Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen, Balraj Singh	NDS 164, 1 (2020)	15-Feb-2020

Q(β^-)=−1684 *3*; S(n)=8642.60 *6*; S(p)=9799 *4*; Q(α)=−3271.57 *24* 2017Wa10
S(2n)=15463.73 *17*, S(2p)=17255.07 *18* (2017Wa10).
Corresponding values in 2021Wa16 are the same, except for slightly higher S(p)=9802 *4*.
Acknowledgement for modifications made May 06, 2021: evaluators are grateful to Professor H.T. Fortune (University of Pennsylvania) for pointing out mistake in B(E2)(W.u.) value of 52.6-keV transition from 787.4, 2^+ to 734.8, 0^+ level; and to Dr. Adam Hayes (NNDC, BNL) for discussion and advice about analysis of Coulomb excitation data in 2002Zi06 article.
No new experimental structure references as of May 5, 2021 for ^{98}Mo since the update in February, 2020.
Mass measurements: 2015Gu09, 2012Ka13, 2008De16.
In ^{97}Mo(n,γ):resonances dataset, a total of 116 resonances are listed with resonance parameters in the energy range E(n)=16 eV to 4 keV, taking most data from 2018MuZY evaluation. 2015Wa18 measured resonance data for 65 neutron resonances from 0.0162 to 1.7 keV. Except for nine resonances in this work, all the others are listed by 2018MuZY.
Other reactions:
^{50}Ti(^{48}Ca,X): 2001Le37, measured Eγ vs. Spin for compound nucleus.
^{94}Zr(^{16}O,^{12}C) E=60 MeV: 1973Ch10.
Neutrino capture by ^{98}Mo: 1995Er08 and 1995Er05 (theory).
^{98}Mo(e,e′): 1975Dr06; E=120, 200, 274 MeV. $\sigma(\theta)$ data, nuclear radii deduced.
^{98}Mo(antiproton,x): 1994Ha51, 1993Wy03, 1986Ka08. 1986Ka08: E=200, 300 MeV/c. X rays reported at energy (relative intensity): 76.0 (100), 102.8 (133), 144 (129), 210 (122) and 324 (15). E2 nuclear resonance effects are observed.
^{98}Mo(γ,xn) GDR: 1974Ca05, 1974Be33. GDR at 15.52 MeV with σ=6.0 MeV. 1974Be33 deduced β_2(787, 2^+)=0.168. Theory: 1977Be11.
^{12}C(^{78}Kr,X),(^{82}Kr,X),(^{86}Kr,X) E=6-13 MeV/nucleon: 1999Ji01: Measured fragment σ, deduced asymmetric fission barrier of ^{98}Mo compound nucleus.
^{100}Mo(^{10}B,^{12}B) E=67 MeV: 1984As02, measured polarization of ^{12}B by $\beta(\theta)$.
^{100}Mo(^{32}S,^{34}S) E=180 MeV: 1995He17, measured $\sigma(\theta)$.
^{101}Ru(n,α) E<2 keV: 1978An01, measured α widths; E=thermal: 2009WaZW, measured Eγ, Iγ, σ for g.s. and 787 level.
Hyperfine measurements for g.s.: 2009Ch09, 1986Ol03, 1985Go10, 1984Br09, 1978Au05, 1972Pe02; deduced Isotope shifts and rms charge radius.
Additional information 1.
Theory references: consult the NSR database (www.nndc.bnl.gov/nsr/) for 114 primary references, 101 dealing with nuclear structure calculations and 13 with decay modes and half-lives.

^{98}Mo Levels

Cross Reference (XREF) Flags

A	^{98}Nb β^- decay (2.86 s)	I	^{97}Mo(n,γ) E=res	Q	^{98}Mo(^{3}He,^{3}He′)
B	^{98}Nb β^- decay (51.1 min)	J	^{97}Mo(n,γ):resonances	R	^{98}Mo(α,α′)
C	Muonic atom	K	^{97}Mo(d,p)	S	Coulomb excitation
D	^{96}Zr(α,2nγ)	L	^{98}Mo(γ,γ′)	T	^{100}Mo(p,t)
E	^{96}Zr(^{16}O,^{14}C)	M	^{98}Mo(n,n′),(n,n)	U	^{100}Ru(^{14}C,^{16}O)
F	^{96}Mo(pol t,p),(t,p)	N	^{98}Mo(n,n′γ)	V	^{102}Ru(d,^{6}Li)
G	^{96}Mo(^{18}O,^{16}O)	O	^{98}Mo(p,p′),(p,p)	W	^{168}Er(^{30}Si,Xγ)
H	^{97}Mo(n,γ) E=th	P	^{98}Mo(d,d′)		

E(level)[†]	J$^\pi$[@]	$T_{1/2}$[&]	XREF	Comments
0.0[a]	0^+	stable	AB DEFGHI KLMNOPQRSTUVW	Evaluated rms charge radius=4.3847 fm *15* (2013An02). Evaluated δ<r^2>(^{92}Mo,^{98}Mo)=+0.834 fm^2 *1* (2013An02). J$^\pi$: no hyperfine structure observed in optical spectroscopy (quoted by

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	J$^{\pi}$[@]	T$_{1/2}$[&]	XREF	Comments
				1969Fu11 as priv comm from Arroe (1951)). T$_{1/2}$: >1.0×10^{14} y (1952Fr23) from neutrino-less $\beta\beta$ decay. Additional information 2. Δ<r^2>(^{98}Mo,^{92}Mo)=+0.811 fm^2 *20* (2009Ch09), laser spectroscopic technique at ISOLDE-CERN facility. Isotope shift(^{98}Mo,^{92}Mo)=−1842 MHz *20* (2009Ch09). Δ<r^2>(^{96}Mo,^{98}Mo)=−0.210 fm^2 *5* (1985Go10); 0.150 fm^2 *12* (1978Au05); Δ<r^2>(^{98}Mo,^{100}Mo)=0.227 fm^2 *19* (1978Au05). Others: 1980Sc01, 1965Ch05 (muonic data); 1975Dr06 ((e,e′) data). Neutron occupancies deduced from neutron-removal reactions ^{98}Mo(d,p),(p,d),(^{3}He,α) (2017Fr08): 0.17 *1* for $\nu 2s_{1/2}$ orbital, 3.34 *17* for ν1d orbital, 1.13 *6* for $\nu 0g_{7/2}$ orbital, and 1.25 *9* for $\nu 0h_{11/2}$ orbital, to add to a total of 5.88 *20*, compared to expected value of 6. Proton vacancies from proton-removal reaction ^{98}Mo(^{3}He,d) (2017Fr08): 0.91 *5* for π1p orbital, 6.78 *34* for $\nu 0g_{9/2}$ orbital, to add to a total of 7.69 *34*, compared to expected value of 8.
734.75 *4*	0$^+$	21.8 ns *9*	AB D F HI KLMNOP STUV	J$^{\pi}$: L(pol t,p)=L(p,t)=0. Also E0 to 0$^+$ seen in (t,p ce). T$_{1/2}$: from ce(t) in (p,p′γ) (1972Bu18). Others: 22 ns *2* (1971AnZV), 1970Co01.
787.384[a] *17*	2$^+$	3.47 ps *7*	AB DEFGHI K MNOPQRST VW	μ=+0.97 *6* (2011Ch23,2014StZZ) Q=−0.26 *9* (1979Pa11,2016St14) J$^{\pi}$: E2 787.4γ to 0$^+$. μ: from Coulomb excitation. Others: +0.97 *7* (2001Ma17), +0.7 *4* (1969He11). Q: from Coul. ex., value applies to constructive interference of the higher excited 2$^+$ states as for other nuclides in this mass region. Q=+0.09 *9* for destructive interference. β_2(p,p′)=0.180 *14* (1992Ke07). Others: 1990Pi14, 1975Bu04, 1972Aw03, 1971Lu07. β_2(d,d′)=0.167 *4* (2001Uk01), 0.153 (1978Wa11), 0.155 (1977Pe18). β_2(α,α′)=0.142 or 0.150 (1990Bu25). Others: 1975Bu04, 1972Ma56. β_2(Coul. ex.)=0.174 *5* (1972Ba90). T$_{1/2}$: from B(E2)(from g.s.)=0.2692 *54*, weighted average of 0.277 *8* (2002Zi06); 0.267 *4* (1979Pa11, 0.266 *5* in 1976Pa13); 0.286 *14* (1972Ba90); 0.275 *15* (1971WaZP); 0.270 *32* (1962Ga13); 0.26 *4* (1962Er05); 0.270 *32* (1958St32); 0.27 *4* (1956Te26); and B(E2)↑=0.260 *10* deduced from T$_{1/2}$=3.60 ps *14* (Doppler broadening,1972SiZP). Final uncertainty was adjusted to 2%. Value of B(E2) is 0.2695 *57* in 2016Pr01 evaluation, without the inclusion of 2002Zi06 value.
1432.210 *19*	2$^+$	1.53 ps *16*	AB DeF HI K MNOP RST V	XREF: T(1435.9)V(1460). J$^{\pi}$: E2 1432.2γ to 0$^+$. T$_{1/2}$: from B(E2) in Coul. ex. β_2=0.052 (1975Bu04,(p,p′)); 0.046 (1977Pe18,(d,d′)); 0.033 (1975Bu04,(α,α′)); 0.037 *2* (1972Ba90,Coul. ex.).
1510.047[a] *21*	4$^+$	2.53 ps *5*	B DeF HI K MNOP RST vW	XREF: K(?)v(1460). E(level): possibly a doublet at 1460 in (d,^{6}Li). J$^{\pi}$: stretched E2 722.6γ to 2$^+$; L(p,p′)=L(d,d′)=4 from 0$^+$. β_4=0.023 (1992Pi08,(p,p′)); 0.021 (1992Pi08,(d,d′)); 0.034 (1975Bu04,(α,α′)).

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[&]	XREF	Comments
1758.49 *3*	2+	1.42 ps *6*	AB D F HI K MNOP ST V	J^{π}: E2 1023.7γ to 0+; L(pol t,p)=L(p,t)=2. β_2=0.03 (1972Aw03,(p,p′)); 0.029 (1977Pe18,(d,d′)); 0.11 *5* (1972Ba90,Coul. ex.).
1871[‡] *2*	2+		OP	J^{π}: L(p,p′)=L(d,d′)=2.
1880.86 *17*	≤4		H	J^{π}: 449.1γ and 1093.2γ to 2+.
1963.05 *8*	0+		D F mN P T	XREF: m(1960)P(1930). J^{π}: L(pol t,p)=L(p,t)=0.
2017.53[b] *3*	3−	65 ps *7*	B D F HI K mNOP RST VW	XREF: m(1960)T(2013.0). J^{π}: L(pol t,p)=L(p,t)=3. β_3(p,p′)=0.210 *16* (1992Ke07). Others: 1990Pi14, 1975Bu04, 1972Aw03, 1971Lu07. β_3(d,d′)=0.191 *4* (2001Uk01), 0.180 (1990Pi14). Others: 1978Wa11, 1977Pe18, 1966Ki04. β_3(α,α′)=0.155 (1975Bu04), 0.160 *12* (1972Ma56). β_3(Coul. ex.)=0.220 *11* (1972Ba90).
2037.52 *7*	0+		A D N T	XREF: T(2034.7). J^{π}: from σ(6°)/σ(15°) in (p,t).
2104.72 *4*	3+		B D HI K MN	XREF: K(2110?)M(2070). J^{π}: spin=3 from γ(θ) in (n,n′γ) and γγ(θ) in (α,2nγ); 672.5γ and 1317.4γ M1+E2 to 2+. log *ft*=9.0 from (5)+ is in conflict with this assignment, but Iβ to this level may be overestimated (see ^{98}Nb β− decay).
2206.61 *6*	2+	<0.257 ps	AB D F H k mN T V	XREF: k(2216)m(2200)T(2199.9)V(2210). J^{π}: L(pol t,p)=L(p,t)=2. $T_{1/2}$: upper limit from effective half-life=0.208 ps *49* from DSAM in (α,2nγ) (2016Th01).
2209[‡] *2*	0+		OP	J^{π}: L(p,p′) or L(d,d′)=0.
2223.862 *22*	4+		B D F HI k mNOP R T	XREF: I(2226)k(2216)m(2200)T(2216.1). J^{π}: L(pol t,p)=L(p,p′)=L(α,α′)=4.
2240 *2*	4+		M O	XREF: M(2250?). J^{π}: L(p,p′)=4.
2333.18 *12*	2+	<0.47 ps	D f H k mNOP T	XREF: f(2336)k(2340)m(2380)T(2328.2). E(level): This level is defined separately from the 2333.4 level based on γγ-coin evidence in (α,2nγ) for the 900.85-keV transition, and Doppler shift shown by this γ ray, and not by the other γ rays from 2333.4,4+ level. Another evidence is provided by β− (51.1 min), where 900.97γ in 1984Me04 is very weak as compared to the 1546γ, and there it is placed from a 3737 level. A 900.9γ in (n,γ) E=th and a 900.96γ in (n,n′γ), where this γ is placed from the 2333.4, 4+ level, is now placed here from the 2333.2, 2+ level by evaluators. J^{π}: L(pol t,p)=L(p,t)=L(p,p′)=2. $T_{1/2}$: upper limit from effective half-life=0.35 ps *12* from DSAM in (α,2nγ) (2016Th01).
2333.46 *3*	4+		B D HI k mNOP R	XREF: k(2340)m(2380)R(2360). E(level): see comment for 2333.1 level. J^{π}: L(p,p′)=L(α,α′)=4; spin=4 is also from γ(θ) in (n,n′γ).
2343.62[a] *3*	6+	5.2 ps *2*	B D f H k mN S VW	XREF: f(2336)k(2340)m(2380)V(2330). J^{π}: γ(θ) in (α,2nγ) suggested stretched Q (E2) to 4+, also L(d,^{6}Li)=6; L(pol t,p)=2(+6). $T_{1/2}$: from B(E2) in Coul. ex.
2350[‡] *2*	(2+)		k m OP	XREF: k(2340)m(2380). J^{π}: L(p,p′) or L(d,d′)=2 but L(p,p′)=6 is also given by 1971Lu07 for a 2343 group.
2369[‡] *2*	2+		m OP	XREF: m(2380).

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[&]	XREF	Comments
				J^{π}: L(p,p′) or L(d,d′)=2.
2418.46[‡] *11*	2^+		D F H k mNOP	XREF: H(?)k(2430)m(2380). J^{π}: L(p,p′) or L(d,d′)=2.
2419.63 *4*	4^+		B D H k mN T	XREF: k(2430)m(2380)T(2417). J^{π}: L(α,α′)=4; spin=4 from γγ(θ) in (α,2nγ). $J^{\pi}=3^-$ from L(p,t) are in disagreement.
2485.15[‡] *7*	3^+		B D H K mNOP T	XREF: K(2500)m(2500)T(2489). J^{π}: 1697.6γ M1+E2 to 2^+ and 975.0γ M1+E2 to 2^+; but L(p,p′) or L(d,d′)=3 suggest 3^-.
2506.38 *4*	5^+		B D H k mN T	XREF: k(2530)m(2500)T(2502.1). J^{π}: spin=5 from γγ(θ) in (α,2nγ), 996.3γ M1+E2 to 4^+. L(p,t)=(3) is in disagreement.
2509 *2*	1^-		k m OP	XREF: k(2530)m(2500). J^{π}: L(p,p′)=1.
2525.8[#] *3*	2^+	<0.367 ps	D F k mNOP T	XREF: F(2530)k(2530)m(2500)N(?)T(2520.4). J^{π}: L(pol t,p)=2. L(p,p′)=(1) is in disagreement. $T_{1/2}$: upper limit from effective half-life=0.326 ps *41* from DSAM in (α,2nγ) (2016Th01).
2537[‡] *5*	(1^-)		OP	J^{π}: L(p,p′) or L(d,d′)=(1).
2562.23[#] *16*	(2^-)		D H NOP	J^{π}: 2^- suggested from cross section data in (p,p′), described as a 2-step process. In (n,γ) E=thermal, J=1 is suggested from γγ(θ) data.
2570.9? *5*	(6,7,8)		D	J^{π}: 227.3γ to (6^+).
2572.84 *10*	3		B D H k N	XREF: k(2585). J^{π}: from γγ(θ) in (α,2nγ).
2574.86 *7*	4^+		B D F k OP R T	XREF: k(2585)T(2568.7). J^{π}: L(pol t,p)=L(p,t)=L(p,p′)=L(d,d′)=4 for a 2574 group; γγ(θ) in (α,2nγ).
2612.4 *5*	0^+		A D F T V	XREF: F(2617)T(2611.3)V(2620). J^{π}: L(pol t,p)=L(p,t)=0.
2620.01 *17*	3^+		B D HI k N	XREF: I(2627)k(2630). J^{π}: spin=3 from γγ(θ) in (α,2nγ); 1187.5γ and 1832.7γ M1+E2 to 2^+.
2620.78[b] *5*	5^-		B D H k NOP W	XREF: k(2630). J^{π}: L(p,p′)=L(d,d′)=5; γγ(θ) in (α,2nγ).
2644.7? *4*	$(1,2^+)$		N T	XREF: T(2646). J^{π}: possible 1909.6γ to 0^+.
2678.88[#] *3*	6^+		B D mNOP R T W	XREF: m(2700)N(?)R(2690)T(2678). J^{π}: L(α,α′)=6 for 2690; γγ(θ) in (α,2nγ). L(p,p′)=(4,5) disagrees.
2700.68[‡] *16*	2^+	<0.208 ps	B D F H mNOP T	XREF: F(2695)m(2700)T(2699.6). J^{π}: L(t,p)=L(p,t)=2; γγ(θ) in (α,2nγ). L(p,p′)=(4) is in disagreement. $T_{1/2}$: upper limit from effective half-life=0.173 ps *35* from DSAM in (α,2nγ) (2016Th01).
2733.4[‡] *3*	2^+		D F m OP T V	XREF: m(2700)T(2731.6)V(2740). J^{π}: L(p,p′) or L(d,d′)=L(t,p)=L(p,t)=2. L(d,^{6}Li)=(2+0) indicates a doublet. γγ(θ) in (α,2nγ) gives J=2,3.
2738.2[d] *5*	(6,7)		D W	J^{π}: 394.3γ to (6^+).
2767.68 *4*	4^+		B D F H N	XREF: F(2791)N(?). J^{π}: spin=4 from γγ(θ) in (α,2nγ); 1980.4γ (E2) to 2^+ (M2 is unlikely).
2795.61 *11*	4^-		D H NO	J^{π}: spin=4 from γγ(θ) in (α,2nγ); 778.0γ M1+E2 to 3^-. L(p,p′)=5 suggests 5^-.

