M1+E2	+0.41 *14*	
		2265.02 *8*	1.45 *21*	78.7427	2$^+$	(E2)		
2375.37	(1$^+$,2)	272.31 *3*	7 *4*	2102.944	1$^-$			
		365.72 *3*	6 *3*	2009.80	1$^+$			
		712.51 *4*	6.3 *7*	1662.810	3$^+$			
		2296.2 *4*	100 *16*	78.7427	2$^+$			
2387.706	(1$^+$,2$^+$)	193.354 *6*	22 *2*	2194.331	(1$^+$)			
		630.79[a@] *3*	<18[a]	1757.367	(2)$^-$			
		839.4 *4*	20 *5*	1549.150	3$^+$			
		1216.01[@] *11*	56 *6*	1172.385	3$^+$			
		1233.51[@] *16*	27 *5*	1154.935	1$^-$			
		1269.71 *24*	91 *54*	1117.874	2$^+$			
		1344.32[@b] *12*	100 *14*	1042.914	0$^+$			
2392.3		1852.3 *4*	100	539.977	6$^+$			
2404.8	(0$^-$,1$^-$,2$^-$)	855[b]	<260	1549.150	3$^+$			
		2326	38	78.7427	2$^+$			
2411.4	(10$^-$)	186.2 *3*	13 *6*	2225.3	9$^-$			

$^{172}_{70}Yb_{102}$-21

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
2411.4	(10$^-$)	347.4 *3*	100 *13*	2064.04	(8$^-$)		
2464.09	(2$^+$)	250.035 *7*	51 *4*	2214.06	(1$^-$)		
		1242.29 *13*	100 *9*	1221.720	3$^-$		
2465.22	(7,8)	310.6 *3*	92 *15*	2154.30	(7)		
		656.0 *3*	62 *15*	1810.32	(8$^-$)		
		793.9 *3*	100 *23*	1670.55	(7$^-$)		
2480.037	(1$^+$,2$^+$)	523.82[b] *3*	3.5 *4*	1956.351	2$^+$		
		585.71[@b] *3*	0.90 *13*	1887			
		630.79[a] *3*	<1.0[a]	1849.173	2$^+$		
		816.35[@b] *10*	2.6 *8*	1662.810	3$^+$		
		871.564 *21*	5.2 *4*	1608.490	2$^+$		
		1002.81[@b] *4*	6.4 *5*	1476.784	2$^+$		
		1013.85[@b] *3*	6.1 *8*	1465.875	2$^+$		
		1281.89 *13*	4.1 *5*	1198.472	2$^-$		
		2401.39 *8*	100 *8*	78.7427	2$^+$	(E2)	
2492.2	(11$^+$)	452.8 *3*	100	2039.38	(9$^+$)	(E2)	
2518.7	(14$^+$)	611.2 *3*	100	1907.48	(12$^+$)	(E2)	B(E2)(W.u.)=394 *+60−45*
2554.2	(12$^-$)	213.6 *3*	100 *14*	2340.7	(11$^-$)		
		409.3 *3*	100 *14*	2145.03	(10$^-$)		
2573	1	2494	51 *9*	78.7427	2$^+$		
		2573	100	0.0	0$^+$		
2607.2	(12$^+$)	394.7 *3*	100	2212.52	(10$^+$)		
2607.3		1408.8 *3*	81 *15*	1198.472	2$^-$		
		1434.5 *3*	44 *15*	1172.385	3$^+$		
		1489.8[@] *3*	100 *15*	1117.874	2$^+$		
2609.2	(11$^-$)	383.9 *3*	100	2225.3	9$^-$	(E2)	
2612	1	2533	70 *13*	78.7427	2$^+$		
		2612	100	0.0	0$^+$		
2629.8	(12$^-$)	436.8 *3*	100	2193.02	(10$^-$)		
2636.1	(13$^-$)	436.7 *3*	42 *17*	2199.47	(11$^-$)		
		728.6 *3*	100 *17*	1907.48	(12$^+$)		
2653.3		353.9 *3*	100 *40*	2299.29			
		685.2 *3*	100 *40*	1968.20	(9$^-$)		
2689.8	(9$^-$)	224.6 *3*	100	2465.22	(7,8)		
2746.5	(12$^+$)	490.2 *3*	100	2256.3	(10$^+$)		
2786.8	(13$^-$)	232.7 *3*	50 *10*	2554.2	(12$^-$)		
		446.0 *3*	100 *20*	2340.7	(11$^-$)		
2840.8	(12$^-$)	429.4 *3*	100	2411.4	(10$^-$)	(E2)	
2856.4	(10$^-$)	166.6 *3*	100	2689.8	(9$^-$)		
3002	1	2923	51 *10*	78.7427	2$^+$		

$^{172}_{70}Yb_{102}$-22

Adopted Levels, Gammas (continued)

γ(^{172}Yb) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[‡]	Comments
3002	1	3002	100	0.0	0^+		
3017	1	2938	100	78.7427	2^+		
		3017	54 *24*	0.0	0^+		
3020.0	(13^+)	527.8 *3*	100	2492.2	(11^+)		
3034.2	(14^-)	247.4 *3*	40 *20*	2786.8	(13^-)		
		480.0 *3*	100 *40*	2554.2	(12^-)		
3043.9	(14^+)	436.7 *3*	100 *40*	2607.2	(12^+)		
3044.5	(11^-)	188.1 *3*	100	2856.4	(10^-)		
3072	$1^{(-)}$	2993	100	78.7427	2^+		
		3072	76 *17*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00053 *17*
3096	1	3017	185 *77*	78.7427	2^+		
		3096	100	0.0	0^+		
3118	$1^{(-)}$	3039	100	78.7427	2^+		
		3118	63 *19*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00037 *17*
3134.6	(14^-)	504.8 *3*	100	2629.8	(12^-)		
3160	$1^{(-)}$	3081	100	78.7427	2^+		
		3160	54 *10*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00072 *22*
3174	$1^{(-)}$	3096	227 *45*	78.7427	2^+		
		3174	100	0.0	0^+	[E1]	B(E1)(W.u.)=0.00057 *17*
3198.4	(16^+)	679.7 *5*	100	2518.7	(14^+)		
3246	$1^{(-)}$	3167	100	78.7427	2^+		
		3246	73 *21*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00048 *20*
3252.9	(12^-)	208.4 *3*	100	3044.5	(11^-)		
3253	1	3174	46 *11*	78.7427	2^+		
		3253	100	0.0	0^+		
3309.5	(14^+)	563.0 *3*	100	2746.5	(12^+)		
3393	$1^{(-)}$	3314	100	78.7427	2^+		
		3393	57 *9*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00075 *19*
3481.6	(13^-)	228.7 *3*	100	3252.9	(12^-)		
3545	$1^{(-)}$	3466	100	78.7427	2^+		
		3545	40 *9*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00085 *28*
3604	1	3525	76 *13*	78.7427	2^+		
		3604	100	0.0	0^+		
3635	$1^{(-)}$	3556	100	78.7427	2^+		
		3635	61 *8*	0.0	0^+	[E1]	B(E1)(W.u.)=0.00135 *32*
3863	1	3784	100	78.7427	2^+		
		3863	88 *19*	0.0	0^+		

[†] From weighted averages when data of comparable precision are available from different γ-ray studies. In many cases, however, values are from (n,γ) E=th and/or

$^{172}_{70}Yb_{102}$-23

Adopted Levels, Gammas (continued)

$\gamma(^{172}Yb)$ (continued)

^{172}Lu ε decay for low-spin levels.

‡ From ce data in ^{172}Lu ε decay, (α,2nγ) and (n,γ) E=th.

From $\gamma(\theta$,t) and/or ce data in ^{172}Lu ε decay.

@ The least-squares fit gives a poor fit for this transition. The fitted value (level energy difference) deviates up to about four times the quoted uncertainty.

& 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.

[a] Multiply placed with undivided intensity.