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	J^π[@]	$T_{1/2}$[&]	XREF	Comments
2799.6 *5*	0^+		T	J^π: L(p,t)=0.
2813.3[‡] *3*	2^+		B D OP T	XREF: T(2811.1). J^π: L(p,p) or L(d,d′)=2; $\gamma\gamma(\theta)$ in (α,2nγ).
2836.83[‡] *6*	6^+		B D F K NOP T	XREF: F(2826)K(2829)N(?)T(2835.3). J^π: $\gamma\gamma(\theta)$ in (α,2nγ); L(t,p)=6 for a 2826 *10* group and L(p,p′) or L(d,d′)=6. L(p,t)=L(α,α')=4 is in disagreement.
2851 *10*	0^+		F	J^π: L(t,p)=0.
2854.15 *15*	(8^+)		D W	J^π: proposed in (^{30}Si,xγ) based on 510.5γ to 6^+.
2856.2 *2*	4^+		B m OP R	XREF: B(?)m(2900)R(2870). J^π: L(p,p′)=L(d,d′)=L(α,α')=4.
2871.1 *4*	2,3	<0.35 ps	D K m T	XREF: K(2880)m(2900)T(2868). J^π: from $\gamma\gamma(\theta)$ in (α,2nγ). $T_{1/2}$: from DSAM in (α,2nγ) (2016Th01).
2896.79 *17*	5^+		D	J^π: spin=5 from $\gamma\gamma(\theta)$ in (α,2nγ); 1386.8γ M1+E2 to 4^+.
2905.2 *7*	4^+	<0.166 ps	D m OP T	XREF: m(2900)T(2902.2). J^π: L(p,p′)=L(d,d′)=4. $T_{1/2}$: upper limit from effective half-life=0.152 ps *14* from DSAM in (α,2nγ) (2016Th01).
2915.8[‡] *4*	2^+	<0.138 ps	D F K mNOP T	XREF: F(2898)m(2900)T(2914.4). J^π: L(t,p)=2, L(p,p′) or L(d,d′)=2. $T_{1/2}$: upper limit from effective half-life=0.076 ps *+62−42* from DSAM in (α,2nγ) (2016Th01). E(level): doublet in (t,p).
2962.45 *16*	3^-		D HI k OP T	XREF: k(2980)T(2963). J^π: L(p,p′)=L(d,d′)=3.
2976.89 *10*	4^+	<0.67 ps	B D F H k OP T	XREF: F(2969)k(2980)T(2977.4). J^π: L(t,p)=L(p,t)=4; $\gamma\gamma(\theta)$ in (α,2nγ). $T_{1/2}$: upper limit from effective half-life=0.44 ps *23* from DSAM in (α,2nγ) (2016Th01).
3010.91? *20*			B	XREF: B(?).
3020.42 *8*	5^-		B D OP	J^π: L(p,p′)=L(d,d′)=5.
3021.75 *3*	4^+		B D F H R T	XREF: F(3013)H(?)R(3020)T(3021). J^π: L(t,p)=L(p,t)=4.
3026.2 *3*	5^+		D	J^π: spin=5 from $\gamma\gamma(\theta)$ in (α,2nγ); 1516.2γ M1+E2 to 4^+.
3045.89 *23*	4^+		f H op	XREF: f(3044)o(3049)p(3049). J^π: L(t,p)=4 for 3044 group; L(p,p′)=L(d,d′)=4 for 3049 group.
3050.92 *6*	4^+	<0.146 ps	B D f H k op T	XREF: f(3044)H(?)k(3066)o(3049)p(3049)T(3050). J^π: L(t,p)=4 for 3044 group ; 1618.8γ to 2^+ and 544.5γ to 5^+. $T_{1/2}$: upper limit from effective half-life=0.125 ps *21* from DSAM in (α,2nγ) (2016Th01).
3067.70 *8*	(3^-)		B D H k NOP T	XREF: H(?)k(3066)T(3067.8). J^π: L(p,t)=3; log *ft*=8.8 from $(5)^+$. L(p,p′)=5 for a 3060 level (1972Aw03) and J=2 for a 3067 level (1990Pi14) are in conflict.
3095.80 *17*	2^+		B F	XREF: B(?)F(3093). J^π: L(t,p)=2.
3096.26[‡b] *16*	(7^-)		B D OP W	J^π: from $\gamma(\theta)$ in (α,2nγ), γ to (5^-) consistent with stretched E2, but L(p,p′) or L(d,d′)=(6) suggests 6^+.
3103.13[‡] *20*	$(2^+,3,4)$		H k op t	XREF: k(3124). J^π: primary γ from $(2^+,3^+)$ and γ to (4^+). L(p,p′) or L(d,d′)=2 for a 3106 group suggests 2^+ for 3103 and/or 3109. L(p,t)=2 for 3105.3.
3108.80[‡] *17*	$(2^+,3,4)$		D H k op t	XREF: k(3124).

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	J^π[@]	$T_{1/2}$[&]	XREF	Comments
				J^π: primary γ from (2^+,3^+) and γ to 4^+; L(p,t)=2 for 3105.3. See also comment for 3103 level.
3125[‡] *5*	(3^-)		OP	J^π: L(p,p′) or L(d,d′)=(3).
3152[‡] *5*	2^+		OP T	XREF: T(3150). J^π: L(p,p′) or L(d,d′)=2.
3155.56 *22*	(4^+)		H k	XREF: k(3168). J^π: 811.5γ to 6^+, 455.1γ to 2^+.
3165.89 *5*	4^+		B k OP T	XREF: k(3168)T(3167). J^π: L(p,p′)=L(d,d′)=4; log *ft*=7.7 from $(5)^+$.
3195.56 *17*	(2^-,3,4)		H T	XREF: T(3197). J^π: 1193.1γ to 3^- and 399.88γ to 4^-; primary γ from 2^+,3^+.
3208.99 *12*	(4^+,5^-)		B	J^π: 530.4γ to 6^+, 1190.8γ to 3^-.
3210.80 *25*	(4^+)		D H N t	XREF: t(3211.6). J^π: 1193.2γ to 3^- and possible 866.6γ to 6^+. Primary γ from 2^+,3^+. L(p,t)=4 for 3211.6 group.
3211.57 *3*	(4^+)		B H N t	XREF: t(3211.6). J^π: 590.9γ to 5^-, 705.5γ to 5^+, possible 2424.1γ to 2^+; log *ft*=6.4 from $(5)^+$; L(p,t)=4 for 3211.6 group.
3214 *5*	3^-		F OP R	XREF: F(3200)R(3220). J^π: L(t,p)=L(p,p′)=L(d,d′)=L(α,α′)=3.
3229.17 *10*	(4^+)	<0.173 ps	B D	J^π: 415.5γ to 2^+, 885.6γ to 6^+, 1718.8γ to 4^+. $T_{1/2}$: upper limit from effective half-life=0.152 ps *21* from DSAM in (α,2nγ) (2016Th01).
3241.2 *10*	(4^+ to 7)		B k T	XREF: k(3270)T(3239.1). J^π: 562.3γ to 6^+; log *ft*=8.4 from $(5)^+$.
3257.86 *10*	1	0.0041 eV *3*	L	B(E1)(↑)=0.34×10^{-5} *3*, B(M1)(↑)=0.031 *3* (2006Ru06).
3263 *5*	1^-		k OP	XREF: k(3270). J^π: L(p,p′)=L(d,d′)=1.
3264.9 *5*	0^+		F k T	XREF: F(3259)k(3270). E(level): from (p,t). J^π: L(t,p)=L(p,t)=0.
3271.49[a] *16*	(8^+)		D W	J^π: $\gamma(\theta)$ from (α,2nγ) consistent with stretched E2 to (6^+).
3276 *5*	(3^-,4^+)		O	J^π: L(p,p′)=(3,4).
3302.9 *6*	2^+		F k T	XREF: F(3294)k(3270). E(level): from (p,t). J^π: L(t,p)=2.
3305 *5*	5^-		OP	J^π: L(p,p′)=L(d,d′)=5.
3323.58 *18*	(7^-)		D	J^π: $\gamma\gamma(\theta)$ in (α,2nγ); (M1(+E2)) 227.4γ to (7^-).
3326.41 *4*	4^+		B k NOP T	XREF: k(3340)N(?)T(3326). J^π: L(p,p′)=L(d,d′)=4; log *ft*=6.8 from $(5)^+$.
3343[‡] *2*	2^+		k OP T	XREF: k(3340). E(level): from (p,t). Other: 3344 *5* from (p,p′) and (d,d′). J^π: L(p,p′) or L(d,d′)=2.
3366.1? *3*			B	
3386.2[‡] *10*	2^+		OP T	E(level): from (p,t). Other: 3389 *5* from (p,p′) and (d,d′). J^π: L(p,p′) or L(d,d′)=2.
3394.50 *5*	(4^+)		B N	XREF: N(?). J^π: γ to 2^+; log *ft*=6.6 from $(5)^+$.
3400.92 *14*	4^+		B O	J^π: L(p,p′)=4.
3403.95 *14*	(5^-,6^+)		B	J^π: 192.4γ to (4^+), possible 306.9γ to (7^-);

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[&]	XREF	Comments
				log *ft*=7.7 from $(5)^+$.
3405.06 *10*	1	0.044 eV *3*	L	B(E1)(↑)=3.2×10^{-5} *2*, B(M1)(↑)=0.289 *19* (2006Ru06).
3418.74 *22*	4^+		B k NOP T	XREF: k(3430)N(?)T(3421). J^{π}: L(p,p′)=L(d,d′)=4; log *ft*=8.3 from $(5)^+$.
3455.17 *6*	(4^+)		B H k N T	XREF: H(?)k(3430)N(?)T(3457). J^{π}: γ to 2^+; log *ft*=6.9 from $(5)^+$.
3457.07 *10*	1	0.035 eV *2*	L	B(E1)(↑)=2.45×10^{-5} *16*, B(M1)(↑)=0.222 *15* (2006Ru06).
3465.95 *11*	(4^+)		B O	J^{π}: L(p,p′)=(4).
3474 *2*			T	
3489[‡] *1*	2^+		OP T	E(level): from (p,t). Other: 3485 *5* from (p,p′) and (d,d′). J^{π}: L(p,p′) or L(d,d′)=2.
3501.7 *3*	(4^+)		B k O	XREF: k(3512). J^{π}: L(p,p′)=(4); 2714.3γ to 2^+; log *ft*=8.9 from $(5)^+$;
3516.75 *7*	(4^+)		B k T	XREF: k(3512)T(3515.7). J^{π}: 1758.7γ to 2^+, 679.7γ to 6^+.
3524[‡] *5*	(6^+)		OP	J^{π}: L(p,p′)=L(d,d′)=(6).
3527.4[d] *5*	$(8,9^-)$		W	J^{π}: proposed in (^{30}Si,Xγ); 431.5γ to (7^-).
3541.28? *15*			B	
3547.51 *6*	(4^+)		B H	XREF: H(?). J^{π}: 2760.0γ to 2^+, 1204.2γ to 6^+; log *ft*=7.2 from $(5)^+$.
3551.35 *9*	1	0.035 eV *3*	L	E(level): this state decays to g.s. and the first excited 0^+ state, indicative of two coexisting configurations are mixed in the 0^+ states (2006Ru06). B(M1)(2817γ, to excited 0^+)/B(M1)(3551γ, to g.s.)=0.28 *5* (2006Ru06), if $J^{\pi}=1^+$.
3554.87? *11*			B k	XREF: k(3570).
3557.0 *4*	(4^+)	<0.215 ps	D k op	XREF: k(3570). J^{π}: L(p,p′)=L(d,d′)=4 for a 3560 *5* group. $T_{1/2}$: effective half-life=0.166 ps *49* from DSAM in (α,2nγ) (2016Th01).
3565.65 *8*	(4^+)		B k op	XREF: k(3570). J^{π}: L(p,p′)=L(d,d′)=4 for a 3560 *5* group.
3598.29 *16*	(4^+)		B H O	XREF: H(?). J^{π}: L(p,p′)=4 for a 3598 *5* group.
3601.1 *4*	$(4^+,5,6)$		B	J^{π}: 922.3γ and 1257.2γ to 6^+; log *ft*=7.8 from $(5)^+$.
3617.12? *21*			B k	XREF: k(3636).
3620.10 *19*	$(3^-,4)$		B k	XREF: k(3636). J^{π}: 1515.5γ to 3^+ and 1602.0γ to 3^-; log *ft*=7.9 from $(5)^+$.
3623.57 *6*	4^+		B k OP	XREF: k(3636). J^{π}: L(p,p′)=L(d,d′)=4 from 0^+.
3639 *5*	4^+		k O T	XREF: k(3636)T(3634). J^{π}: L(p,p′)=4.
3656.7[c] *3*	(9^-)		D W	J^{π}: proposed in (^{30}Si,Xγ); 560.5γ to (7^-), 385.1γ to (8^+).
3664 *5*	4^+		OP	J^{π}: L(p,p′)=L(d,d′)=4.
3682 *5*	4^+		k O T	XREF: k(3695)T(3685). J^{π}: L(p,p′)=4.
3703.98 *20*	1	0.0042 eV *6*	L	B(E1)(↑)=0.23×10^{-3} *16*, B(M1)(↑)=0.021 *3* in (γ,γ′) (2006Ru06).
3711.9 *7*	5^-		B k OP	XREF: k(3695). J^{π}: L(p,p′)=L(d,d′)=5.
3723.7 *3*	4^+		B k O	XREF: k(3740). J^{π}: L(p,p′)=4 from 0^+.

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	Jπ[@]	XREF	Comments
3737.79 *9*	4+	B H k NOP	XREF: H(?)k(3740)N(?). Jπ: L(p,p′)=L(d,d′)=4.
3757 *5*	5−	O	Jπ: L(p,p′)=5.
3768.7[b] *6*	(9−)	D W	Jπ: proposed in (^{30}Si,Xγ); 672.4γ to (7−).
3777.88 *11*	4+	B k OP	XREF: k(3790). Jπ: L(p,p′)=L(d,d′)=4.
3793 *5*	5−	k O T	XREF: k(3790)T(3796). Jπ: L(p,p′)=5.
3806.08 *20*	1	L	
3809.20 *10*	(4,5,6+)	B k	XREF: k(3790). Jπ: log *ft*=7.5 from (5)+; 2299.1γ to 4+.
3809.59 *10*	(4,5−)	B k	XREF: k(3790). Jπ: 1792.1γ to 3−; log *ft*=7.0 from (5)+.
3824[‡] *5*		OP	
3836.98 *10*	1	L	
3842.77[‡] *20*	(4,5,6+)	B OP T	XREF: B(?)T(3851). Jπ: log *ft*=7.8 from (5)+; possible 2332.7γ to 4+.
3857.68 *10*	1	L	
3898 *5*	(4+)	P	Jπ: L(d,d′)=(4).
3937.08 *10*	1	L	
3944.09 *10*	(1)	L	
3947.5 *3*	(4+)	B P T	XREF: P(3939)T(3951). Jπ: L(d,d′)=(4); log *ft*=7.4 from (5)+.
3964.33 *11*	(4+,5,6)	B	Jπ: log *ft*=6.9 from (5)+; 1285.4γ and 1620.7γ to 6+.
3981.81 *10*	3−	B P	Jπ: L(d,d′)=3.
3998.62[‡] *10*	5−	B OP	XREF: O(3993)P(3993). Jπ: L(p,p′) or L(d,d′)=5.
4020.6 *5*	(2)	L	
4041.6 *9*	(1)	L	
4044 *5*	4+	P	Jπ: L(d,d′)=4.
4060.62? *13*	(4,5,6+)	B	Jπ: log *ft*=7.5 from (5)+; possible 2550.5γ to 4+.
4076.43 *11*	(4,5,6+)	B	Jπ: log *ft*=7.3 from (5)+; 2566.4γ to 4+.
4079.8 *4*	1	L	
4102.3 *5*	(2)	L	
4103.35? *20*	(4+)	B	Jπ: possible 2671.1γ to 2+; log *ft*=7.4 from (5)+.
4117[‡] *5*	(4+,5−)	OP	Jπ: L(p,p′) or L(d,d′)=(4,5).
4143 *5*	4+	P	Jπ: L(d,d′)=4.
4149.2[a] *4*	(10+)	D W	Jπ: proposed in (^{30}Si,Xγ); 877.9γ and 1294.9γ to (8+).
4170.8 *8*	1	L	
4177 *5*	3−	P T	XREF: T(4169). Jπ: L(d,d′)=3.
4179.90 *20*	(1)	L	
4190.2[d] *7*	(10,11)	W	Jπ: proposed in (^{30}Si,Xγ); 662.7γ to (8,9).
4231.1 *4*	1	L	
4247 *5*	4+	P T	XREF: T(4253). Jπ: L(d,d′)=4.
4252.6 *12*	(1)	L	
4258.8 *5*	1	L	
4267.90 *20*	1	L	
4295.40 *10*	(1)	L	
4356 *10*		T	
4361.80 *10*	(1)	L	
4391.21 *10*	(1)	L	
4410.21 *10*	1	L	

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	J$^{\pi}$[@]	XREF	Comments
4423.9[c] *6*	(11$^-$)	D W	J$^{\pi}$: proposed in (^{30}Si,Xγ); member of negative-parity sequence; 767.2γ to (9$^-$).
4440.1? *7*		D	
4537.7[b] *8*	(11$^-$)	D W	J$^{\pi}$: proposed in (^{30}Si,Xγ); 769.0γ to (9$^-$).
4543.31 *20*	1	L	
4581.6 *7*	(1)	L	
4590.62 *10*	1	L	
4599.3 *5*	1	L	
4609.5? *8*		D	
4616.2 *5*	1	L	
4654.3 *4*	(1)	L	
4812.73 *20*	1	L	
4837.53 *10*	1	L	
4902.83 *10*	1	L	
4993.6[d] *9*	(12,13)	W	J$^{\pi}$: proposed in (^{30}Si,Xγ); 803.4γ to (10,11); member of a sequence.
5008.6 *3*	1	L	
5028.64 *20*	1	L	
5047.0[a] *7*	(12$^+$)	W	J$^{\pi}$: proposed in (^{30}Si,Xγ); 897.8γ to (10$^+$); member of a sequence.
5050.34 *10*	1	L	
5081.74 *20*	1	L	
5121.4 *3*	1	L	
5134.1 *11*	(1)	L	
5147.6 *3*	1	L	
5165.15 *20*	1	L	
5174.6 *12*	(2)	L	
5195.5 *4*	1	L	
5215.0 *5*	(2)	L	
5225.5 *7*	(1)	L	
5236.1 *9*	1	L	
5244.55 *20*	(1)	L	
5267.7 *6*	(2)	L	
5312.6 *3*	1	L	
5314.4[b] *9*	(13$^-$)	W	J$^{\pi}$: proposed in (^{30}Si,Xγ); 776.7γ to (11$^-$); member of a negative-parity sequence.
5315.3[c] *8*	(13$^-$)	W	J$^{\pi}$: proposed in (^{30}Si,Xγ); 891.4γ to (11$^-$); member of a negative-parity sequence.
5324.0 *5*	(1)	L	
5346.66 *20*	1	L	
5354.66 *20*	1	L	
5362.7 *8*	(1)	L	
5386.26 *20*	1	L	
5397.46 *10*	1	L	
5412.6 *4*	1	L	
5432.9 *6*	1	L	
5442.2 *6*	1	L	
5450.5 *4*	1	L	
5458.2 *5*	1	L	
5482.36 *10*	1	L	
5492.4 *3*	(1)	L	
5508.9 *3*	1	L	
5519.1 *7*	1	L	
5528.2 *4*	1	L	
5544.1 *18*	(1)	L	
5552.7 *8*	(1)	L	
5563.27 *20*	1	L	
5579.2 *4*	1	L	

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	Jπ[@]	XREF	Comments
5588.4 *15*	(1)	L	
5595.6 *10*	1	L	
5615.3 *12*	1	L	
5626.1 *4*	1	L	
5638.07 *10*	1	L	
5654.38 *20*	1	L	
5664.6 *3*	1	L	
5678.8 *14*	(2)	L	
5686.88 *20*	1	L	
5708.2 *6*	1	L	
5716.1 *4*	1	L	
5725.6 *5*	1	L	
5732.9 *6*	1	L	
5741.48 *10*	1	L	
5754.1 *9*	1	L	
5764.7 *3*	1	L	
5775.98 *20*	1	L	
5791.8 *5*	1	L	
5801.4 *3*	1	L	
5811.38 *20*	1	L	
5828.59 *20*	1	L	
5856.9 *3*	1	L	
5889.4 *6*	1	L	
5906.6 *7*	1	L	
5916.99 *20*	1	L	
5925.0[a] *8*	(14^+)	W	Jπ: proposed in (^{30}Si,Xγ); 878.0γ to (12^+); member of a yrast sequence.
5959.79 *20*	1	L	
5972.80 *20*	1	L	
5984.10 *20*	1	L	
5993.0 *8*	(1)	L	
5999.7 *8*	(1)	L	
6022.10 *20*	1	L	
6031.90 *10*	1	L	
6046.3 *4*	1	L	
6065.70 *10*	1	L	
6076.7 *7*	(1)	L	
6101.6 *4*	1	L	
6110.20 *10*	(1)	L	
6120.51 *20*	(1)	L	
6133.0[c] *10*	(15^-)	W	Jπ: proposed in (^{30}Si,Xγ); 817.7γ to (13^-); member of a negative-parity sequence.
6145.1 *18*	1	L	
6172 *3*	1	L	
6183.2 *8*	(1)	L	
6220.1 *11*	(1)	L	
6234.5 *10*	(1)	L	
6247.1 *3*	(1)	L	
6266.0 *7*	(1)	L	
6315.9 *3*	1	L	
6330.32 *20*	1	L	
6367.4 *4*	1	L	
6379.2 *8*	1	L	
6388.3 *7*	1	L	
6397.9 *5*	1	L	
6419.9 *11*	1	L	
6438.7 *10*	1	L	
6451.23 *20*	(1)	L	

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)†	Jπ@	XREF
6465.8 *6*	1	L
6473.4 *3*	1	L
6491.8 *6*	1	L
6511.6 *11*	(1)	L
6522.3 *10*	(1)	L
6530.6 *6*	1	L
6543.43 *20*	1	L
6566.7 *10*	(1)	L
6577.3 *10*	1	L
6586.2 *3*	1	L
6596.4 *3*	1	L
6614.9 *8*	1	L
6631.3 *12*	(1)	L
6636.7 *18*	(1)	L
6648.1 *8*	(1)	L
6680.2 *20*	(1)	L
6698.7 *7*	1	L
6756.35 *20*	1	L
6765.7 *7*	1	L
6815.9 *13*	(1)	L
6824.2 *6*	1	L
6836.6 *6*	(1)	L
6847.4 *6*	1	L
6853.7 *4*	2	L
6866.0 *4*	(2)	L
6888.6 *5*	1	L
6900.3 *3*	(1)	L
6950.8 *8*	1	L
6959.3 *6*	(2)	L
6972.0 *8*	(1)	L
6979.6 *8*	1	L
6995.1 *5*	1	L
7008.77 *20*	1	L
7035.4 *3*	1	L
7050.8 *6*	1	L
7061.8 *4*	1	L
7073.5 *6*	1	L
7087.3 *11*	1	L
7105.1 *13*	(1)	L
7117.2 *4*	1	L
7128.0 *7*	1	L
7142.38 *20*	1	L
7156.8 *3*	1	L
7169.6 *5*	1	L
7182.1 *3*	1	L
7192.3 *8*	1	L
7204.6 *5*	1	L
7258.4 *7*	1	L
7274.4 *4*	1	L
7295.7 *7*	1	L
7309.0 *9*	(1)	L
7327.3 *5*	1	L
7336.49 *20*	1	L
7353.0 *8*	(1)	L
7376.2 *11*	(1)	L
7387.4 *8*	1	L
7396.1 *3*	1	L
7428.3 *4*	1	L
7434 *15*		K
7447.0 *9*	1	L
7461.3 *7*	1	L
7473.7 *3*	1	L
7498.0 *13*	(2)	L
7513.2 *5*	(2)	L
7543.3 *20*	(1)	L
7551.7 *17*	(2)	L
7562.3 *7*	1	L
7583.1 *4*	1	L
7609.1 *6*	1	L
7692.0 *6*	1	L
7711.3 *6*	1	L
7737.3 *20*	(1)	L
7752.5 *8*	1	L
7764.5 *4*	1	L
7781.1 *4*	1	L
7803.4 *5*	1	L
7820.5 *9*	1	L
7834.9 *13*	(1)	L
7847.1 *6*	1	L
7877.3 *6*	1	L
7889.9 *7*	1	L
7900.8 *15*	(2)	L
7927.3 *20*	1	L
7943.6 *8*	1	L
7965.3 *20*	(1)	L
7986.3 *20*	(2)	L
7996.1 *7*	1	L
8011.6 *7*	1	L
8023.6 *5*	1	L
8033.8 *9*	1	L
8045.2 *18*	(1)	L
8054.6 *8*	1	L
8068.0 *11*	(1)	L
8073 *4*	(2)	L
8081.1 *6*	(1)	L
8096.26 *20*	(1)	L
8112.8 *8*	1	L
8124.5 *6*	1	L
8137.5 *10*	1	L
8158.4 *6*	1	L
8168.8 *4*	1	L
8182.8 *4*	1	L
8213.3 *10*	(2)	L
8244.6 *10*	1	L
8255.5 *11*	(1)	L
8266.2 *19*	(1)	L
8277.0 *4*	1	L
8289.5 *21*	1	L
8298.4 *13*	(1)	L
8310.1 *9*	1	L
8331.2 *9*	(1)	L
8357.5 *11*	(2)	L
8370.5 *5*	1	L
8393.4 *20*	1	L

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Adopted Levels, Gammas (continued)

^{98}Mo Levels (continued)

E(level)[†]	Jπ[@]	$T_{1/2}$[&]	XREF	Comments
8429.5 *9*	(2)		L	
8444.4 *7*	1		L	
8459.6 *7*	1		L	
8472.1 *4*	1		L	
8491.7 *9*	1		L	
8503.9 *5*	1		L	
8513.1 *11*	1		L	
8527.3 *10*	1		L	
8537.5 *7*	1		L	
8562.8 *9*	1		L	
8580.2 *15*	(2)		L	
8590.1 *9*	1		L	
8602.3 *6*	1		L	
8613.1 *5*	1		L	
8620.2 *7*	1		L	
8627.8 *7*	1		L	
8636.5 *5*	1		L	
(8642.58 *4*)	$2^+,3^+$		HI	Jπ: s-wave neutron capture on $5/2^+$.
8650.3 *6*	1		L	
8662.7 *5*	1		L	
8674.3 *10*	1		L	
≈8800			T	E(level): wide bump attributed to two-hole states.
13.85×10^3 *24*	2^+	4.68 MeV *34*	R	%E2 EWSR=85 *14* for ISGQR (2015Yo04).
14.2×10^3 *4*			Q	FWHM of the GQR=4.7 MeV *4* (1979Mo12). dσ/dΩ(at 6°)=22 mb/sr *6*, %EWSR=87 (1979Mo12).
15.7×10^3	0^+	6.5 MeV	R	%E0 EWSR=83 for ISGMR (2015Yo04).
16.0×10^3 *3*	1^-	10.9 MeV *11*	R	%E1 EWSR=26 *3* for ISGDR (2015Yo04).
21.5×10^3 *4*	3^-	4.2 MeV *3*	R	%E3 EWSR=61 *8* for ISGOR (2015Yo04).
24.2×10^3	0^+	5.6 MeV	R	%E0 EWSR=14 for ISGMR (2015Yo04).
27.4×10^3 *7*	1^-	10.8 MeV *30*	R	%E1 EWSR=49 *8* for ISGDR (2015Yo04).

[†] From least squares fit to Eγ data. For levels populated in (γ,γ′) only, energies are from Eγ values for transitions to the g.s.

[‡] In the XREF column this level is shown to be populated in both (p,p′) and (d,d′), but from the data given by 1992Pi08 (see table 1 in 1992Pi08) it is not clear whether the level is populated in both the reactions or only one of these.

[#] In the XREF column this level is shown to be populated in both (p,p′) and (d,d′). While population in (p,p′) is certain, it is not clear (from table 1 in 1992Pi08) whether or not the level is populated in (d,d′).

[@] For levels populated in (γ,γ′) only, spin assignments are from γ(θ) of ground transitions (L=1 or 2), mostly consistent with spin=1.

[&] Deduced from measured B(E2) or B(E3) in Coulomb excitation up to 2344 level and from DSAM in (α,2nγ) above that up to 3557, unless otherwise noted. Values of widths are from (γ,γ′) or (α,α′) where available.

[a] Seq.(A): Yrast structure.

[b] Seq.(B): γ cascade based on 3^-. Possible octupole structure.

[c] Seq.(C): γ cascade based on (9^-).

[d] Seq.(D): γ cascade based on (6,7).

Adopted Levels, Gammas (continued)

$\gamma(^{98}Mo)$

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	α@	Comments
734.75	0^+	734.75		0.0	0^+	E0			E_γ: deduced from level difference. ce line observed in (p,p′γ) and (t,pγ) studies.
									Mult.: from observation in ce data only.
									Branching ratio for two photon emission: $\Gamma_{\gamma\gamma}/\Gamma<0.0001$ at 95% confidence level (2014He12). Two methods were used, one based on direct population of 735, 0^+ state, and the second based on population of 735, 0^+ level through 1024γ from 1758,2^+ level.
									Strength parameter ρ^2(E0)=0.0273 *25* (1971AnZV,(p,p′γ)). 2005Ki02 evaluation gives ρ^2(E0)=0.0273 *11*.
787.384	2^+	(52.63 *5*)	6.5×10^{-5} *12*	734.75	0^+	[E2]		12.06 *18*	B(E2)(W.u.)=9.7 *+10−25*
									α(K)=8.32 *12*; α(L)=3.09 *5*; α(M)=0.568 *8*
									α(N)=0.0770 *11*; α(O)=0.001080 *16*
									E_γ: from level-energy difference.
									I_γ: from B(E2)(735,0^+ to 787,2^+) in Coul. ex.
									B(E2)(W.u.) from B(E2)↑=0.130 *+14−34* (2002Zi06). Other B(E2)(W.u.)=21.8 11 from B(E2)↑=0.293 *14* (1978La17).
		787.372 *20*	100	0.0	0^+	E2			B(E2)(W.u.)=20.1 *4*
									E_γ: weighted average of 787.363 *20* from ^{98}Nb β^- decay (51.1 min) and 787.38 *2* from (n,n′γ). Others: 787.4 *3* from ^{98}Nb β^- decay (2.86 s), 787.26 *15* from (α,2nγ), 787.42 *10* from (n,γ) E=th, 787.4 *5* from (^{30}Si,Xγ), and 787.5 *3* from Coulomb excitation.
									Mult.: Q from $\gamma\gamma(\theta)$ in (α,2nγ) and $\gamma(\theta)$ in (n,n′γ); M2 ruled out by RUL.
1432.210	2^+	644.828 *20*	100 *3*	787.384	2^+	E2+M1	+1.69 *16*		B(M1)(W.u.)=0.0073 *+23−17*; B(E2)(W.u.)=48 *+9−8*
									E_γ: weighted average of 644.847 *20* from ^{98}Nb β^- decay (51.1 min) and 644.81 *2* from (n,n′γ). Others: 645.1 *3* from ^{98}Nb β^- decay (2.86 s), 644.70 *15* from (α,2nγ), 644.89 *11* from (n,γ) E=th, and 644.9 *3* from Coulomb excitation.
									δ: weighted average of +1.67 *25* from $\gamma\gamma(\theta)$ in (α,2nγ) and +1.70 *16* from $\gamma(\theta)$ in (n,n′γ). Others: +0.58 *5* from $\gamma\gamma(\theta)$ in (n,γ) E=thermal; +0.27 *2* from matrix elements in Coul. ex.
		697.42 *10*	5.2 *3*	734.75	0^+	(E2)			B(E2)(W.u.)=2.3 *+5−4*
									E_γ: weighted average of 697.38 *10* from ^{98}Nb β^- decay (51.1 min), 697.10 *46* from (α,2nγ), 697.6 *2* from (n,γ) E=th, and 697.6 *5* from Coulomb excitation.
									I_γ: weighted average of 5.0 *3* from ^{98}Nb β^- decay (51.1 min), 5.8 *7* from (α,2nγ), 5.9 *17* from (n,γ) E=th, and 5.8 *16* from Coulomb excitation.
		1432.22 *3*	84.2 *13*	0.0	0^+	E2			B(E2)(W.u.)=1.02 *+15−12*
									E_γ: weighted average of 1432.4 *3* from ^{98}Nb β^- decay (2.86 s), 1432.175 *20* from ^{98}Nb β^- decay (51.1 min), 1432.29 *20* from (α,2nγ), 1432.31 *11* from (n,γ) E=th, 1432.30 *3* from (n,n′γ), and

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Adopted Levels, Gammas (continued)