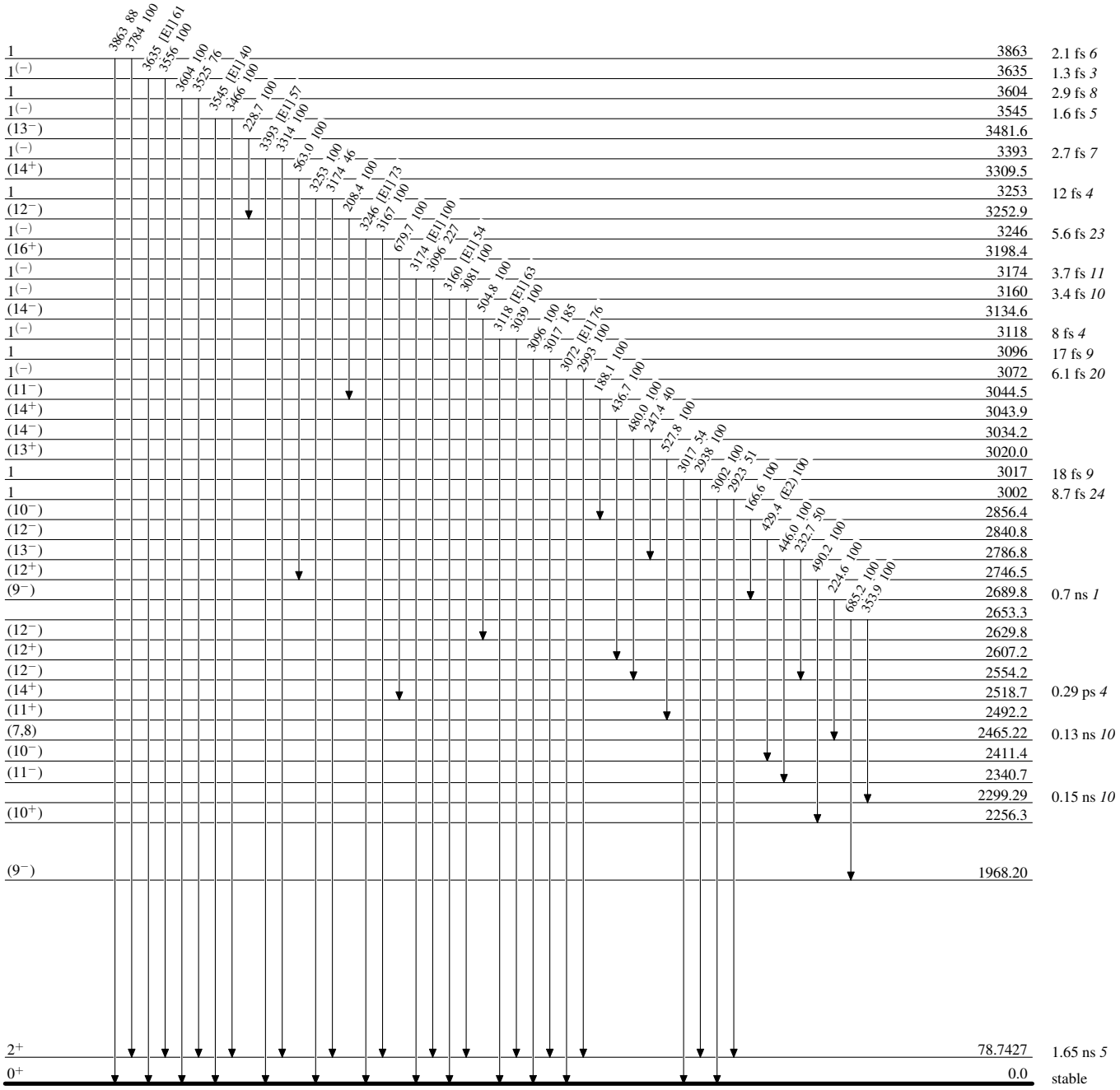
[b] Placement of transition in the level scheme is uncertain.

$^{172}_{70}Yb_{102}$-24

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



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

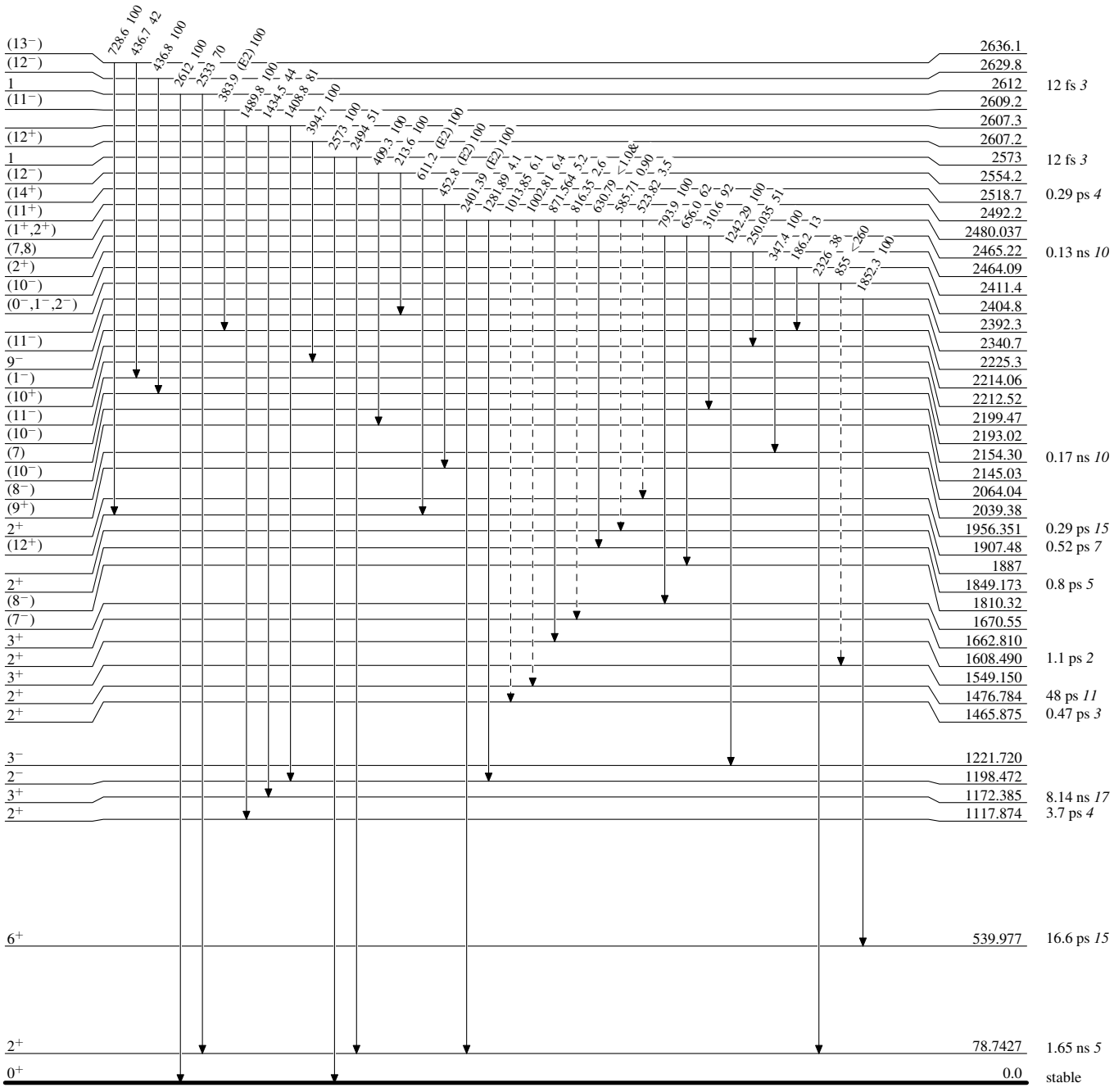
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

– – – – – – ► γ Decay (Uncertain)



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

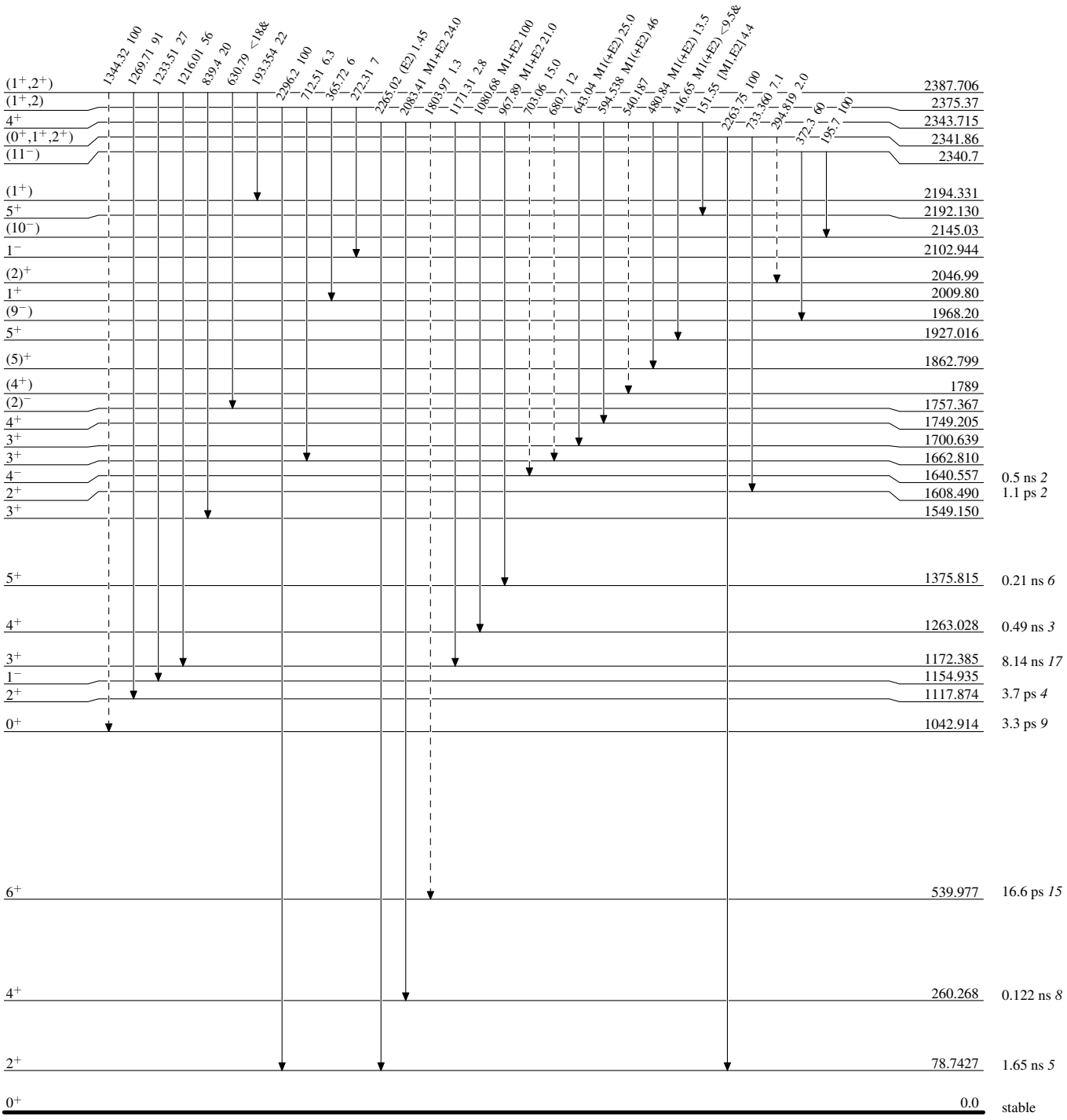
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



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

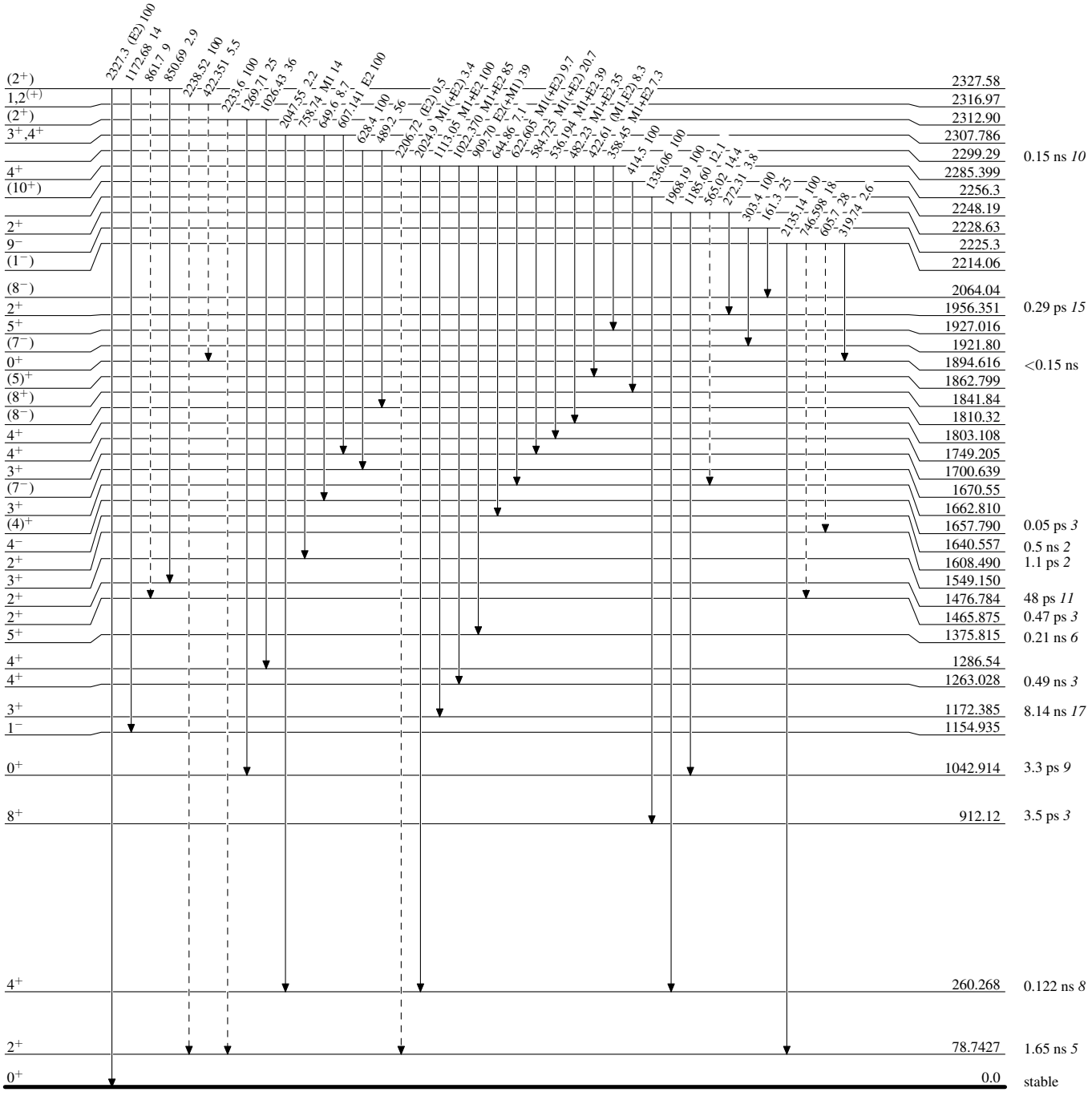
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



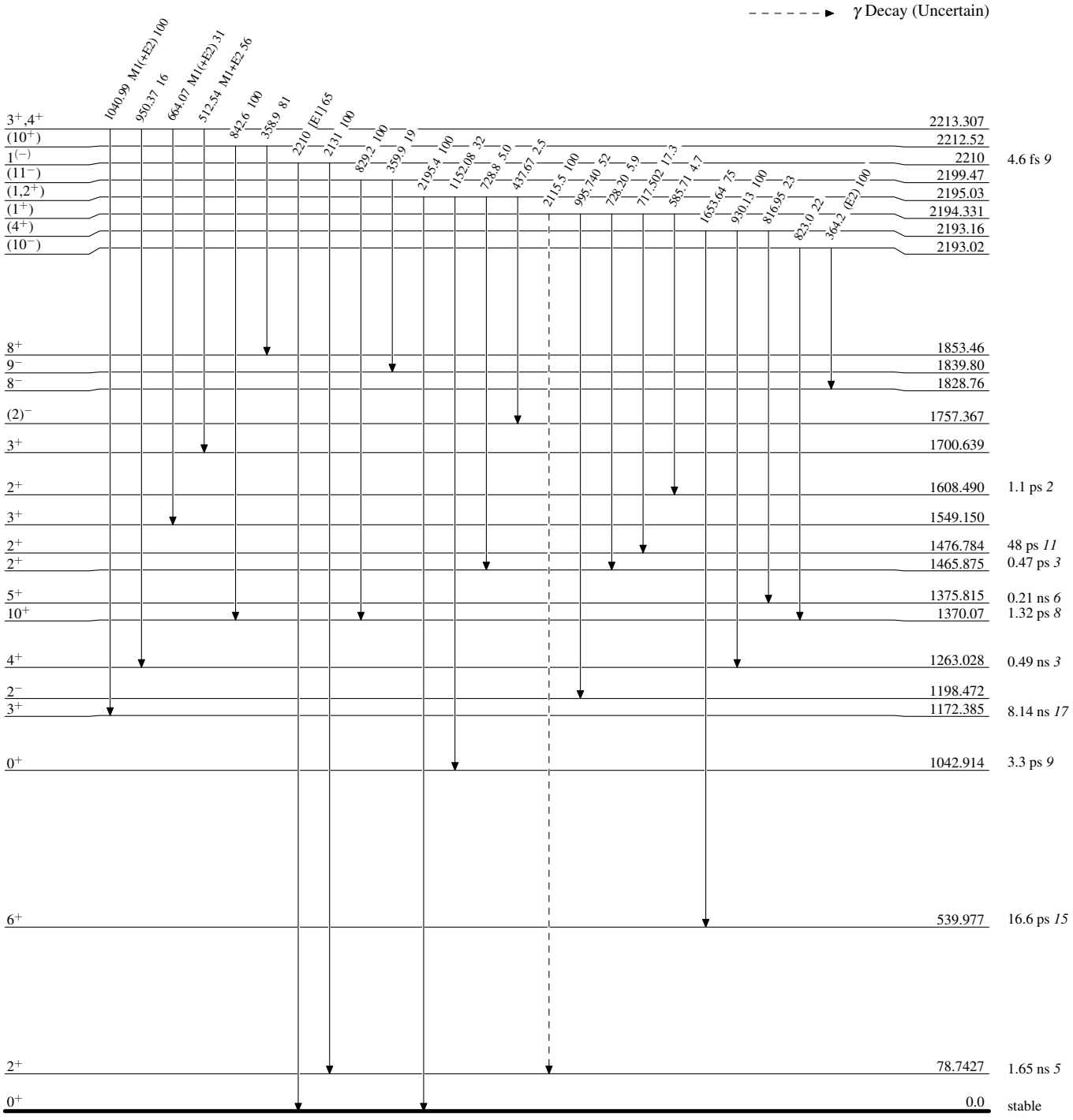
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