γ(^{98}Mo) (continued)

E$_i$(level)	J$^\pi_i$	E$_\gamma$†	I$_\gamma$†	E$_f$	J$^\pi_f$	Mult.‡	δ‡	α@	Comments
									1432.2 3 from Coulomb excitation. I$_\gamma$: unweighted average of 88.7 8 from ^{98}Nb β^- decay (51.1 min), 81.5 16 from (α,2nγ), 84 7 from (n,γ) E=th, 84.9 10 from (n,n′γ), and 82 7 from Coulomb excitation. Mult.: Q from $\gamma(\theta)$ in (n,n′γ); M2 ruled out by RUL.
1510.047	4$^+$	77.83	0.00052 8	1432.210	2$^+$	[E2]		2.98	B(E2)(W.u.)=15.2 +33−30 α(K)=2.31 4; α(L)=0.550 8; α(M)=0.1002 14 α(N)=0.01390 20; α(O)=0.000318 5 E$_\gamma$: from level-energy difference. I$_\gamma$: from Coul. ex.
		722.643 20	100	787.384	2$^+$	E2			B(E2)(W.u.)=42.3 +9−8 E$_\gamma$: weighted average of 722.626 20 from ^{98}Nb β^- decay (51.1 min) and 722.66 2 from (n,n′γ). Others: 722.48 15 from (α,2nγ), 722.70 10 from (n,γ) E=th, 722.4 5 from (^{30}Si,Xγ), and 722.8 3 from Coulomb excitation. Mult.: also supported by $\gamma\gamma(\theta)$ in (n,γ) E=thermal and $\gamma(\theta)$ in (n,n′γ). Deduced δ(O/Q)=−0.05 11 (n,n′γ); −0.04 3 (n,γ).
1758.49	2$^+$	248.45	0.16 3	1510.047	4$^+$	[E2]		0.0462	B(E2)(W.u.)=14 4 α(K)=0.0398 6; α(L)=0.00532 8; α(M)=0.000954 14 α(N)=0.0001406 20; α(O)=6.35×10^{-6} 9 E$_\gamma$: from level-energy difference. I$_\gamma$: from Coul. ex.
		326.29 12	6.4 4	1432.210	2$^+$	(M1(+E2))	−0.17 22	0.0111 8	B(M1)(W.u.)=0.0157 +27−34; B(E2)(W.u.)<22 α(K)=0.0098 7; α(L)=0.00113 10; α(M)=0.000201 18 α(N)=3.06×10^{-5} 25; α(O)=1.72×10^{-6} 10 E$_\gamma$: weighted average of 326.7 6 from ^{98}Nb β^- decay (2.86 s), 326.43 13 from ^{98}Nb β^- decay (51.1 min), 326.05 25 from (α,2nγ), and 326.21 12 from (n,γ) E=th. I$_\gamma$: weighted average of 5.1 9 from ^{98}Nb β^- decay (2.86 s), 4.6 9 from ^{98}Nb β^- decay (51.1 min), 7.0 3 from (α,2nγ), 6.3 6 from (n,γ) E=th, and 5.7 5 from Coulomb excitation.
		971.11 4	64 3	787.384	2$^+$	M1+E2	−0.97 14		B(M1)(W.u.)=0.0032 +8−7; B(E2)(W.u.)=3.0 7 E$_\gamma$: weighted average of 971.7 3 from ^{98}Nb β^- decay (2.86 s), 970.86 10 from ^{98}Nb β^- decay (51.1 min), 971.03 16 from (α,2nγ), 971.01 11 from (n,γ) E=th, 971.14 3 from (n,n′γ), and 971.3 5 from Coulomb excitation. I$_\gamma$: unweighted average of 53 6 from ^{98}Nb β^- decay (2.86 s), 61 3 from ^{98}Nb β^- decay (51.1 min), 65.9 10 from (α,2nγ), 60 6 from (n,γ) E=th, 72.9 10 from (n,n′γ), and 70 15 from Coulomb excitation. δ: others: −1.6 +7−15 from $\gamma(\theta)$ in (n,n′γ), −2.15 15 from $\gamma\gamma(\theta)$ in (n,γ) E=thermal; +0.42 7 from matrix elements in Coul. ex.

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Adopted Levels, Gammas (continued)

$\gamma(^{98}$Mo) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
1758.49	2^+	1023.73 *3*	100.0 *13*	734.75	0^+	E2	B(E2)(W.u.)=7.5 *+6−5* E_γ: weighted average of 1024.3 *3* from ^{98}Nb β^- decay (2.86 s), 1023.7 *1* from ^{98}Nb β^- decay (51.1 min), 1023.61 *16* from (α,2nγ), 1023.60 *11* from (n,γ) E=th, 1023.74 *3* from (n,n′γ), and 1023.7 *5* from Coulomb excitation. I_γ: from (n,n′γ). Mult.: also supported by $\gamma(\theta)$ in (n,n′γ).
		1758.64 *12*	6.4 *8*	0.0	0^+	[E2]	B(E2)(W.u.)=0.032 *+7−6* E_γ: weighted average of 1758.4 *6* from ^{98}Nb β^- decay (2.86 s), 1758.46 *12* from ^{98}Nb β^- decay (51.1 min), 1758.64 *14* from (α,2nγ), 1758.9 *5* from (n,γ) E=th, 1759.1 *2* from (n,n′γ), and 1758.8 *5* from Coulomb excitation. I_γ: weighted average of 10.6 *21* from ^{98}Nb β^- decay (2.86 s), 5.5 *9* from ^{98}Nb β^- decay (51.1 min), 5.4 *21* from (n,γ) E=th, and 6.7 *8* from (n,n′γ).
1880.86	≤4	449.1 *3*	9 *4*	1432.210	2^+		E_γ,I_γ: from (n,γ) E=thermal only.
		1093.2 *2*	100 *12*	787.384	2^+		E_γ,I_γ: from (n,γ) E=thermal only.
1963.05	0^+	531.0 *4*	39 *3*	1432.210	2^+		E_γ: weighted average of 530.61 *30* from (α,2nγ) and 531.3 *3* from (n,n′γ). I_γ: weighted average of 39 *3* from (α,2nγ) and 42 *6* from (n,n′γ).
		1175.65 *8*	100 *5*	787.384	2^+	E2	E_γ: weighted average of 1175.57 *20* from (α,2nγ) and 1175.66 *8* from (n,n′γ). I_γ: from (n,n′γ).
2017.53	3^-	258.99 *4*	25.8 *7*	1758.49	2^+	(E1)	B(E1)(W.u.)=4.9×10^{-5} *+9−7* E_γ: weighted average of 259.00 *10* from ^{98}Nb β^- decay (51.1 min), 258.96 *26* from (α,2nγ), 259.01 *10* from (n,γ) E=th, 258.98 *4* from (n,n′γ), and 258.9 *5* from Coulomb excitation. I_γ: weighted average of 26.3 *7* from ^{98}Nb β^- decay (51.1 min), 22.0 *19* from (α,2nγ), 28 *3* from (n,γ) E=th, 25.5 *8* from (n,n′γ), and 27.0 *20* from Coulomb excitation. Mult.: δ(Q/D)=+0.01 *6* from (α,2nγ).
		507.8 *2*	4.1 *5*	1510.047	4^+	[E1]	B(E1)(W.u.)=1.02×10^{-6} *+31−24* E_γ: from (α,2nγ) and (n,γ) E=thermal. Other: 507.8 *3* from ^{98}Nb β^- decay (51.1 min). I_γ: from (n,γ) E=thermal. Other: 3.9 *20* from ^{98}Nb β^- decay (51.1 min).
		585.40[b]	<0.3	1432.210	2^+	[E1]	B(E1)(W.u.)<5.7×10^{-8} E_γ,I_γ: from ^{98}Nb β^- decay (51.1 min) only.
		1230.16 *4*	100 *3*	787.384	2^+	(E1)	B(E1)(W.u.)=1.76×10^{-6} *+28−22* E_γ: weighted average of 1230.15 *5* from ^{98}Nb β^- decay (51.1 min), 1230.04 *15* from (α,2nγ), 1230.23 *12* from (n,γ) E=th, 1230.17 *4* from (n,n′γ), 1230.3 *5* from (^{30}Si,Xγ), and 1230.1 *3* from Coulomb excitation. Mult.: δ(Q/D)=−0.04 *7* ($\gamma\gamma(\theta)$ in (α,2nγ); 0.00 *2* ($\gamma\gamma(\theta)$ in (n,γ)); −0.04 *1* ($\gamma(\theta)$ in (n,n′γ)).
		1282.78[b]	<1.3	734.75	0^+	[E3]	B(E3)(W.u.)<58 E_γ,I_γ: from ^{98}Nb β^- decay (51.1 min) only.
		2017.46 *10*	18.7 *12*	0.0	0^+	[E3]	B(E3)(W.u.)=30 *+7−5* E_γ: weighted average of 2017.48 *10* from ^{98}Nb β^- decay (51.1 min), 2018.01 *53* from (α,2nγ), 2017.4 *2* from (n,γ) E=th, 2017.3 *3* from (n,n′γ), 2017.3 *5* from (^{30}Si,Xγ), and 2017.4 *5* from Coulomb excitation.

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γ(^{98}Mo) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	Comments
								I_γ: weighted average of 21.1 *13* from ^{98}Nb β^- decay (51.1 min), 16.2 *17* from (α,2nγ), 19.2 *21* from (n,γ) E=th, 17.0 *10* from (n,n$'\gamma$), and 23.0 *20* from Coulomb excitation. Other: 58 *14* from (^{30}Si,Xγ).
2037.52	0$^+$	1250.13 *6*	100	787.384	2$^+$	(E2)		E_γ: weighted average of 1250.00 *19* from (α,2nγ) and 1250.14 *6* from (n,n$'\gamma$). Other: 1250.2 *6* from ^{98}Nb β^- decay (2.86 s).
2104.72	3$^+$	594.65 *12*	9 *4*	1510.047	4$^+$			E_γ: weighted average of 594.66 *13* from ^{98}Nb β^- decay (51.1 min), 594.65 *12* from (α,2nγ), and 594.6 *3* from (n,γ) E=th. I_γ: weighted average of 8.2 *24* from ^{98}Nb β^- decay (51.1 min) and 21 *8* from (n,γ) E=th.
		672.52 *4*	82 *3*	1432.210	2$^+$	M1+E2	+5.8# *9*	E_γ: weighted average of 672.59 *10* from ^{98}Nb β^- decay (51.1 min), 672.50 *17* from (α,2nγ), 672.63 *11* from (n,γ) E=th, and 672.50 *4* from (n,n$'\gamma$). I_γ: weighted average of 78 *6* from ^{98}Nb β^- decay (51.1 min), 79 *3* from (α,2nγ), 83 *8* from (n,γ) E=th, and 89 *4* from (n,n$'\gamma$). Mult.,δ: from $\gamma(\theta)$ in (n,n$'\gamma$); E1+M2 ruled out by RUL due to large quadrupole mixing. Other: δ=+6.7 *+34−17* from $\gamma\gamma(\theta)$ (α,2nγ) agrees well.
		1317.38 *10*	100 *4*	787.384	2$^+$	M1+E2	+3.1# *6*	E_γ: weighted average of 1317.33 *10* from ^{98}Nb β^- decay (51.1 min), 1317.37 *17* from (α,2nγ), 1317.40 *12* from (n,γ) E=th, and 1317.43 *11* from (n,n$'\gamma$). Mult.,δ: from $\gamma(\theta)$ in (n,n$'\gamma$); E1+M2 ruled out by RUL due to large quadrupole mixing. Other: δ=+2.9 *+6−5* from $\gamma\gamma(\theta)$ in (α,2nγ) agrees well.
2206.61	2$^+$	448.2 *2*	14 *6*	1758.49	2$^+$			
		696.5^b	<1.4	1510.047	4$^+$			
		774.3^b	<6	1432.210	2$^+$			
		1419.36 *7*	100 *14*	787.384	2$^+$	M1+E2	−0.33 *11*	B(M1)(W.u.)>0.019; B(E2)(W.u.)>0.49 E_γ: weighted average of 1419.7 *3* from ^{98}Nb β^- decay (2.86 s), 1419.07 *10* from ^{98}Nb β^- decay (51.1 min), 1419.48 *22* from (α,2nγ), 1419.39 *13* from (n,γ) E=th, and 1419.41 *5* from (n,n$'\gamma$).
		2206.5^b	<3	0.0	0$^+$			
2223.862	4$^+$	206.3 *5*	0.6 *4*	2017.53	3$^-$			
		465.5 *2*	0.6 *2*	1758.49	2$^+$			
		713.824 *20*	100.0 *21*	1510.047	4$^+$	M1+E2	+1.13 *17*	E_γ: weighted average of 713.817 *20* from ^{98}Nb β^- decay (51.1 min) and 713.87 *5* from (n,n$'\gamma$). Others: 713.80 *16* from (α,2nγ) and 713.88 *15* from (n,γ) E=th. E_γ: other: 100 *5* from (n,n$'\gamma$).
		791.646 *20*	85.4 *5*	1432.210	2$^+$	(E2)		E_γ: others: 791.58 *17* from (α,2nγ), 791.5 *2* from (n,γ) E=th, and 792.0 *2* from (n,n$'\gamma$). I_γ: weighted average of 85.5 *5* from ^{98}Nb β^- decay (51.1 min), 83 *4* from (α,2nγ), 78 *9* from (n,γ) E=th. Other: 150 *20* from (n,n$'\gamma$). Mult.: δ(M3/E2)=+0.07 *8* from (α,2nγ).
		1436.45 *6*	27.4 *6*	787.384	2$^+$	(E2)		E_γ: weighted average of 1436.42 *5* from ^{98}Nb β^- decay (51.1 min), 1436.68 *25* from (α,2nγ), 1436.6 *3* from (n,γ) E=th, and 1437.0 *3* from (n,n$'\gamma$). I_γ: weighted average of 27.6 *4* from ^{98}Nb β^- decay (51.1 min), 23.4 *19* from (α,2nγ), 29 *6* from (n,γ) E=th, and 23 *4* from (n,n$'\gamma$). Mult.: δ(M3/E2)=−0.03 *7* from (α,2nγ).

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γ(^{98}Mo) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	Comments
2333.18	2^+	900.92 *15*	100	1432.210	2^+	(M1(+E2))	−0.15 +*19*−*29*	B(M1)(W.u.)>0.054 E_γ: weighted average of 900.85 *21* from (α,2nγ), 900.9 *2* from (n,γ) E=th and 900.96 *15* from (n,n′γ). Placement from (α,2nγ); it is placed from the 2333.4, 4^+ level in (n,γ) E=th and (n,n′γ) and replaced from the 2333.2, 2^+ level by evaluators.. Mult.,δ: γγ(θ) in (α,2nγ).
2333.46	4^+	109.53 *10*	0.95 *24*	2223.862	4^+			I_γ: from β^- (51.1 min). Other: 11 *4* in (α,2nγ) is too large by a factor of almost 10.
		575.02 *10*	6.3 *7*	1758.49	2^+			E_γ: weighted average of 575.06 *10* from ^{98}Nb β^- decay (51.1 min), 575.06 *10* from (α,2nγ), 575.0 *2* from (n,γ) E=th, and 574.4 *3* from (n,n′γ). I_γ: weighted average of 6.2 *7* from ^{98}Nb β^- decay (51.1 min) and 7.1 *21* from (n,γ) E=th. Value of 26 *5* in (n,n′γ) is discrepant, not used in averaging.
		823.38 *5*	57 *8*	1510.047	4^+	M1+E2	−0.388 *7*	E_γ: weighted average of 823.39 *5* from ^{98}Nb β^- decay (51.1 min), 823.33 *16* from (α,2nγ), 823.44 *12* from (n,γ) E=th, and 823.35 *7* from (n,n′γ). I_γ: unweighted average of 64.1 *14* from ^{98}Nb β^- decay (51.1 min), 77 *5* from (α,2nγ), 45 *4* from (n,γ) E=th, and 43.1 *23* from (n,n′γ). δ: others: δ(Q/D)=−2.7 +*11*−*21* or −0.24 *20* from γ(θ) in (n,n′γ).
		1546.04 *5*	100.0 *19*	787.384	2^+	(E2)		E_γ: weighted average of 1546.03 *5* from ^{98}Nb β^- decay (51.1 min), 1546.30 *22* from (α,2nγ), 1545.95 *12* from (n,γ) E=th, and 1546.06 *8* from (n,n′γ). δ(M3/E2)=−0.04 *4* from (α,2nγ).
2343.62	6^+	833.562 *20*	100	1510.047	4^+	E2		B(E2)(W.u.)=10.1 *4* E_γ: weighted average of 833.556 *20* from ^{98}Nb β^- decay (51.1 min), 833.61 *13* from (n,γ) E=th, and 833.70 *11* from (n,n′γ). Others: 833.52 *15* from (α,2nγ) and 833.6 *5* from (^{30}Si,Xγ). Mult.: δ(M3/E2)=−0.01 *7* from (α,2nγ).
2418.46	2^+	985.9 *3*	100	1432.210	2^+	((M1+E2))	+0.01 *7*	E_γ: weighted average of 986.34 *27* from (α,2nγ), 985.5 *4* from (n,γ) E=th, and 985.8 *2* from (n,n′γ).
		1631.11 *11*	97 *6*	787.384	2^+			E_γ: weighted average of 1631.26 *50* from (α,2nγ), 1631.4 *2* from (n,γ) E=th, and 1631.03 *10* from (n,n′γ). I_γ: from (α,2nγ).
2419.63	4^+	195.66 *10*	5.1 *7*	2223.862	4^+			
		314.9 *2*	2.9 *7*	2104.72	3^+			E_γ: weighted average of 315.0 *2* from ^{98}Nb β^- decay (51.1 min), 314.9 *2* from (α,2nγ), and 314.6 *3* from (n,γ) E=th. I_γ: weighted average of 2.9 *7* from ^{98}Nb β^- decay (51.1 min) and 2.8 *19* from (n,γ) E=th.
		402.05 *10*	11.1 *14*	2017.53	3^-			E_γ: weighted average of 401.99 *10* from ^{98}Nb β^- decay (51.1 min), 402.33 *39* from (α,2nγ), and 402.2 *2* from (n,γ) E=th. I_γ: weighted average of 13.1 *15* from ^{98}Nb β^- decay (51.1 min), 10.0 *14* from (α,2nγ), and 8 *3* from (n,γ) E=th.

$^{98}_{42}Mo_{56}$-17

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	α@	Comments
2419.63	4^+	661.12 *19*	19.2 *21*	1758.49	2^+	(E2)			E_γ: weighted average of 661.15 *19* from ^{98}Nb β^- decay (51.1 min), 661.16 *40* from (α,2nγ), 661.5 *5* from (n,γ) E=th, and 660.7 *4* from (n,n′γ). I_γ: weighted average of 28 *4* from ^{98}Nb β^- decay (51.1 min), 17.8 *13* from (α,2nγ), 19 *9* from (n,γ) E=th, and 32 *7* from (n,n′γ). δ(M3/E2)=+0.09 *10* from (α,2nγ).
		909.62 *5*	100.0 *22*	1510.047	4^+	M1+E2	−0.64 *10*		E_γ: weighted average of 909.67 *5* from ^{98}Nb β^- decay (51.1 min), 909.52 *17* from (α,2nγ), 909.59 *13* from (n,γ) E=th, and 909.54 *8* from (n,n′γ).
		987.48 *10*	32 *3*	1432.210	2^+				E_γ: weighted average of 987.47 *10* from ^{98}Nb β^- decay (51.1 min), 987.48 *10* from (α,2nγ), 987.6 *5* from (n,γ) E=th, and 987.6 *8* from (n,n′γ). I_γ: weighted average of 32.8 *22* from ^{98}Nb β^- decay (51.1 min), 20 *9* from (n,γ) E=th, and 16 *13* from (n,n′γ).
		1631.8 *3*	54 *5*	787.384	2^+				E_γ: unweighted average of 1632.17 *10* from ^{98}Nb β^- decay (51.1 min), 1632.46 *33* from (α,2nγ), 1631.4 *2* from (n,γ) E=th, and 1631.03 *10* from (n,n′γ). I_γ: unweighted average of 59.9 *22* from ^{98}Nb β^- decay (51.1 min), 40.5 *16* from (α,2nγ), 57 *9* from (n,γ) E=th, and 60 *8* from (n,n′γ).
2485.15	3^+	151.9 *2*	8 *4*	2333.46	4^+				E_γ: weighted average of 151.8 *2* from ^{98}Nb β^- decay (51.1 min) and 151.9 *2* from (α,2nγ).
		380.3 *2*	20.8 *25*	2104.72	3^+				E_γ: weighted average of 380.4 *2* from ^{98}Nb β^- decay (51.1 min) and 380.05 *43* from (α,2nγ). I_γ: weighted average of 15 *4* from ^{98}Nb β^- decay (51.1 min) and 21.8 *17* from (α,2nγ).
		467.0 *9*	3 *3*	2017.53	3^-				
		726.83[b] *10*	<4.6	1758.49	2^+				I_γ: 38 *12* from ^{98}Nb β^- decay (51.1 min) but this γ is not confirmed in (α,2nγ), only an upper limit is given.
		975.08 *14*	36.0 *17*	1510.047	4^+	M1+E2	−0.9 *+6−16*		E_γ: weighted average of 975.02 *14* from ^{98}Nb β^- decay (51.1 min), 975.25 *32* from (α,2nγ), and 975.2 *3* from (n,n′γ). I_γ: weighted average of 38 *4* from ^{98}Nb β^- decay (51.1 min), 35.9 *17* from (α,2nγ), and 30 *8* from (n,n′γ).
		1052.96 *10*	54 *3*	1432.210	2^+	M1+E2	−0.97 *+27−36*		E_γ: weighted average of 1052.95 *10* from ^{98}Nb β^- decay (51.1 min), 1053.04 *26* from (α,2nγ), and 1052.96 *13* from (n,n′γ). I_γ: weighted average of 46 *8* from ^{98}Nb β^- decay (51.1 min), 55 *3* from (α,2nγ). Other: 104 *7* from (n,n′γ) is discrepant.
		1697.6 *2*	100	787.384	2^+	M1+E2	−0.52 *13*		I_γ: from (n,n′γ).
2506.38	5^+	86.64 *10*	19 *1*	2419.63	4^+				E_γ: weighted average of 86.65 *10* from ^{98}Nb β^- decay (51.1 min) and 86.51 *32* from (α,2nγ). I_γ: other: 8 *5* from (α,2nγ).
		162.53 *15*	0.9 *5*	2343.62	6^+				

From ENSDF

$^{98}_{42}Mo_{56}$-18

Adopted Levels, Gammas (continued)

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[@]	Comments
2506.38	5^+	172.95 *5*	71 *4*	2333.46	4^+	(M1(+E2))	+0.05 *11*	0.057 *3*	α(K)=0.0495 *22*; α(L)=0.0058 *4*; α(M)=0.00104 *7* α(N)=0.000158 *9*; α(O)=8.8×10^{-6} *4* E_γ: others: 172.89 *16* from (α,2nγ), 171.9 *7* from (n,n′γ). I_γ: weighted average of 65 *4* from ^{98}Nb β^- decay (51.1 min), 74 *3* from (α,2nγ). Other: 25 *14* from (n,n′γ) is discrepant.
		282.52 *10*	1.9 *3*	2223.862	4^+				
		299.6[b] *2*	1.4 *5*	2206.61	2^+	[M3]		0.244	α(K)=0.207 *3*; α(L)=0.0309 *5*; α(M)=0.00566 *8* α(N)=0.000847 *12*; α(O)=4.20×10^{-5} *6* Implied mult=M3 makes this low-energy transition questionable.
		401.61[b]		2104.72	3^+				
		996.32 *5*	100.0 *18*	1510.047	4^+	M1+E2	−0.96 *10*		E_γ: weighted average of 996.30 *5* from ^{98}Nb β^- decay (51.1 min), 996.33 *16* from (α,2nγ), and 996.44 *13* from (n,n′γ).
2525.8	2^+	1093.6 *3*	100	1432.210	2^+	(M1(+E2))	+0.01 *17*		B(M1)(W.u.)>0.044 E_γ: weighted average of 1093.32 *26* from (α,2nγ) and 1093.9 *3* from (n,n′γ).
2562.23	(2^-)	544.8 *2*	7.8 *12*	2017.53	3^-				E_γ: weighted average of 544.52 *39* from (α,2nγ), 545.0 *2* from (n,γ) E=th, and 544.2 *4* from (n,n′γ). I_γ: weighted average of 7.4 *9* from (α,2nγ), 13 *4* from (n,γ) E=th, and 17 *7* from (n,n′γ).
		803.6 *5*	8 *7*	1758.49	2^+				E_γ,I_γ: from (n,γ) E=th.
		1774.8 *3*	100 *5*	787.384	2^+	D(+Q)	+0.05 *7*		E_γ: unweighted average of 1775.37 *23* from (α,2nγ), 1774.7 *2* from (n,γ) E=th, and 1774.31 *11* from (n,n′γ). I_γ: from (n,n′γ).
2570.9?	(6,7,8)	227.3[b] *5*	100	2343.62	6^+				E_γ: from (α,2nγ) only.
2572.84	3	239.2 *2*	16 *4*	2333.46	4^+				E_γ,I_γ: from (n,γ) E=th.
		555.3 *2*	52 *7*	2017.53	3^-				E_γ: weighted average of 555.3 *2* from ^{98}Nb β^- decay (51.1 min), 555.07 *35* from (α,2nγ), 555.4 *2* from (n,γ) E=th, and 555.4 *3* from (n,n′γ). I_γ: weighted average of 38 *25* from ^{98}Nb β^- decay (51.1 min), 47 *7* from (α,2nγ), 59 *7* from (n,γ) E=th. Other: 161 *30* from (n,n′γ) is discrepant.
		814.3 *2*	50 *3*	1758.49	2^+	D(+Q)	+0.10 *10*		E_γ: weighted average of 814.8 *3* from ^{98}Nb β^- decay (51.1 min), 814.46 *26* from (α,2nγ), 814.2 *2* from (n,γ) E=th, and 814.1 *2* from (n,n′γ). I_γ: weighted average of 50 *25* from ^{98}Nb β^- decay (51.1 min), 50 *3* from (α,2nγ), 62 *15* from (n,γ) E=th. Other: 94 *8* from (n,n′γ) is discrepant.
		1140.8 *4*	29 *4*	1432.210	2^+				E_γ: weighted average of 1140.83 *47* from (α,2nγ) and 1140.8 *4* from (n,γ) E=th. I_γ: weighted average of 29 *4* from (α,2nγ) and 32 *15* from (n,γ) E=th.
		1785.54 *16*	100 *13*	787.384	2^+	D(+Q)	+0.01 *6*		E_γ: weighted average of 1785.66 *14* from ^{98}Nb β^- decay (51.1

From ENSDF

$^{98}_{42}Mo_{56}$-19

$\gamma(^{98}$Mo) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	Comments
								min), 1785.90 *24* from (α,2nγ), 1785.4 *3* from (n,γ) E=th, and 1785.1 *2* from (n,n′γ).
2574.86	4^+	350.79 *12*	100	2223.862	4^+	(M1(+E2))	−0.13 *24*	E_γ: weighted average of 350.78 *12* from ^{98}Nb β^- decay (51.1 min) and 350.81 *18* from (α,2nγ). I_γ: from (α,2nγ). Other: I(350.8γ)/I(1063.7γ)=15 *6*/100 *6* from ^{98}Nb β^- decay (51.1 min), is discrepant.
		557.5 *1*	20 *6*	2017.53	3^-			E_γ: weighted average of 557.5 *1* from ^{98}Nb β^- decay (51.1 min) and 557.08 *39* from (α,2nγ). I_γ: from (α,2nγ). Other: I(557.5γ)/I(1063.7γ)=39 *6*/100 *6* from ^{98}Nb β^- decay (51.1 min).
		1063.6 *6*	91 *4*	1510.047	4^+	M1+E2	−2.7 *+8−15*	E_γ: unweighted average of 1063.0 *2* from ^{98}Nb β^- decay (51.1 min) and 1064.27 *18* from (α,2nγ). I_γ: from (α,2nγ).
2612.4	0^+	1825.0 *5*	100	787.384	2^+	(E2)		E_γ: from (α,2nγ). Other: 1821.0 *6* in β^- (2.86 s).
2620.01	3^+	1187.5 *3*	50 *9*	1432.210	2^+	M1+E2	−1.0 *+10−5*	E_γ: weighted average of 1187.1 *5* from ^{98}Nb β^- decay (51.1 min), 1187.50 *43* from (α,2nγ), 1187.6 *3* from (n,γ) E=th, and 1187.6 *3* from (n,n′γ). I_γ: weighted average of 80 *50* from ^{98}Nb β^- decay (51.1 min), 49 *18* from (n,γ) E=th, and 49 *9* from (n,n′γ). Others: 9.7 *7* from (α,2nγ) is discrepant.
		1832.7 *2*	100 *8*	787.384	2^+	M1+E2	−0.54 *13*	E_γ: weighted average of 1833.0 *3* from ^{98}Nb β^- decay (51.1 min), 1832.93 *33* from (α,2nγ), 1833.0 *3* from (n,γ) E=th, and 1832.4 *2* from (n,n′γ).
		1886.3[b] *7*	40 *18*	734.75	0^+	[M3]		E_γ,I_γ: from (n,γ) E=th. Implied M3 for this transition makes it questionable.
2620.78	5^-	603.28 *12*	63.3 *12*	2017.53	3^-	(E2)		E_γ: weighted average of 603.28 *10* from ^{98}Nb β^- decay (51.1 min), 603.25 *17* from (α,2nγ), 603.33 *12* from (n,γ) E=th, 603.1 *4* from (n,n′γ), and 603.1 *5* from (^{30}Si,Xγ). I_γ: weighted average of 66 *4* from ^{98}Nb β^- decay (51.1 min), 63.3 *12* from (α,2nγ), 63 *5* from (n,γ) E=th, 49 *10* from (n,n′γ), and 55 *11* from (^{30}Si,Xγ). Mult.: δ(M3/E2)=−0.08 *11* from (α,2nγ).
		1110.77 *7*	100.0 *23*	1510.047	4^+	(E1)		E_γ: weighted average of 1110.76 *10* from ^{98}Nb β^- decay (51.1 min), 1110.75 *16* from (α,2nγ), 1110.81 *14* from (n,γ) E=th, 1110.78 *7* from (n,n′γ), and 1110.3 *5* from (^{30}Si,Xγ). Mult.: δ(M2/E1)=−0.05 *10* from (α,2nγ); D also from $\gamma(\theta)$ in (n,n′γ).
2644.7?	$(1,2^+)$	1212.7[b] *5*	100 *36*	1432.210	2^+			E_γ,I_γ: from (n,n′γ) only.
		1909.6[b] *6*	<54	734.75	0^+			E_γ,I_γ: from (n,n′γ) only.
2678.88	6^+	172.44 *10*	4.1 *5*	2506.38	5^+			E_γ: weighted average of 172.44 *10* from ^{98}Nb β^- decay (51.1 min) and 172.47 *26* from (α,2nγ). I_γ: weighted average of 4.6 *5* from ^{98}Nb β^- decay (51.1 min) and 3.6 *5* from (α,2nγ).
		335.255 *23*	53.0 *8*	2343.62	6^+	(M1(+E2))	−0.01 *1*	α(K)=0.00897 *13*; α(L)=0.001029 *15*; α(M)=0.000184 *3* α(N)=2.80×10^{-5} *4*; α(O)=1.580×10^{-6} *23*

$^{98}_{42}$Mo$_{56}$-20

Adopted Levels, Gammas (continued)

γ(^{98}Mo) (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. ‡	δ ‡	Comments
								E_γ: weighted average of 335.258 *20* from ^{98}Nb β^- decay (51.1 min), 335.15 *16* from (α,2nγ), and 334.5 *5* from (^{30}Si,Xγ). I_γ: weighted average of 53.4 *11* from ^{98}Nb β^- decay (51.1 min) and 52.8 *8* from (α,2nγ). Other: 180 *70* from (^{30}Si,Xγ).
		345.53 *10*	0.5 *1*	2333.46	4^+			

$^{98}_{42}Mo_{56}$-21

Adopted Levels, Gammas (continued)

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[‡]	δ[‡]	α[@]	Comments
2678.88	6^+	455.04 *10*	4.6 *2*	2223.862	4^+				
		1168.826 *20*	100.0 *21*	1510.047	4^+	(E2)			E_γ: weighted average of 1168.827 *20* from ^{98}Nb β^- decay (51.1 min), 1168.81 *16* from (α,2nγ), and 1168.5 *5* from (^{30}Si,Xγ). δ(M3/E2)=+0.01 *4* from (α,2nγ). I_γ: other: 100 *21* from (^{30}Si,Xγ).
2700.68	2^+	493.4 *6*	8 *6*	2206.61	2^+				E_γ,I_γ: from (n,γ) E=th.
		1190.8[&b] *2*	<467[&]	1510.047	4^+				E_γ,I_γ: from ^{98}Nb β^- decay (51.1 min) only.
		1913.5 *2*	100 *20*	787.384	2^+	(M1(+E2))	−0.14 *14*		B(M1)(W.u.)>0.002 E_γ: weighted average of 1913.4 *4* from ^{98}Nb β^- decay (51.1 min), 1913.60 *33* from (α,2nγ), 1913.1 *3* from (n,γ) E=th, and 1913.6 *2* from (n,n′γ). I_γ: from (n,n′γ) E=th.
2733.4	2^+	1946.0 *3*	100	787.384	2^+	(M1(+E2))	−0.09 *15*		E_γ: from (α,2nγ) only.
2738.2	(6,7)	394.3 *5*	100	2343.62	6^+				E_γ: weighted average of 394.4 *5* from (α,2nγ) and 394.2 *5* from (^{30}Si,Xγ).
2767.68	4^+	146.6[b] *3*	4.0 *15*	2620.78	5^-				
		347.94 *10*	6.9 *6*	2419.63	4^+				
		434.27 *6*	35 *2*	2333.46	4^+				I_γ: weighted average of 34.9 *9* from ^{98}Nb β^- decay (51.1 min) and 25 *5* from (n,γ) E=th.
		543.83 *10*	17 *1*	2223.862	4^+				
		561.21	≈2	2206.61	2^+				
		662.89 *15*	5.2 *15*	2104.72	3^+				
		750.1 *2*	0.9 *3*	2017.53	3^-				
		1009.3 *1*	1.4 *12*	1758.49	2^+				
		1257.59 *5*	29 *1*	1510.047	4^+				
		1335.45 *5*	38.3 *6*	1432.210	2^+				
		1980.4 *3*	100 *1*	787.384	2^+	(E2)			E_γ: unweighted average of 1980.17 *5* from ^{98}Nb β^- decay (51.1 min), 1981.20 *32* from (α,2nγ), 1979.9 *3* from (n,γ) E=th, and 1980.3 *3* from (n,n′γ). Only the 1980γ reported in (α,2nγ), δ(M3/E2)=+0.01 *11*.
2795.61	4^-	778.01 *20*	38 *3*	2017.53	3^-	M1+E2	−0.37 *15*		E_γ,I_γ: from (α,2nγ).
		1285.53 *14*	100	1510.047	4^+	(E1)			E_γ: weighted average of 1285.63 *16* from (α,2nγ), 1285.42 *14* from (n,γ) E=th, and 1285.6 *2* from (n,n′γ). Mult.: δ(M2/E1)=−0.02 *3* from (α,2nγ).
2813.3	2^+	192.36[ab] *14*	[a]	2620.01	3^+				
		306.89[ab] *10*	[a]	2506.38	5^+	[M3]		0.222	α(K)=0.188 *3*; α(L)=0.0280 *4*; α(M)=0.00512 *8* α(N)=0.000767 *11*; α(O)=3.82×10^{-5} *6* Implied mult=M3 makes this transition questionable or very weak.
		469.90[b] *14*		2343.62	6^+	[E4]			This γ, seen in β^- decay (51.1 min), is questionable in view of unlikely mult=E4 involved.
		2025.5 *4*		787.384	2^+	M1+E2	−4 +2−57		E_γ: γ from (α,2nγ) only.