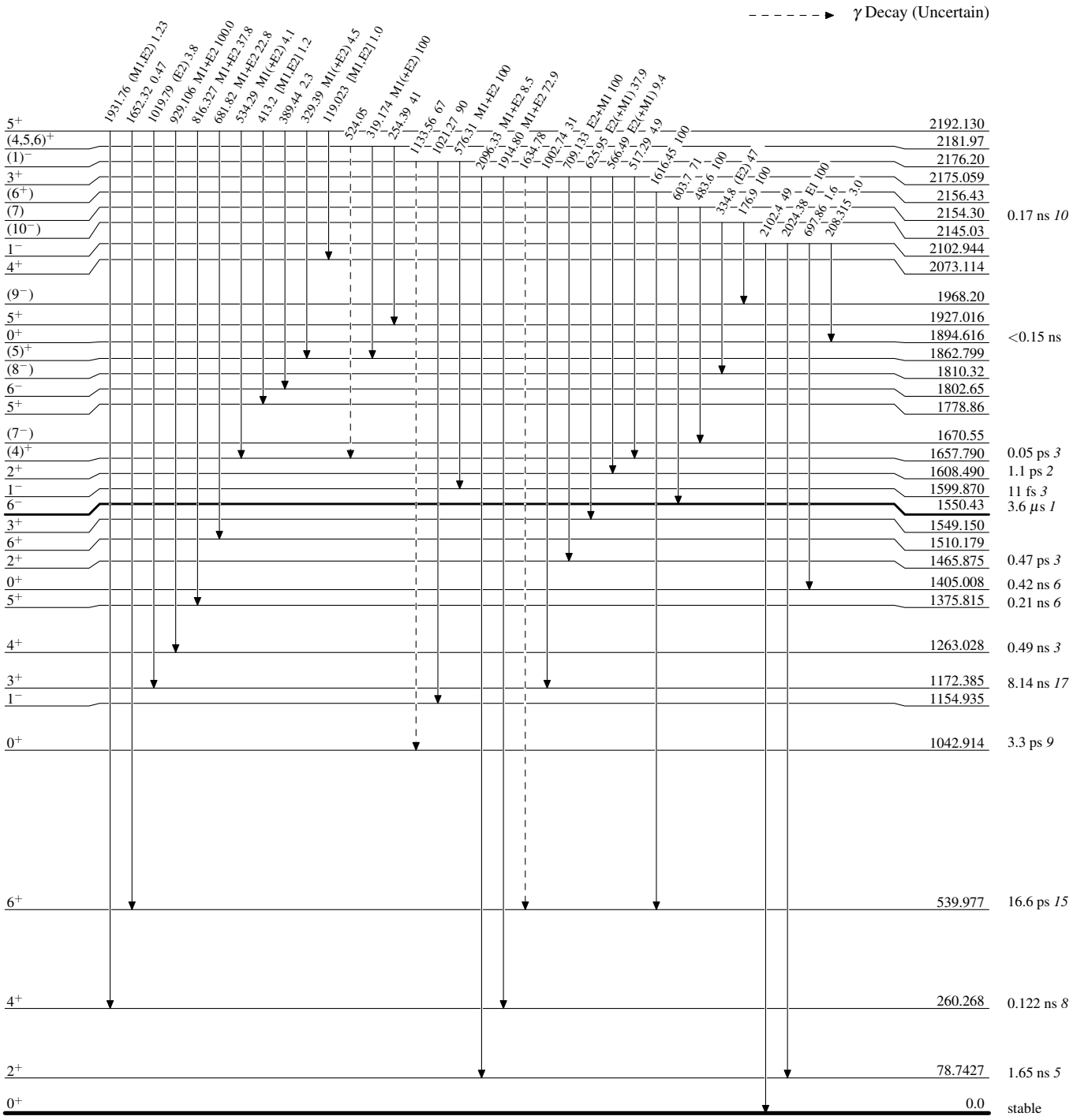
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



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

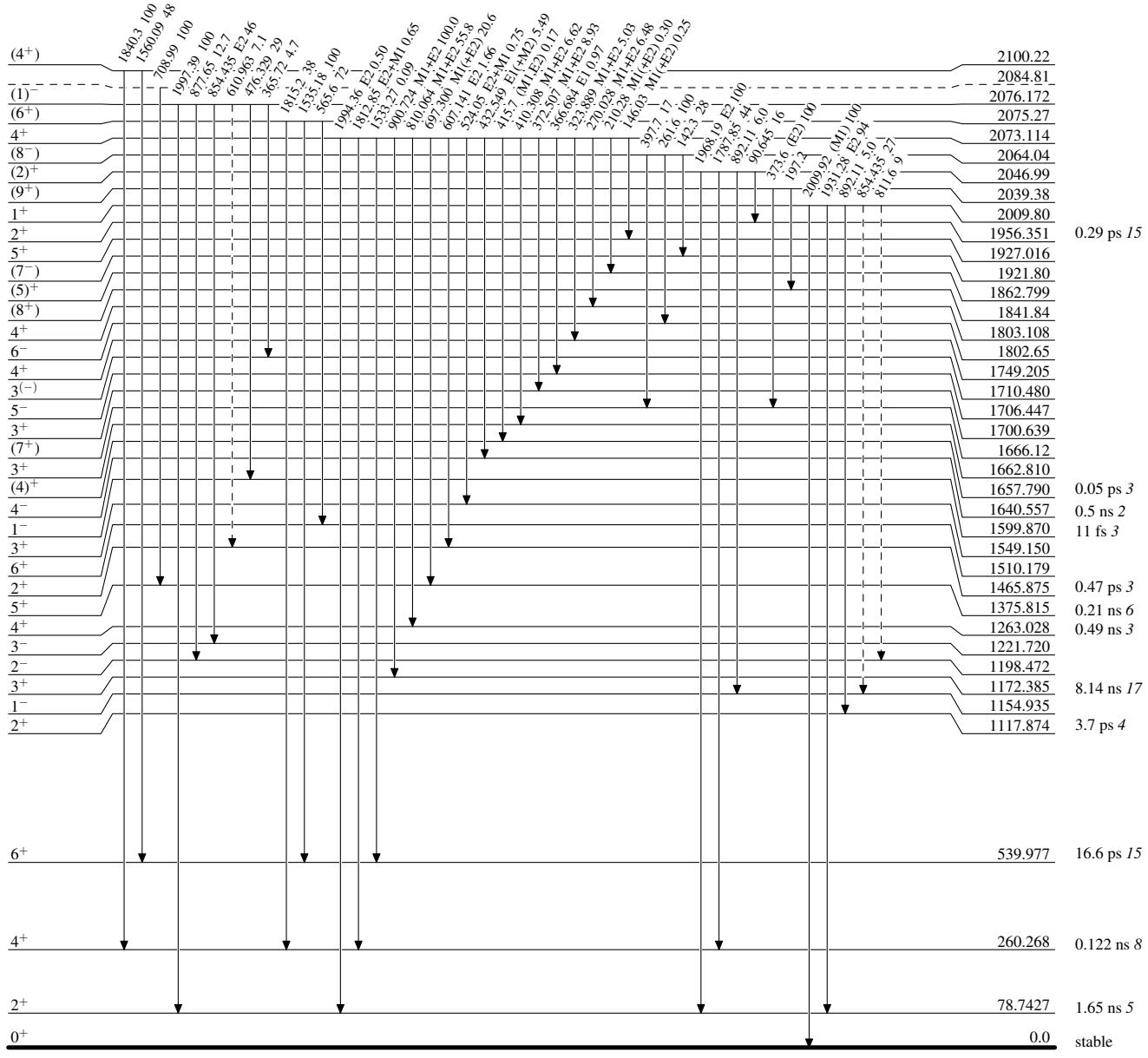
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