$^{98}_{42}Mo_{56}$-22

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	α@	Comments
2836.83	6⁺	157.87 *10*	100.0 *25*	2678.88	6⁺				E_γ: weighted average of 157.88 *10* from ^{98}Nb β^- decay (51.1 min), 157.87 *16* from (α,2nγ), and 157.6 *4* from (n,n′γ).
		330.34 *10*	28 *3*	2506.38	5⁺	M1+E2	−0.24 *6*	0.01097 *25*	α(K)=0.00963 *22*; α(L)=0.00111 *3*; α(M)=0.000199 *6* α(N)=3.03×10⁻⁵ *8*; α(O)=1.69×10⁻⁶ *4* E_γ: weighted average of 330.37 *10* from ^{98}Nb β^- decay (51.1 min) and 330.18 *23* from (α,2nγ). I_γ: weighted average of 29.3 *25* from ^{98}Nb β^- decay (51.1 min) and 23 *6* from (α,2nγ).
		493.16 *10*	26 *6*	2343.62	6⁺	M1+E2	−0.29 *15*		E_γ: weighted average of 493.18 *10* from ^{98}Nb β^- decay (51.1 min) and 493.09 *20* from (α,2nγ). I_γ: weighted average of 29 *7* from ^{98}Nb β^- decay (51.1 min) and 23 *6* from (α,2nγ).
		1326.7	7 *5*	1510.047	4⁺				
2854.15	(8⁺)	282.2[b] *5*	4 *2*	2570.9?	(6,7,8)				E_γ,I_γ: from (α,2nγ) only.
		510.47 *16*	100 *14*	2343.62	6⁺				E_γ: weighted average of 510.45 *16* from (α,2nγ) and 510.7 *5* from (^{30}Si,Xγ).
2856.2	4⁺	177.4[b] *2*	100	2678.88	6⁺				
2871.1	2,3	2083.7 *4*	100	787.384	2⁺	D+Q			δ(Q/D)=+0.06 *10* for J=3, −3.7 *+15−58* for J=2 from $\gamma\gamma(\theta)$ in (α,2nγ).
2896.79	5⁺	791.8 *3*	100	2104.72	3⁺				
		1386.84 *19*	96 *4*	1510.047	4⁺	M1+E2	+3.2 *+8−5*		
2905.2	4⁺	2117.8 *7*	100	787.384	2⁺	[E2]			B(E2)(W.u.)>3.0 E_γ: from (α,2nγ).
2915.8	2⁺	2128.4 *4*	100	787.384	2⁺	M1+E2	−0.71 *+37−57*		B(M1)(W.u.)>0.0063; B(E2)(W.u.)>0.36 E_γ: weighted average of 2129.03 *45* from (α,2nγ) and 2128.1 *3* from (n,n′γ).
2962.45	3⁻	944.7 *2*	19 *5*	2017.53	3⁻				E_γ: weighted average of 944.39 *44* from (α,2nγ) and 944.7 *2* from (n,γ) E=th. I_γ: from (α,2nγ). Other: 118 *30* from (n,γ) E=th.
		1452.4 *3*	100	1510.047	4⁺				E_γ: weighted average of 1452.69 *42* from (α,2nγ) and 1452.3 *3* from (n,γ) E=th. I_γ: from (α,2nγ). Other: 100 *30* from (n,γ) E=th.
		2176.4 *5*	83 *14*	787.384	2⁺				E_γ,I_γ: from (α,2nγ) only.
2976.89	4⁺	557.1 *4*	44 *28*	2419.63	4⁺				E_γ,I_γ: from (n,γ) E=th. γ also from (α,2nγ).
		753.0	1.1 *6*	2223.862	4⁺				
		1466.84 *10*	100 *3*	1510.047	4⁺	(M1(+E2))	+0.05 *17*		B(M1)(W.u.)>0.0056 E_γ: weighted average of 1466.79 *10* from ^{98}Nb β^- decay (51.1 min), 1466.96 *24* from (α,2nγ), and 1467.1 *3* from (n,γ) E=th.
		2189.4 *5*	1.1 *6*	787.384	2⁺	[E2]			B(E2)(W.u.)>0.0018
3010.91?		2223.5[b] *2*	100	787.384	2⁺				

$^{98}_{42}Mo_{56}$-23

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	Comments
3020.42	5^-	399.60 *10*	100 *6*	2620.78	5^-	(M1(+E2))	+0.06 *15*	E_γ: weighted average of 399.65 *10* from ^{98}Nb β^- decay (51.1 min) and 399.43 *18* from (α,2nγ).
		676.84 *10*	33.6 *24*	2343.62	6^+	(E1)		E_γ: weighted average of 676.87 *10* from ^{98}Nb β^- decay (51.1 min) and 676.66 *26* from (α,2nγ). I_γ: weighted average of 34 *6* from ^{98}Nb β^- decay (51.1 min) and 33.5 *24* from (α,2nγ). δ(M2/E1)=−0.01 *10* from (α,2nγ).
		1002.9 *2*	24.4 *10*	2017.53	3^-	(E2)		E_γ: weighted average of 1002.9 *2* from ^{98}Nb β^- decay (51.1 min) and 1002.85 *31* from (α,2nγ). I_γ: weighted average of 31 *13* from ^{98}Nb β^- decay (51.1 min) and 24.4 *10* from (α,2nγ). δ(M3/E2)=+0.03 *5*.
		1510.4	<94	1510.047	4^+			
3021.75	4^+	254.05 *14*	0.4 *2*	2767.68	4^+			
		688.23 *10*	6.2 *4*	2333.46	4^+			
		797.88 *10*	12.4 *6*	2223.862	4^+			
		815.5 *3*	0.8 *4*	2206.61	2^+			
		917.05 *13*	1.4 *4*	2104.72	3^+			
		1004.31 *10*	1.9 *8*	2017.53	3^-			
		1263.36 *11*	2.5 *4*	1758.49	2^+			
		1511.68 *2*	100 *1*	1510.047	4^+			E_γ: weighted average of 1511.68 *2* from ^{98}Nb β^- decay (51.1 min), 1511.65 *34* from (α,2nγ), and 1512.0 *3* from (n,γ) E=th.
		1589.62 *10*	2.9 *2*	1432.210	2^+			
		2234.31 *10*	3.7 *2*	787.384	2^+			
3026.2	5^+	1516.19 *25*	100	1510.047	4^+	M1+E2	+0.27 *6*	
3045.89	4^+	1287.2 *3*	100 *30*	1758.49	2^+			E_γ,I_γ: from (n,γ) E=th.
		2258.7 *4*	44 *21*	787.384	2^+			E_γ,I_γ: from (n,γ) E=th.
3050.92	4^+	544.5 *4*	4.8 *14*	2506.38	5^+			
		631.4 *2*	2.4 *10*	2419.63	4^+			
		717.5 *3*	14 *3*	2333.18	2^+	[E2]		B(E2)(W.u.)>61
		1540.93 *8*	100 *2*	1510.047	4^+	(M1(+E2))	−0.20 *27*	B(M1)(W.u.)>0.024 E_γ: weighted average of 1540.92 *5* from ^{98}Nb β^- decay (51.1 min), 1540.47 *52* from (α,2nγ), and 1541.6 *3* from (n,γ) E=th.
		1618.75 *11*	11.4 *14*	1432.210	2^+	[E2]		B(E2)(W.u.)>0.92
		2263.0 *2*	1.9 *3*	787.384	2^+	[E2]		B(E2)(W.u.)>0.027
3067.70	(3^-)	446.93 *10*	100 *7*	2620.78	5^-			E_γ: weighted average of 446.91 *10* from ^{98}Nb β^- decay (51.1 min), 446.78 *17* from (α,2nγ), 446.99 *13* from (n,γ) E=th, and 447.2 *3* from (n,n′γ).
		843.82 *10*	37 *5*	2223.862	4^+			
3095.80	2^+	1585.6[b] *2*	100	1510.047	4^+			
3096.26	(7^-)	241.7[b] *5*	11 *5*	2854.15	(8^+)			E_γ,I_γ: from (α,2nγ) only.
		475.6 *4*	100 *12*	2620.78	5^-	(E2)		E_γ: unweighted average of 476.35 *10* from ^{98}Nb β^- decay (51.1 min), 475.23 *17* from (α,2nγ), and 475.3 *5* from (^{30}Si,Xγ). Mult.: δ(M3/E2)=+0.01 *3* from (α,2nγ).

$^{98}_{42}Mo_{56}$-24

Adopted Levels, Gammas (continued)

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
3096.26	(7⁻)	752.77 *23*	80.9 *16*	2343.62	6⁺	(E1)	E_γ: unweighted average of 753.19 *14* from ^{98}Nb β^- decay (51.1 min), 752.41 *16* from (α,2nγ), and 752.7 *5* from (^{30}Si,Xγ). I_γ: weighted average of 73 *9* from ^{98}Nb β^- decay (51.1 min), and 81.2 *16* from (α,2nγ). Other: 42 *5* from (^{30}Si,Xγ) is discrepant. Mult.: δ(M2/E1)=−0.01 *4* from (α,2nγ).
3103.13	(2⁺,3,4)	335.4 *2*	100	2767.68	4⁺		E_γ: from (n,γ) E=th only.
3108.80	(2⁺,3,4)	1091.4 *2*	100	2017.53	3⁻		E_γ: weighted average of 1091.52 *20* from (α,2nγ) and 1091.2 *2* from (n,γ) E=th.
		1598.4 *3*	24 *4*	1510.047	4⁺		E_γ: weighted average of 1599.50 *33* from (α,2nγ) and 1598.8 *7* from (n,γ) E=th. I_γ: from (α,2nγ).
3155.56	(4⁺)	455.1 *3*	35 *18*	2700.68	2⁺		E_γ,I_γ: from (n,γ) E=th only.
		811.5 *5*	100 *60*	2343.62	6⁺		E_γ,I_γ: from (n,γ) E=th only.
		1050.8 *4*	70 *60*	2104.72	3⁺		E_γ,I_γ: from (n,γ) E=th only.
3165.89	4⁺	189.0[a] *3*	70[a] *11*	2976.89	4⁺		
		746.28 *12*	22 *6*	2419.63	4⁺		
		1061.25[a] *13*	30[a] *3*	2104.72	3⁺		
		1407.5 *1*	38 *8*	1758.49	2⁺		
		1655.87 *10*	100 *6*	1510.047	4⁺		
		2378.29 *10*	29 *2*	787.384	2⁺		
3195.56	(2⁻,3,4)	399.88 *15*	87 *13*	2795.61	4⁻		E_γ,I_γ: from (n,γ) E=th only.
		1178.1 *5*	100 *40*	2017.53	3⁻		E_γ,I_γ: from (n,γ) E=th only.
3208.99	(4⁺,5⁻)	530.42 *14*	100 *31*	2678.88	6⁺		
		985.2 *4*	62 *15*	2223.862	4⁺		
		1190.8[&] *2*	<108[&]	2017.53	3⁻		E_γ: poor fit, level-energy difference=1191.5.
3210.80	(4⁺)	866.6[b] *5*	31 *30*	2343.62	6⁺		E_γ,I_γ: from (n,γ) E=th only.
		1193.2 *3*	100 *29*	2017.53	3⁻		E_γ: weighted average of 1193.09 *30* from (α,2nγ), 1193.3 *3* from (n,γ) E=th, and 1193.1 *4* from (n,n′γ). I_γ: from (n,γ) E=th.
3211.57	(4⁺)	443.6 *3*	0.5 *2*	2767.68	4⁺		
		590.90 *10*	4.0 *3*	2620.78	5⁻		
		705.5 *2*	0.4 *2*	2506.38	5⁺		
		791.98 *15*	2.7 *5*	2419.63	4⁺		
		878.07 *10*	8.1 *3*	2333.46	4⁺		
		1106.8 *4*	0.4 *2*	2104.72	3⁺		
		1194.02 *10*	5.6 *3*	2017.53	3⁻		
		1701.505 *20*	100 *1*	1510.047	4⁺		E_γ: weighted average of 1701.503 *20* from ^{98}Nb β^- decay (51.1 min), 1701.8 *3* from (n,γ) E=th, and 1701.8 *6* from (n,n′γ).
		2424.1[b] *3*	1.6 *5*	787.384	2⁺		
3229.17	(4⁺)	415.5 *4*	13 *6*	2813.3	2⁺	[E2]	B(E2)(W.u.)>420 B(E2)(W.u.)>RUL=300 for E2 makes this low-energy transition questionable.
		885.58 *10*	100 *13*	2343.62	6⁺	[E2]	B(E2)(W.u.)>130
		1718.8 *6*	38 *6*	1510.047	4⁺		E_γ: from (α,2nγ). I_γ: from ^{98}Nb β^- decay (51.1 min).

From ENSDF

Adopted Levels, Gammas (continued)

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	δ[‡]	α[@]	Comments
3241.2	(4$^+$ to 7)	562.3	100	2678.88	6$^+$				
3257.86	1	3257.8 1	100	0.0	0$^+$	D			E_γ: from (γ,γ').
3271.49	(8$^+$)	416.8 5	13.2 19	2854.15	(8$^+$)				E_γ,I_γ: from (^{30}Si,Xγ) only.
		927.94 17	100 7	2343.62	6$^+$	Q			E_γ: weighted average of 927.95 17 from $(\alpha,2n\gamma)$ and 927.9 5 from (^{30}Si,Xγ).
3323.58	(7$^-$)	227.37 18	100	3096.26	(7$^-$)	(M1(+E2))	−0.08 10	0.0276 10	α(K)=0.0242 9; α(L)=0.00282 13; α(M)=0.000505 22 α(N)=7.7×10^{-5} 4; α(O)=4.28×10^{-6} 13
		979.87 23	100 7	2343.62	6$^+$				
3326.41	4$^+$	819.95 10	23.7 17	2506.38	5$^+$				
		906.86 10	50.8 17	2419.63	4$^+$				E_γ: other: 906.1 3 from (n,n$'\gamma$).
		992.88 5	100 3	2333.46	4$^+$				E_γ: other: 903.6 9 from (n,n$'\gamma$).
		1102.66 10	43.2 17	2223.862	4$^+$				
		1221.75 10	21.2 17	2104.72	3$^+$				
		1308.9 2	6.8 17	2017.53	3$^-$				
		1568.17 15	8.5 17	1758.49	2$^+$				
		1816.37 10	39.8 17	1510.047	4$^+$				
		2538.91 10	5.6 5	787.384	2$^+$				
3366.1?		1142.2[b] 3	100	2223.862	4$^+$				
3394.50	(4$^+$)	715.6 3	10 7	2678.88	6$^+$				
		773.7 2	2.9 7	2620.78	5$^-$				
		1061.25[a] 13	3.6[a] 3	2333.46	4$^+$				
		1289.98 15	3.6 7	2104.72	3$^+$				
		1377.6[b] 7	1.0 7	2017.53	3$^-$				
		1636.0 2	3.9 3	1758.49	2$^+$				
		1884.40 5	100 1	1510.047	4$^+$				E_γ: other: 1883.7 4 from (n,n$'\gamma$).
		2607.03 10	3.6 2	787.384	2$^+$				
3400.92	4$^+$	189.0[a] 3	1.9[a] 15	3211.57	(4$^+$)				
		1057.62[b] 10	100 8	2343.62	6$^+$				
3403.95	(5$^-$,6$^+$)	192.36[a] 14	9.1[a] 3	3211.57	(4$^+$)				
		306.89[ab] 10	100[a] 6	3096.26	(7$^-$)				
3405.06	1	3405.0 1	100	0.0	0$^+$	D			E_γ: from (γ,γ').
3418.74	4$^+$	1908.7 3	100 33	1510.047	4$^+$				E_γ: weighted average of 1908.6 2 from ^{98}Nb β^- decay (51.1 min) and 1909.7 6 from (n,n$'\gamma$).
		2631.3 3	20 7	787.384	2$^+$				
3455.17	(4$^+$)	1035.5 3	2.7 14	2419.63	4$^+$				
		1121.6 3	7 3	2333.46	4$^+$				
		1945.03 8	100.0 14	1510.047	4$^+$				E_γ: weighted average of 1945.01 5 from ^{98}Nb β^- decay (51.1 min), 1945.1 4 from (n,γ) E=th, and 1945.7 3 from (n,n$'\gamma$).
		2023.05 10	10.8 7	1432.210	2$^+$				E_γ: other: 2024.2 2 from (n,n$'\gamma$). I_γ: other: 67 9 from (n,n$'\gamma$) is discrepant.
		2667.75 10	4.7 4	787.384	2$^+$				

γ(^{98}Mo) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
3457.07	1	3457.0 *1*	100	0.0	0+	D	
3465.95	(4+)	959.8 *5*	84 *26*	2506.38	5+		
		1122.32 *10*	100 *26*	2343.62	6+		
		1955.82[b] *10*	116 *11*	1510.047	4+		
3501.7	(4+)	2714.3 *3*	100	787.384	2+		
3516.75	(4+)	350.92 *10*	100 *5*	3165.89	4+		
		679.68 *10*	27 *5*	2836.83	6+		
		1097.2 *2*	5 *3*	2419.63	4+		
		1183.6 *2*	7 *3*	2333.18	2+		
		1310.1 *2*	32 *5*	2206.61	2+		
		1499.3 *5*	10 *5*	2017.53	3−		
		1758.7	12 *3*	1758.49	2+		
		2006.6 *3*	29 *5*	1510.047	4+		
		2730.9 *3*	10 *3*	787.384	2+		E_γ: poor fit, level-energy difference=2729.3.
3527.4	(8,9−)	431.5 *5*	60 *10*	3096.26	(7−)		E_γ,I_γ: from (^{30}Si,Xγ) only.
		788.9 *5*	100 *4*	2738.2	(6,7)		E_γ,I_γ: from (^{30}Si,Xγ) only.
3541.28?		862.40[b] *14*	100	2678.88	6+		
3547.51	(4+)	1204.15 *16*	32 *7*	2343.62	6+		
		1213.30 *15*	36 *7*	2333.46	4+		E_γ: poor fit, level-energy difference=1214.04.
		1323.99 *10*	100 *7*	2223.862	4+		E_γ: poor fit, level-energy difference=1323.64. Other: 1323.9 *4* from (n,γ) E=th.
		1442.6 *3*	21 *7*	2104.72	3+		
		2037.39 *10*	29 *3*	1510.047	4+		
		2760.02 *10*	30 *2*	787.384	2+		
3551.35	1	2816.9 *2*	14.0 *16*	734.75	0+	D	
		3551.2 *1*	100.0 *16*	0.0	0+	D	
3554.87?		2767.45[b] *11*	100	787.384	2+		
3557.0	(4+)	1213.4 *4*	100	2343.62	6+		
3565.65	(4+)	514.78 *13*	48 *14*	3050.92	4+		
		1341.74 *10*	100 *5*	2223.862	4+		
		1461.0 *2*	14 *5*	2104.72	3+		
		2055.5 *4*	19 *5*	1510.047	4+		
3598.29	(4+)	194.1 *5*	25 *13*	3403.95	(5−,6+)		
		1254.69 *16*	100 *25*	2343.62	6+		
3601.1	(4+,5,6)	922.3 *4*	88 *38*	2678.88	6+		
		1257.2	100 *25*	2343.62	6+		
3617.12?		1273.5[b] *2*	100	2343.62	6+		
3620.10	(3−,4)	1515.5 *2*	100 *25*	2104.72	3+		
		1602.0 *4*	25 *13*	2017.53	3−		
3623.57	4+	572.6 *5*	21 *12*	3050.92	4+		
		944.6 *5*	15 *6*	2678.88	6+		
		1048.70 *10*	76 *9*	2574.86	4+		
		1117.1 *2*	24 *9*	2506.38	5+		

$^{98}_{42}$Mo$_{56}$-27

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [†]	E_f	J_f^π	Mult. [‡]	Comments
3623.57	4^+	1291.4 *4*	24 *12*	2333.46	4^+		E_γ: poor fit, level-energy difference=1290.11.
		1399.83 *17*	24 *3*	2223.862	4^+		
		1417.0 *4*	32 *9*	2206.61	2^+		
		1518.79 *10*	56 *6*	2104.72	3^+		
		2113.41 *10*	100 *12*	1510.047	4^+		
		2191.1 *5*	14 *2*	1432.210	2^+		
		2836.21 *11*	15 *2*	787.384	2^+		
3656.7	(9^-)	385.1 *5*	69 *14*	3271.49	(8^+)		E_γ: from (α,2nγ) and (^{30}Si,Xγ). I_γ: from (^{30}Si,Xγ).
		560.5 *5*	100 *12*	3096.26	(7^-)		E_γ: weighted average of 560.7 *5* from (α,2nγ) and 560.2 *5* from (^{30}Si,Xγ). I_γ: from (^{30}Si,Xγ).
		802.6 *5*	30 *5*	2854.15	(8^+)		E_γ,I_γ: from (^{30}Si,Xγ).
3703.98	1	3703.9 *2*	100	0.0	0^+	D	
3711.9	5^-	2201.8 *7*	100	1510.047	4^+		
3723.7	4^+	512 *1*	100 *33*	3211.57	(4^+)		
		887.0 *5*	5 *3*	2836.83	6^+		
		1389.8 *4*	6.7 *17*	2333.46	4^+		
		2936.8 *5*	1.0 *3*	787.384	2^+		
3737.79	4^+	900.97 *10*	79 *14*	2836.83	6^+		E_γ: other: 900.96 *15* from (n,n′γ). I_γ: other: <327 from (n,n′γ).
		1394.15 *12*	100 *14*	2343.62	6^+		E_γ: weighted average of 1394.07 *10* from ^{98}Nb β^- decay (51.1 min), 1394.2 *2* from (n,γ) E=th, and 1394.7 *3* from (n,n′γ). I_γ: other: 100 *24* from (n,n′γ).
3768.7	(9^-)	672.4 *5*	100	3096.26	(7^-)		
3777.88	4^+	2267.8 *1*	100	1510.047	4^+		
3806.08	1	3806.0 *2*	100	0.0	0^+	D	
3809.20	$(4,5,6^+)$	408.4[a] *2*	<23[a]	3400.92	4^+		I_γ: from relative Iγ of 408.4γ from 3809.6 level and that only a small fraction of the intensity of the 408.4γ doublet may belong here.
		2299.10 *10*	100 *8*	1510.047	4^+		
3809.59	$(4,5^-)$	408.4[a] *2*	11[a] *6*	3400.92	4^+		
		1189.3 *3*	40 *12*	2620.78	5^-		
		1792.05 *10*	100 *8*	2017.53	3^-		
3836.98	1	3836.9 *1*	100	0.0	0^+	D	
3842.77	$(4,5,6^+)$	2332.7[b] *2*	100	1510.047	4^+		
3857.68	1	3857.6 *1*	100	0.0	0^+	D	
3937.08	1	3937.0 *1*	100	0.0	0^+	D	
3944.09	(1)	3944.0 *1*	100	0.0	0^+	(D)	
3947.5	(4^+)	1268.6 *3*	100	2678.88	6^+		
3964.33	$(4^+,5,6)$	1285.4 *3*	25 *10*	2678.88	6^+		
		1620.70 *11*	100 *20*	2343.62	6^+		
3981.81	3^-	1877.3 *4*	30 *20*	2104.72	3^+		
		2471.72 *10*	100 *10*	1510.047	4^+		
3998.62	5^-	1377.5 *5*	30 *20*	2620.78	5^-		

$^{98}_{42}Mo_{56}$-28

γ(^{98}Mo) (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[‡]	Comments
3998.62	5⁻	2488.55 *10*	100 *10*	1510.047	4⁺		
4020.6	(2)	4020.5 *5*	100	0.0	0⁺	(Q)	
4041.6	(1)	4041.5 *9*	100	0.0	0⁺	(D)	
4060.62?	(4,5,6⁺)	2550.54[b] *12*	100	1510.047	4⁺		
4076.43	(4,5,6⁺)	2566.35 *10*	100	1510.047	4⁺		
4079.8	1	4079.7 *4*	100	0.0	0⁺	D	
4102.3	(2)	4102.2 *5*	100	0.0	0⁺	(Q)	
4103.35?	(4⁺)	2671.1[b] *2*	100	1432.210	2⁺		
4149.2	(10⁺)	877.9 *5*	100 *13*	3271.49	(8⁺)		E_γ: weighted average of 878.1 *5* from (α,2nγ) and 877.6 *5* from (^{30}Si,Xγ). I_γ: from (^{30}Si,Xγ).
		1294.9 *5*	23 *3*	2854.15	(8⁺)		E_γ,I_γ: from (^{30}Si,Xγ).
4170.8	1	4170.7 *8*	100	0.0	0⁺	D	
4179.90	(1)	4179.8 *2*	100	0.0	0⁺	(D)	
4190.2	(10,11)	662.7 *5*	100	3527.4	(8,9⁻)		
4231.1	1	4231.0 *4*	100	0.0	0⁺	D	
4252.6	(1)	4252.5 *12*	100	0.0	0⁺	(D)	
4258.8	1	4258.7 *5*	100	0.0	0⁺	D	
4267.90	1	4267.8 *2*	100	0.0	0⁺	D	
4295.40	(1)	4295.3 *1*	100	0.0	0⁺	(D)	
4361.80	(1)	4361.7 *1*	100	0.0	0⁺	(D)	
4391.21	(1)	4391.1 *1*	100	0.0	0⁺	(D)	
4410.21	1	4410.1 *1*	100	0.0	0⁺	D	
4423.9	(11⁻)	767.2 *5*	100	3656.7	(9⁻)		
4440.1?		290.8[b] *5*	100	4149.2	(10⁺)		E_γ: from (α,2nγ) only.
4537.7	(11⁻)	769.0 *5*	100	3768.7	(9⁻)		E_γ: weighted average of 769.1 *5* from (α,2nγ) and 768.9 *5* from (^{30}Si,Xγ).
4543.31	1	4543.2 *2*	100	0.0	0⁺	D	
4581.6	(1)	4581.5 *7*	100	0.0	0⁺	(D)	
4590.62	1	4590.5 *1*	100	0.0	0⁺	D	
4599.3	1	4599.2 *5*	100	0.0	0⁺	D	
4609.5?		169.4[b] *5*	100	4440.1?			E_γ: from (α,2nγ) only.
4616.2	1	4616.1 *5*	100	0.0	0⁺	D	
4654.3	(1)	4654.2 *4*	100	0.0	0⁺	(D)	
4812.73	1	4812.6 *2*	100	0.0	0⁺	D	
4837.53	1	4837.4 *1*	100	0.0	0⁺	D	
4902.83	1	4902.7 *1*	100	0.0	0⁺	D	
4993.6	(12,13)	803.4 *5*	100	4190.2	(10,11)		
5008.6	1	5008.5 *3*	100	0.0	0⁺	D	
5028.64	1	5028.5 *2*	100	0.0	0⁺	D	
5047.0	(12⁺)	897.8 *5*	100	4149.2	(10⁺)		
5050.34	1	5050.2 *1*	100	0.0	0⁺	D	
5081.74	1	5081.6 *2*	100	0.0	0⁺	D	
5121.4	1	5121.3 *3*	100	0.0	0⁺		

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Adopted Levels, Gammas (continued)

γ(^{98}Mo) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡
5134.1	(1)	5134.0 *11*	100	0.0	0^+	(D)
5147.6	1	5147.5 *3*	100	0.0	0^+	D
5165.15	1	5165.0 *2*	100	0.0	0^+	D
5174.6	(2)	5174.5 *12*	100	0.0	0^+	(Q)
5195.5	1	5195.4 *4*	100	0.0	0^+	D
5215.0	(2)	5214.9 *5*	100	0.0	0^+	(Q)
5225.5	(1)	5225.4 *7*	100	0.0	0^+	(D)
5236.1	1	5235.9 *9*	100	0.0	0^+	D
5244.55	(1)	5244.4 *2*	100	0.0	0^+	(D)
5267.7	(2)	5267.5 *6*	100	0.0	0^+	(Q)
5312.6	1	5312.4 *3*	100	0.0	0^+	D
5314.4	(13^-)	776.7 *5*	100	4537.7	(11^-)	
5315.3	(13^-)	891.4 *5*	100	4423.9	(11^-)	
5324.0	(1)	5323.8 *5*	100	0.0	0^+	(D)
5346.66	1	5346.5 *2*	100	0.0	0^+	D
5354.66	1	5354.5 *2*	100	0.0	0^+	D
5362.7	(1)	5362.5 *8*	100	0.0	0^+	(D)
5386.26	1	5386.1 *2*	100	0.0	0^+	D
5397.46	1	5397.3 *1*	100	0.0	0^+	D
5412.6	1	5412.4 *4*	100	0.0	0^+	D
5432.9	1	5432.7 *6*	100	0.0	0^+	D
5442.2	1	5442.0 *6*	100	0.0	0^+	D
5450.5	1	5450.3 *4*	100	0.0	0^+	D
5458.2	1	5458.0 *5*	100	0.0	0^+	D
5482.36	1	5482.2 *1*	100	0.0	0^+	D
5492.4	(1)	5492.2 *3*	100	0.0	0^+	(D)
5508.9	1	5508.7 *3*	100	0.0	0^+	D
5519.1	1	5518.9 *7*	100	0.0	0^+	D
5528.2	1	5528.0 *4*	100	0.0	0^+	D
5544.1	(1)	5543.9 *18*	100	0.0	0^+	(D)
5552.7	(1)	5552.5 *8*	100	0.0	0^+	(D)
5563.27	1	5563.1 *2*	100	0.0	0^+	D
5579.2	1	5579.0 *4*	100	0.0	0^+	D
5588.4	(1)	5588.2 *15*	100	0.0	0^+	(D)
5595.6	1	5595.4 *10*	100	0.0	0^+	D
5615.3	1	5615.1 *12*	100	0.0	0^+	D
5626.1	1	5625.9 *4*	100	0.0	0^+	D
5638.07	1	5637.9 *1*	100	0.0	0^+	D
5654.38	1	5654.2 *2*	100	0.0	0^+	D
5664.6	1	5664.4 *3*	100	0.0	0^+	D
5678.8	(2)	5678.6 *14*	100	0.0	0^+	(Q)
5686.88	1	5686.7 *2*	100	0.0	0^+	D
5708.2	1	5708.0 *6*	100	0.0	0^+	D
5716.1	1	5715.9 *4*	100	0.0	0^+	D
5725.6	1	5725.4 *5*	100	0.0	0^+	D
5732.9	1	5732.7 *6*	100	0.0	0^+	D
5741.48	1	5741.3 *1*	100	0.0	0^+	D
5754.1	1	5753.9 *9*	100	0.0	0^+	D
5764.7	1	5764.5 *3*	100	0.0	0^+	D
5775.98	1	5775.8 *2*	100	0.0	0^+	D
5791.8	1	5791.6 *5*	100	0.0	0^+	D
5801.4	1	5801.2 *3*	100	0.0	0^+	D
5811.38	1	5811.2 *2*	100	0.0	0^+	D
5828.59	1	5828.4 *2*	100	0.0	0^+	D
5856.9	1	5856.7 *3*	100	0.0	0^+	D
5889.4	1	5889.2 *6*	100	0.0	0^+	D
5906.6	1	5906.4 *7*	100	0.0	0^+	D
5916.99	1	5916.8 *2*	100	0.0	0^+	D
5925.0	(14^+)	878.0 *5*		5047.0	(12^+)	
5959.79	1	5959.6 *2*	100	0.0	0^+	D
5972.80	1	5972.6 *2*	100	0.0	0^+	D
5984.10	1	5983.9 *2*	100	0.0	0^+	D
5993.0	(1)	5992.8 *8*	100	0.0	0^+	(D)
5999.7	(1)	5999.5 *8*	100	0.0	0^+	(D)
6022.10	1	6021.9 *2*	100	0.0	0^+	D
6031.90	1	6031.7 *1*	100	0.0	0^+	D
6046.3	1	6046.1 *4*	100	0.0	0^+	D
6065.70	1	6065.5 *1*	100	0.0	0^+	D
6076.7	(1)	6076.5 *7*	100	0.0	0^+	(D)
6101.6	1	6101.4 *4*	100	0.0	0^+	D
6110.20	(1)	6110.0 *1*	100	0.0	0^+	(D)
6120.51	(1)	6120.3 *2*	100	0.0	0^+	(D)
6133.0	(15^-)	817.7 *5*	100	5315.3	(13^-)	
6145.1	1	6144.9 *18*	100	0.0	0^+	D
6172	1	6172 *3*	100	0.0	0^+	D
6183.2	(1)	6183.0 *8*	100	0.0	0^+	(D)
6220.1	(1)	6219.9 *11*	100	0.0	0^+	(D)
6234.5	(1)	6234.3 *10*	100	0.0	0^+	(D)
6247.1	(1)	6246.9 *3*	100	0.0	0^+	(D)
6266.0	(1)	6265.8 *7*	100	0.0	0^+	(D)
6315.9	1	6315.7 *3*	100	0.0	0^+	D
6330.32	1	6330.1 *2*	100	0.0	0^+	D
6367.4	1	6367.2 *4*	100	0.0	0^+	D
6379.2	1	6379.0 *8*	100	0.0	0^+	D
6388.3	1	6388.1 *7*	100	0.0	0^+	D
6397.9	1	6397.7 *5*	100	0.0	0^+	D