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

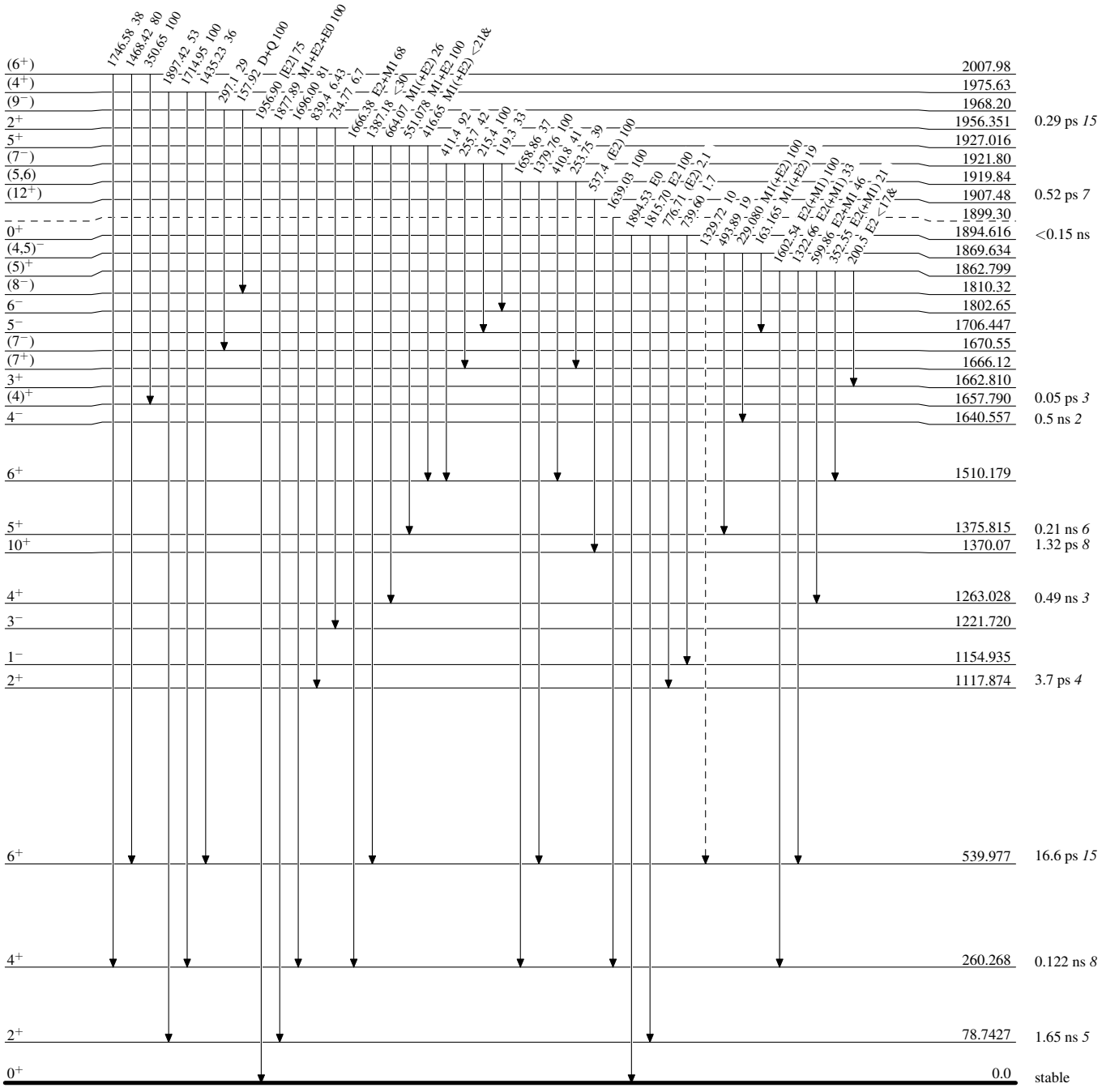
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



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

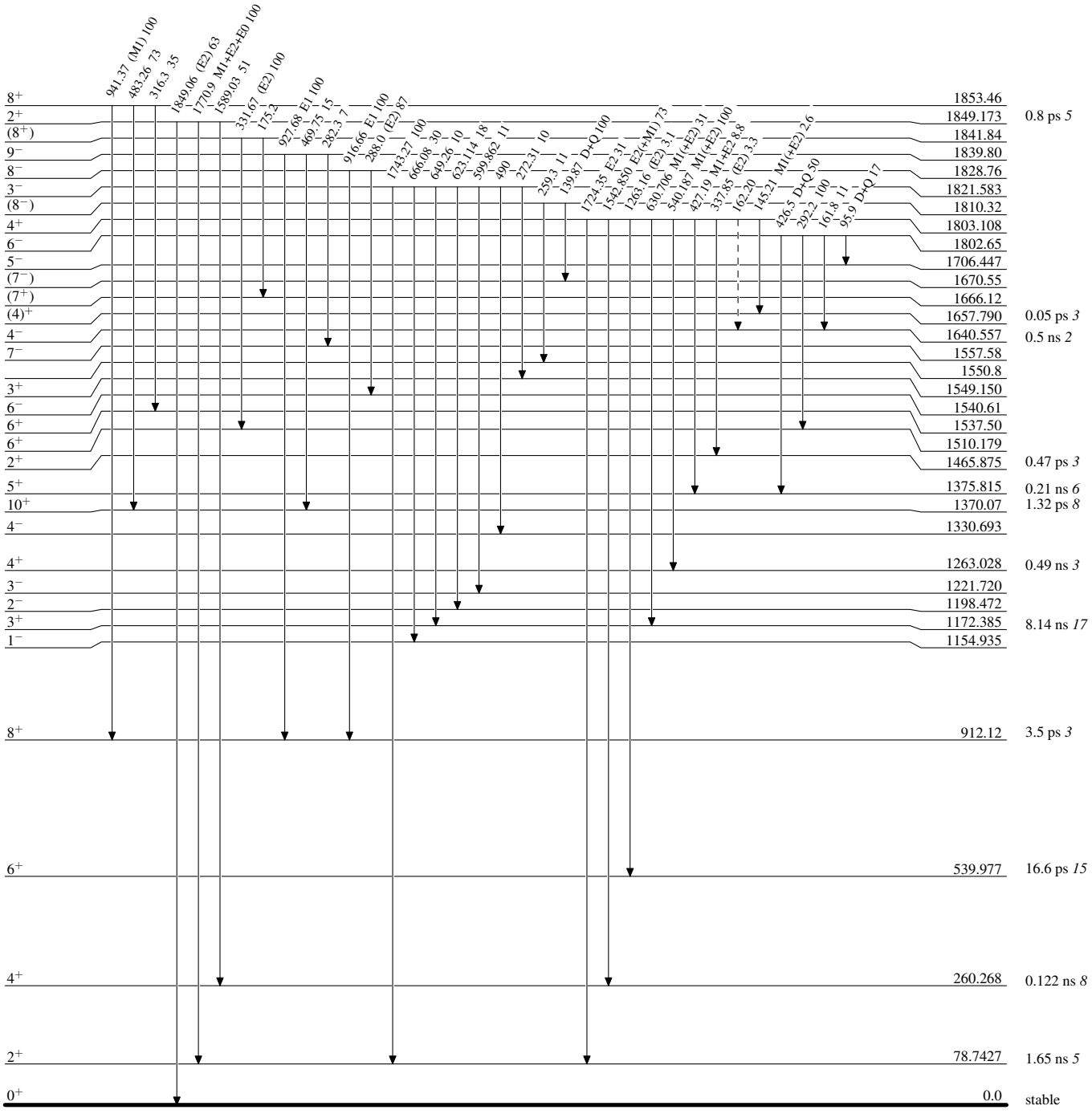
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



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

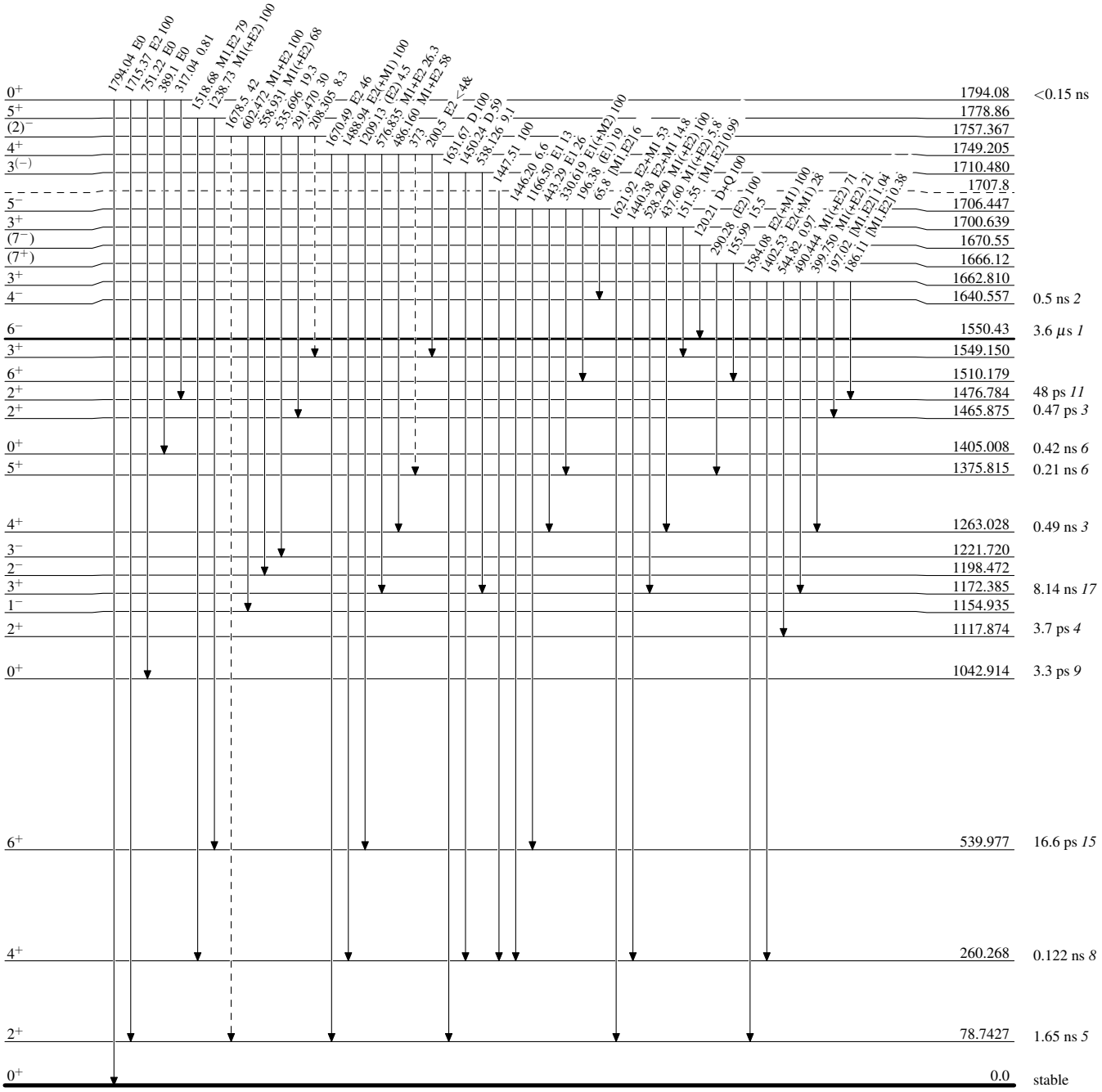
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

γ Decay (Uncertain)



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

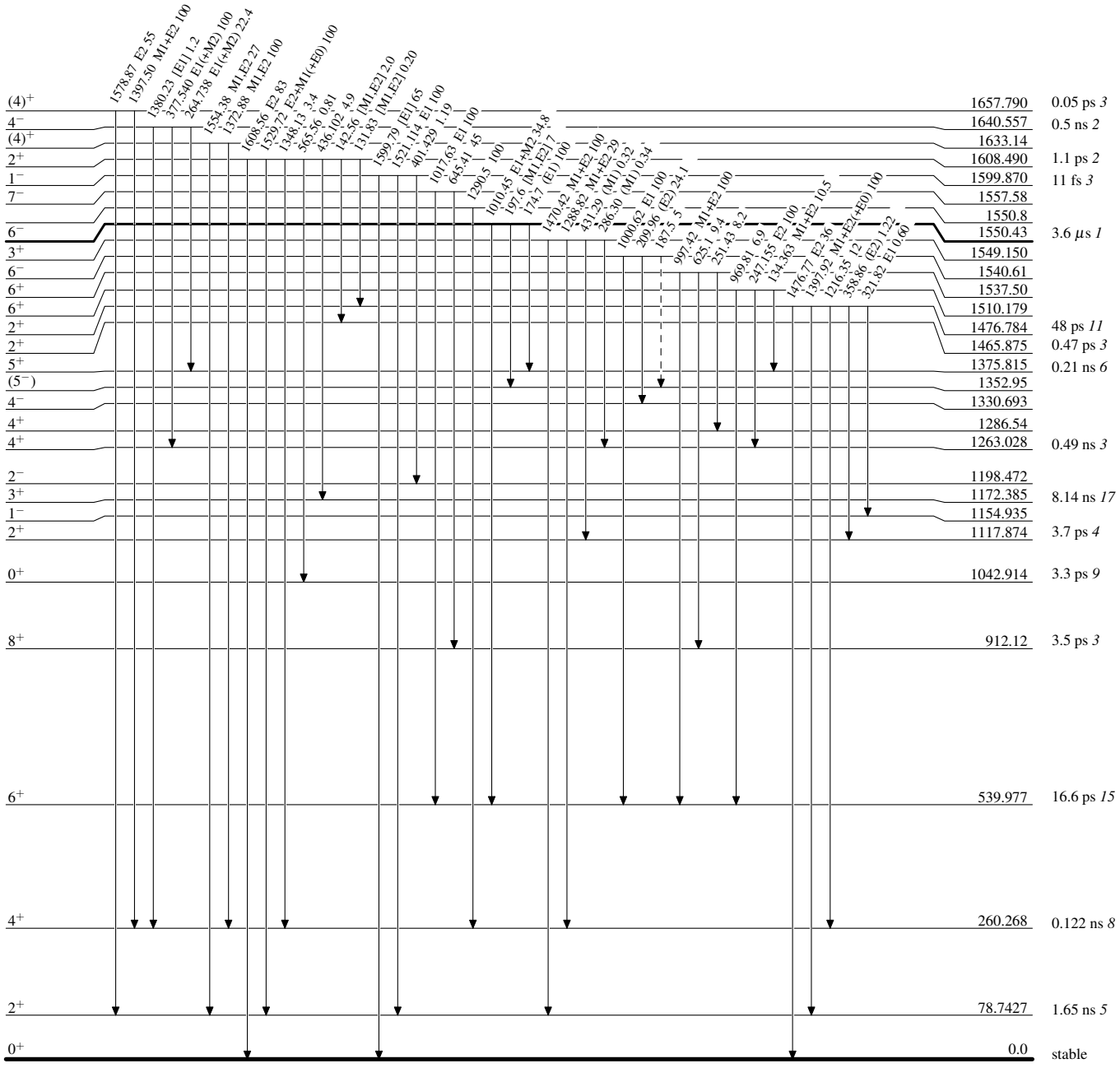
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given

- - - - - - ► γ Decay (Uncertain)

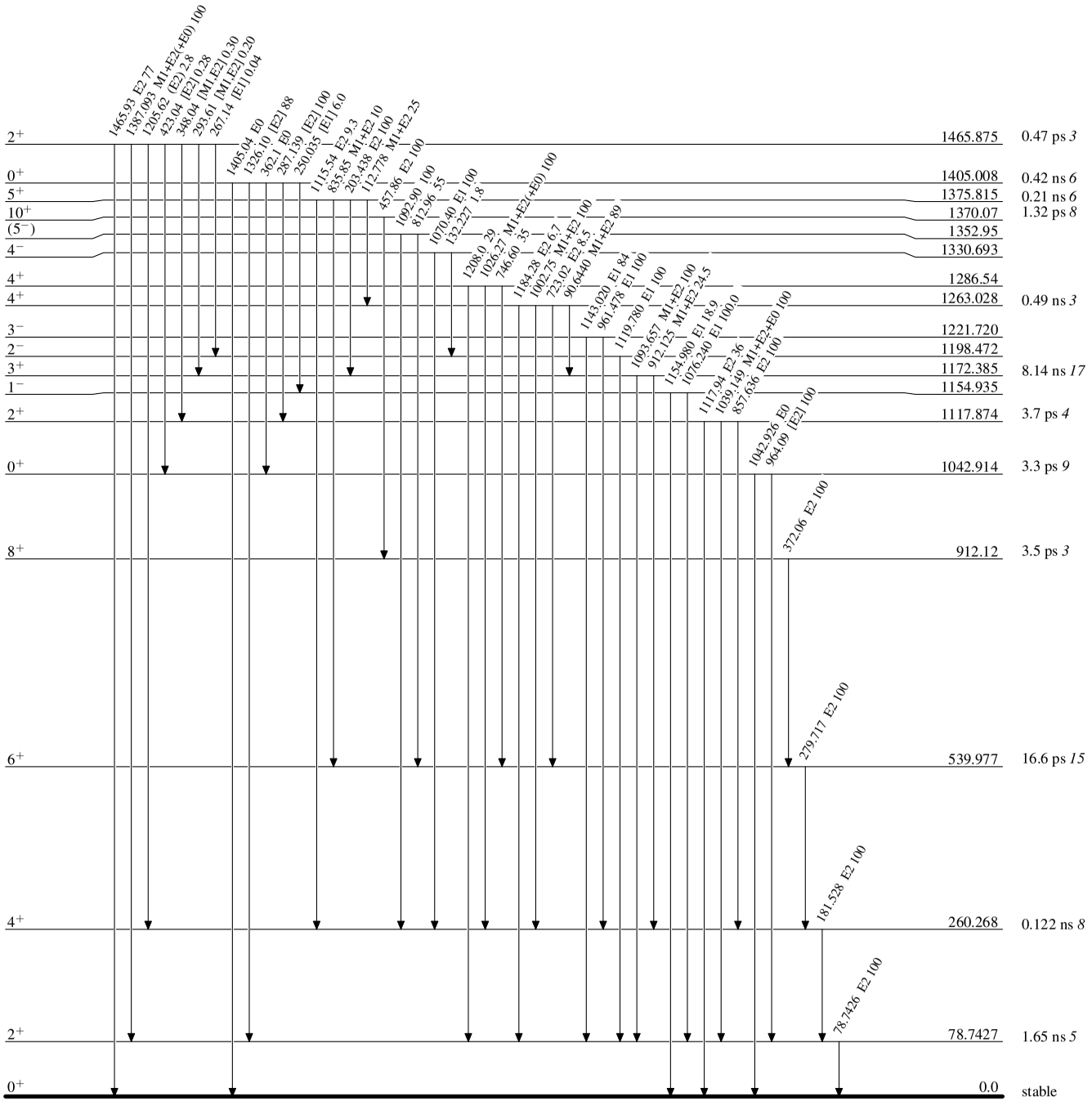


$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas

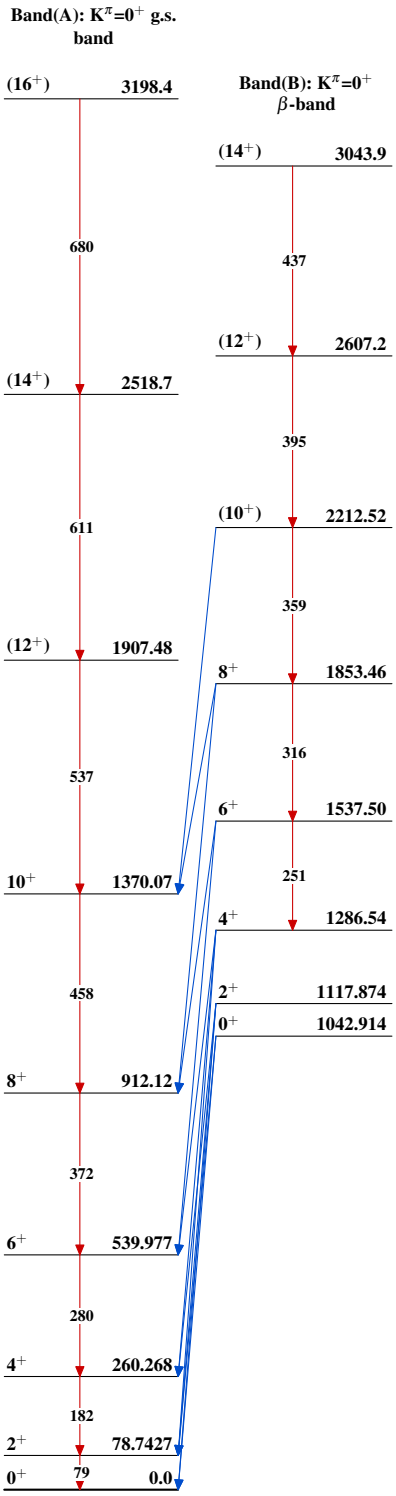
Level Scheme (continued)

Intensities: Relative photon branching from each level
& Multiply placed: undivided intensity given



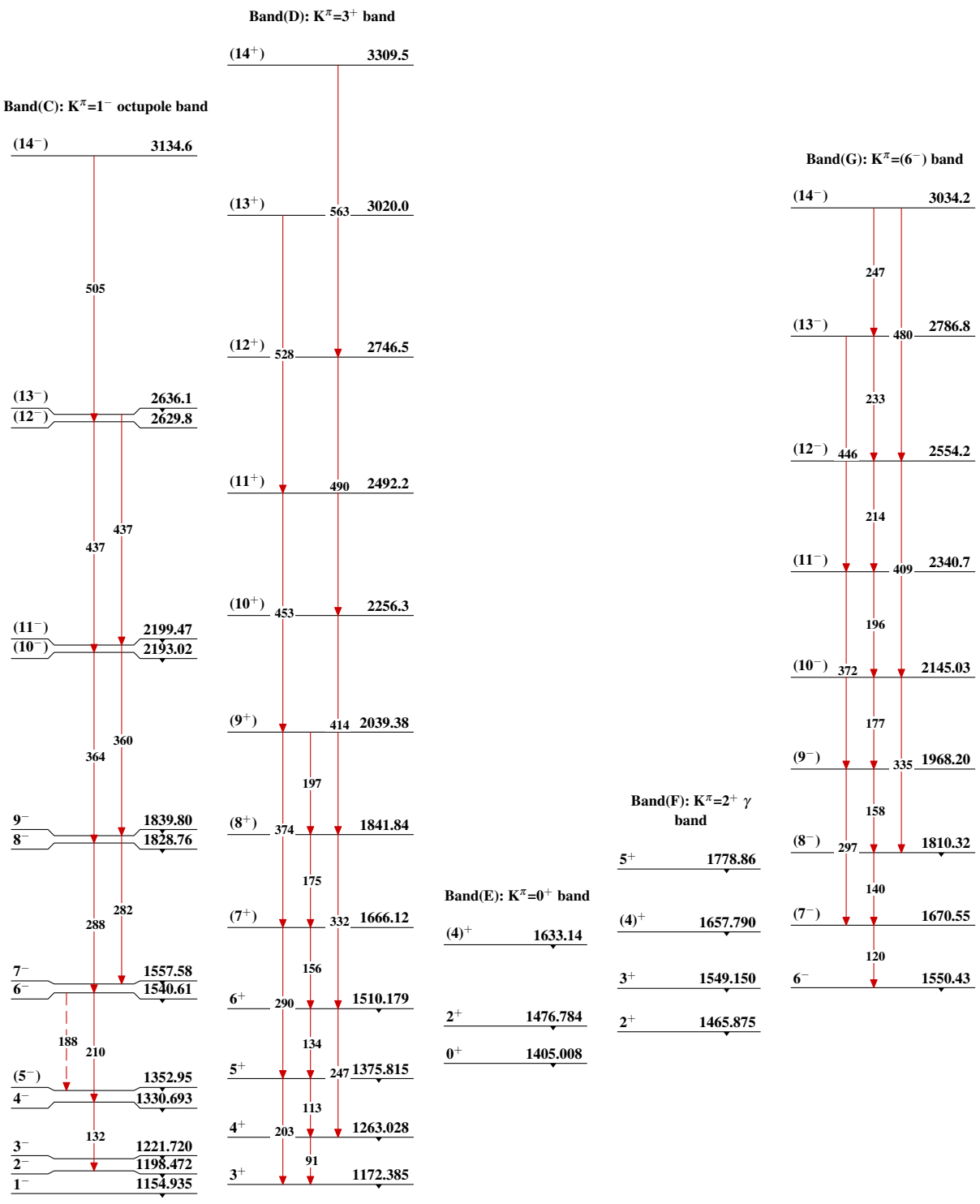
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas



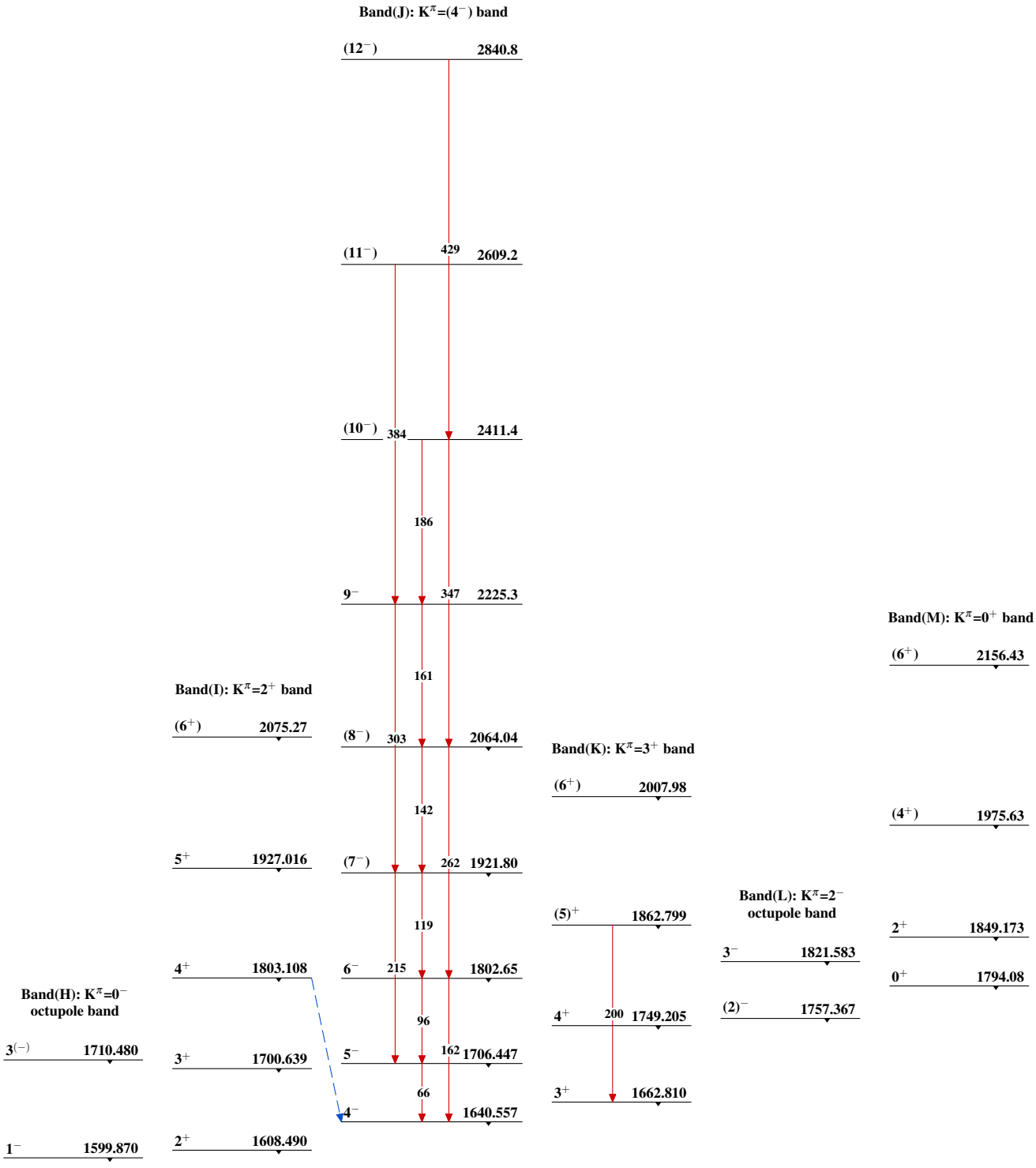
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas (continued)



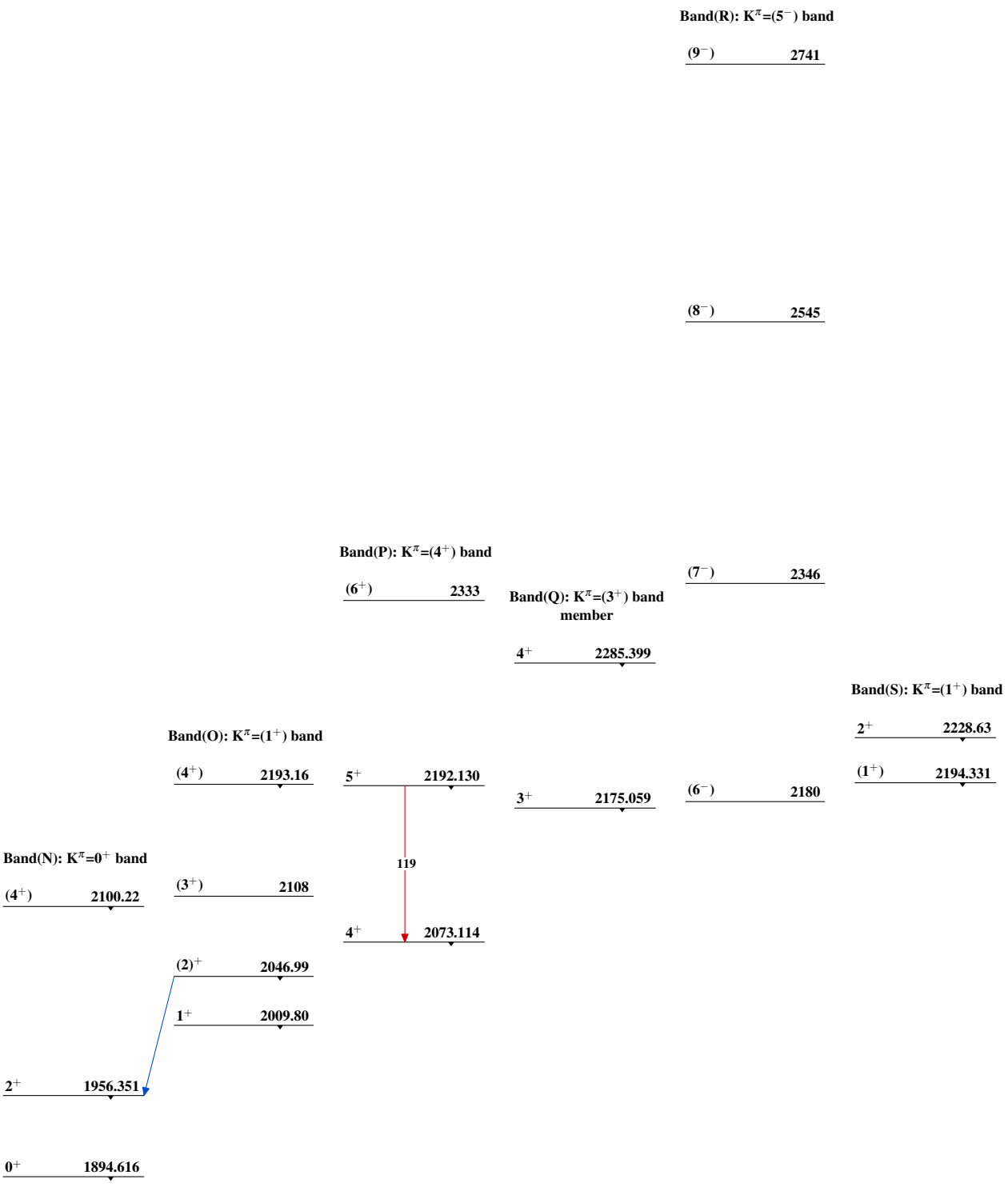
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas (continued)



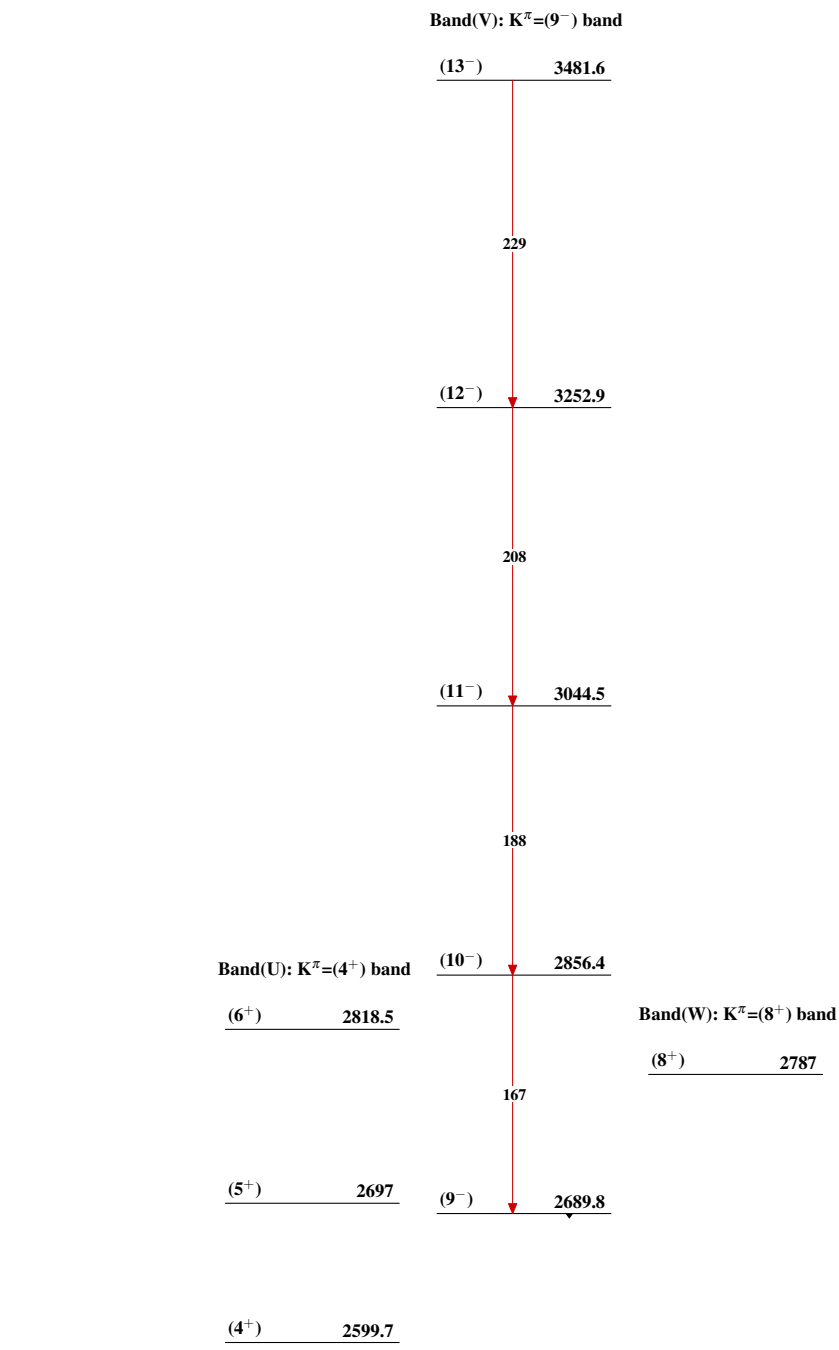
$^{172}_{70}Yb_{102}$

Adopted Levels, Gammas (continued)



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

Adopted Levels, Gammas (continued)



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