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Adopted Levels, Gammas (continued)

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡
6419.9	1	6419.7 *11*	100	0.0	0^+	D
6438.7	1	6438.5 *10*	100	0.0	0^+	D
6451.23	(1)	6451.0 *2*	100	0.0	0^+	(D)
6465.8	1	6465.6 *6*	100	0.0	0^+	D
6473.4	1	6473.2 *3*	100	0.0	0^+	D
6491.8	1	6491.6 *6*	100	0.0	0^+	D
6511.6	(1)	6511.4 *11*	100	0.0	0^+	(D)
6522.3	(1)	6522.1 *10*	100	0.0	0^+	(D)
6530.6	1	6530.4 *6*	100	0.0	0^+	D
6543.43	1	6543.2 *2*	100	0.0	0^+	D
6566.7	(1)	6566.5 *10*	100	0.0	0^+	(D)
6577.3	1	6577.1 *10*	100	0.0	0^+	D
6586.2	1	6586.0 *3*	100	0.0	0^+	D
6596.4	1	6596.2 *3*	100	0.0	0^+	D
6614.9	1	6614.7 *8*	100	0.0	0^+	D
6631.3	(1)	6631.1 *12*	100	0.0	0^+	(D)
6636.7	(1)	6636.5 *18*	100	0.0	0^+	(D)
6648.1	(1)	6647.9 *8*	100	0.0	0^+	(D)
6680.2	(1)	6680 *2*	100	0.0	0^+	(D)
6698.7	1	6698.5 *7*	100	0.0	0^+	D
6756.35	1	6756.1 *2*	100	0.0	0^+	D
6765.7	1	6765.4 *7*	100	0.0	0^+	D
6815.9	(1)	6815.6 *13*	100	0.0	0^+	(D)
6824.2	1	6823.9 *6*	100	0.0	0^+	D
6836.6	(1)	6836.3 *6*	100	0.0	0^+	(D)
6847.4	1	6847.1 *6*	100	0.0	0^+	D
6853.7	2	6853.4 *4*	100	0.0	0^+	Q
6866.0	(2)	6865.7 *4*	100	0.0	0^+	(Q)
6888.6	1	6888.3 *5*	100	0.0	0^+	D
6900.3	(1)	6900.0 *3*	100	0.0	0^+	(D)
6950.8	1	6950.5 *8*	100	0.0	0^+	D
6959.3	(2)	6959.0 *6*	100	0.0	0^+	(Q)
6972.0	(1)	6971.7 *8*	100	0.0	0^+	(D)
6979.6	1	6979.3 *8*	100	0.0	0^+	D
6995.1	1	6994.8 *5*	100	0.0	0^+	D
7008.77	1	7008.5 *2*	100	0.0	0^+	D
7035.4	1	7035.1 *3*	100	0.0	0^+	D
7050.8	1	7050.5 *6*	100	0.0	0^+	D
7061.8	1	7061.5 *4*	100	0.0	0^+	D
7073.5	1	7073.2 *6*	100	0.0	0^+	D
7087.3	1	7087.0 *11*	100	0.0	0^+	D
7105.1	(1)	7104.8 *13*	100	0.0	0^+	(D)
7117.2	1	7116.9 *4*	100	0.0	0^+	D
7128.0	1	7127.7 *7*	100	0.0	0^+	D
7142.38	1	7142.1 *2*	100	0.0	0^+	D
7156.8	1	7156.5 *3*	100	0.0	0^+	D
7169.6	1	7169.3 *5*	100	0.0	0^+	D
7182.1	1	7181.8 *3*	100	0.0	0^+	D
7192.3	1	7192.0 *8*	100	0.0	0^+	D
7204.6	1	7204.3 *5*	100	0.0	0^+	D
7258.4	1	7258.1 *7*	100	0.0	0^+	D
7274.4	1	7274.1 *4*	100	0.0	0^+	D
7295.7	1	7295.4 *7*	100	0.0	0^+	D
7309.0	(1)	7308.7 *9*	100	0.0	0^+	(D)
7327.3	1	7327.0 *5*	100	0.0	0^+	D
7336.49	1	7336.2 *2*	100	0.0	0^+	D
7353.0	(1)	7352.7 *8*	100	0.0	0^+	(D)
7376.2	(1)	7375.9 *11*	100	0.0	0^+	(D)
7387.4	1	7387.1 *8*	100	0.0	0^+	D
7396.1	1	7395.8 *3*	100	0.0	0^+	D
7428.3	1	7428.0 *4*	100	0.0	0^+	D
7447.0	1	7446.7 *9*	100	0.0	0^+	D
7461.3	1	7461.0 *7*	100	0.0	0^+	D
7473.7	1	7473.4 *3*	100	0.0	0^+	D
7498.0	(2)	7497.7 *13*	100	0.0	0^+	(Q)
7513.2	(2)	7512.9 *5*	100	0.0	0^+	(Q)
7543.3	(1)	7543 *2*	100	0.0	0^+	(D)
7551.7	(2)	7551.4 *17*	100	0.0	0^+	(Q)
7562.3	1	7562.0 *7*	100	0.0	0^+	D
7583.1	1	7582.8 *4*	100	0.0	0^+	D
7609.1	1	7608.8 *6*	100	0.0	0^+	D
7692.0	1	7691.7 *6*	100	0.0	0^+	D
7711.3	1	7711.0 *6*	100	0.0	0^+	D
7737.3	(1)	7737 *2*	100	0.0	0^+	(D)
7752.5	1	7752.2 *8*	100	0.0	0^+	D
7764.5	1	7764.2 *4*	100	0.0	0^+	D
7781.1	1	7780.8 *4*	100	0.0	0^+	D
7803.4	1	7803.1 *5*	100	0.0	0^+	D
7820.5	1	7820.2 *9*	100	0.0	0^+	D
7834.9	(1)	7834.6 *13*	100	0.0	0^+	(D)
7847.1	1	7846.8 *6*	100	0.0	0^+	D
7877.3	1	7877.0 *6*	100	0.0	0^+	D
7889.9	1	7889.6 *7*	100	0.0	0^+	D
7900.8	(2)	7900.5 *15*	100	0.0	0^+	(Q)
7927.3	1	7927 *2*	100	0.0	0^+	D
7943.6	1	7943.3 *8*	100	0.0	0^+	D

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. ‡
7965.3	(1)	7965 *2*	100	0.0	0^+	(D)
7986.3	(2)	7986 *2*	100	0.0	0^+	(Q)
7996.1	1	7995.7 *7*	100	0.0	0^+	D
8011.6	1	8011.2 *7*	100	0.0	0^+	D
8023.6	1	8023.2 *5*	100	0.0	0^+	D
8033.8	1	8033.4 *9*	100	0.0	0^+	D
8045.2	(1)	8044.8 *18*	100	0.0	0^+	(D)
8054.6	1	8054.2 *8*	100	0.0	0^+	D
8068.0	(1)	8067.6 *11*	100	0.0	0^+	(D)
8073	(2)	8073 *4*	100	0.0	0^+	(Q)
8081.1	(1)	8080.7 *6*	100	0.0	0^+	(D)
8096.26	(1)	8095.9 *2*	100	0.0	0^+	(D)
8112.8	1	8112.4 *8*	100	0.0	0^+	D
8124.5	1	8124.1 *6*	100	0.0	0^+	D
8137.5	1	8137.1 *10*	100	0.0	0^+	D
8158.4	1	8158.0 *6*	100	0.0	0^+	D
8168.8	1	8168.4 *4*	100	0.0	0^+	D
8182.8	1	8182.4 *4*	100	0.0	0^+	D
8213.3	(2)	8212.9 *10*	100	0.0	0^+	(Q)
8244.6	1	8244.2 *10*	100	0.0	0^+	D
8255.5	(1)	8255.1 *11*	100	0.0	0^+	(D)
8266.2	(1)	8265.8 *19*	100	0.0	0^+	(D)
8277.0	1	8276.6 *4*	100	0.0	0^+	D
8289.5	1	8289.1 *21*	100	0.0	0^+	D
8298.4	(1)	8298.0 *13*	100	0.0	0^+	(D)
8310.1	1	8309.7 *9*	100	0.0	0^+	D
8331.2	(1)	8330.8 *9*	100	0.0	0^+	(D)
8357.5	(2)	8357.1 *11*	100	0.0	0^+	(Q)
8370.5	1	8370.1 *5*	100	0.0	0^+	D
8393.4	1	8393 *2*	100	0.0	0^+	D
8429.5	(2)	8429.1 *9*	100	0.0	0^+	(Q)
8444.4	1	8444.0 *7*	100	0.0	0^+	D
8459.6	1	8459.2 *7*	100	0.0	0^+	D
8472.1	1	8471.7 *4*	100	0.0	0^+	D
8491.7	1	8491.3 *9*	100	0.0	0^+	D
8503.9	1	8503.5 *5*	100	0.0	0^+	D
8513.1	1	8512.7 *11*	100	0.0	0^+	D
8527.3	1	8526.9 *10*	100	0.0	0^+	D
8537.5	1	8537.1 *7*	100	0.0	0^+	D
8562.8	1	8562.4 *9*	100	0.0	0^+	D
8580.2	(2)	8579.8 *15*	100	0.0	0^+	(Q)
8590.1	1	8589.7 *9*	100	0.0	0^+	D
8602.3	1	8601.9 *6*	100	0.0	0^+	D

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Adopted Levels, Gammas (continued)

$\gamma(^{98}Mo)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	Comments
8613.1	1	8612.7 *5*	100	0.0	0^+	D	
8620.2	1	8619.8 *7*	100	0.0	0^+	D	
8627.8	1	8627.4 *7*	100	0.0	0^+	D	
8636.5	1	8636.1 *5*	100	0.0	0^+	D	
(8642.58)	$2^+,3^+$	5431.5 *4*	2.4 *2*	3210.80	(4^+)		
		5446.4 *4*	2.3 *2*	3195.56	$(2^-,3,4)$		
		5487.0 *5*	1.0 *2*	3155.56	(4^+)		
		5533.4 *8*	3.1 *5*	3108.80	$(2^+,3,4)$		
		5538.8 *6*	1.9 *2*	3103.13	$(2^+,3,4)$		
		5592.1[b] *7*	0.5 *2*	3050.92	4^+		
		5596.3 *6*	1.4 *2*	3045.89	4^+		
		5665.0 *7*	1.0 *3*	2976.89	4^+		
		5680.0 *6*	9.4 *8*	2962.45	3^-	(E1)	Mult.: from radiation strength in (n,γ) E=th.
		5874.72 *22*	11.9 *13*	2767.68	4^+		
		5941.9 *4*	4.0 *9*	2700.68	2^+		
		6021.9 *7*	0.8 *1*	2620.01	3^+		
		6069.4 *6*	3.7 *3*	2572.84	3		
		6080.6 *5*	1.6 *2*	2562.23	(2^-)		
		6156.7 *7*	0.4 *1*	2485.15	3^+		
		6222.92 *12*	5.5 *7*	2419.63	4^+		
		6308.4 *5*	0.5 *1*	2333.46	4^+		
		6418.5 *7*	0.4 *1*	2223.862	4^+		
		6435.93 *8*	3.4 *3*	2206.61	2^+		
		6537.4 *4*	1.8 *8*	2104.72	3^+		
		6624.80 *2*	100 *6*	2017.53	3^-	(E1)	Mult.: from radiation strength (1971He10) in (n,γ) E=th.
		6760.7 *7*	0.5 *1*	1880.86	≤4		
		6883.48 *16*	1.6 *3*	1758.49	2^+		
		7132.2 *4*	1.5 *2*	1510.047	4^+		
		7210.7 *4*	1.0 *1*	1432.210	2^+		
		7853.9 *4*	1.0 *1*	787.384	2^+		
		7907.4 *8*	0.24 *10*	734.75	0^+		
8650.3	1	8649.9 *6*	100	0.0	0^+	D	
8662.7	1	8662.3 *5*	100	0.0	0^+	D	
8674.3	1	8673.9 *10*	100	0.0	0^+	D	

† From ^{98}Nb β^- decay (51.1 min) up to 4103 level and from (γ,γ') above that, unless otherwise noted.

‡ From $\gamma\gamma(\theta)$ in (α,2nγ) and RUL up to 3323 level and from $\gamma(\theta)$ in (γ,γ') above that, unless otherwise stated. For large dipole+quadrupole admixtures, mult=M1+E2 is assigned in contrast to E1+M2, assuming that level half-lives are less than few ns if not given.

Large (δ(Q/D)) mixing ratio favors mult=M1+E2 rather than E1+M2, assuming level half-lives are no longer than few ns.

@ Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies,

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$\gamma(^{98}Mo)$ (continued)

assigned multipolarities, and mixing ratios, unless otherwise specified.
& Multiply placed with undivided intensity.
[a] Multiply placed with intensity suitably divided.
[b] Placement of transition in the level scheme is uncertain.

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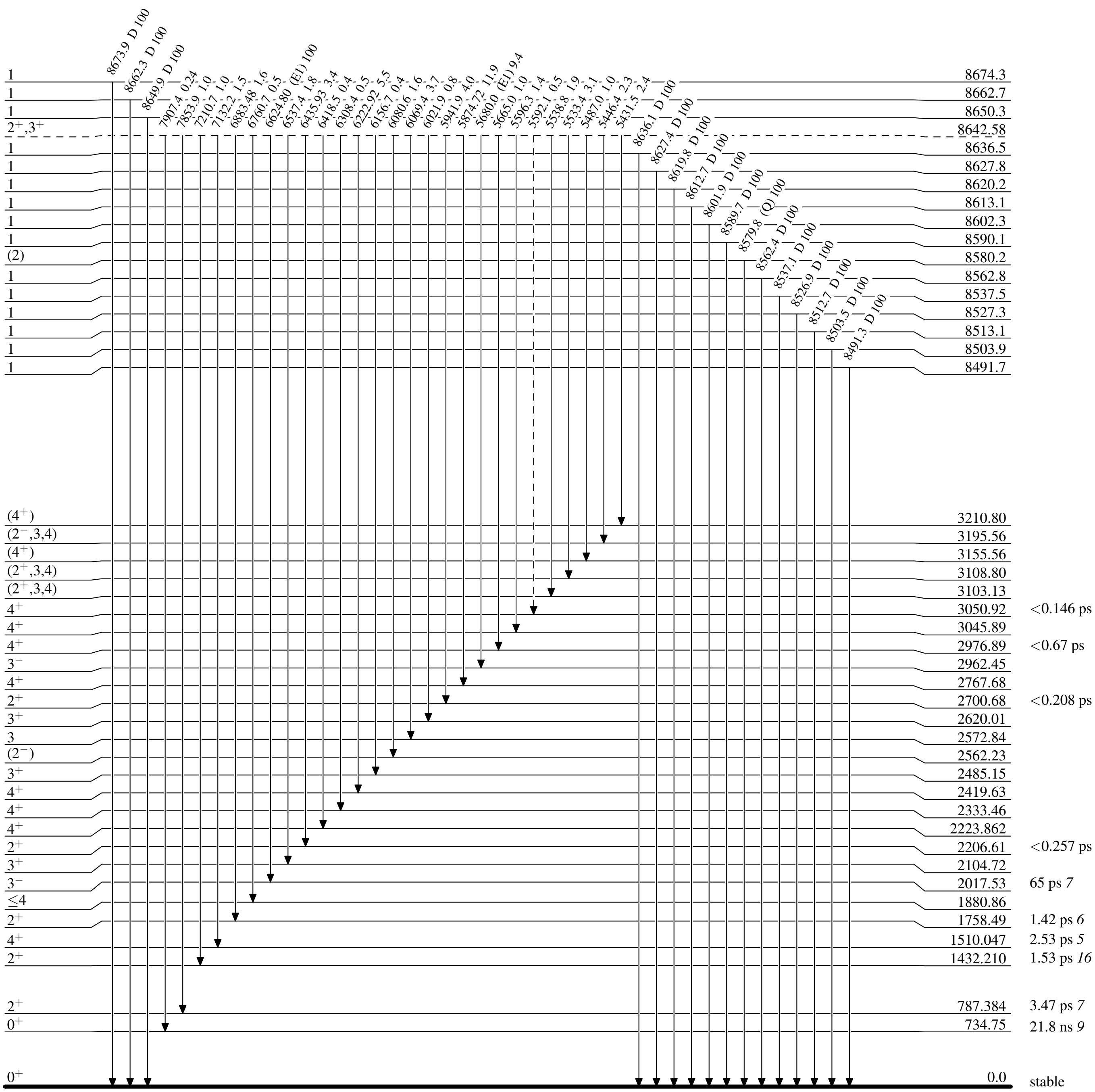
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

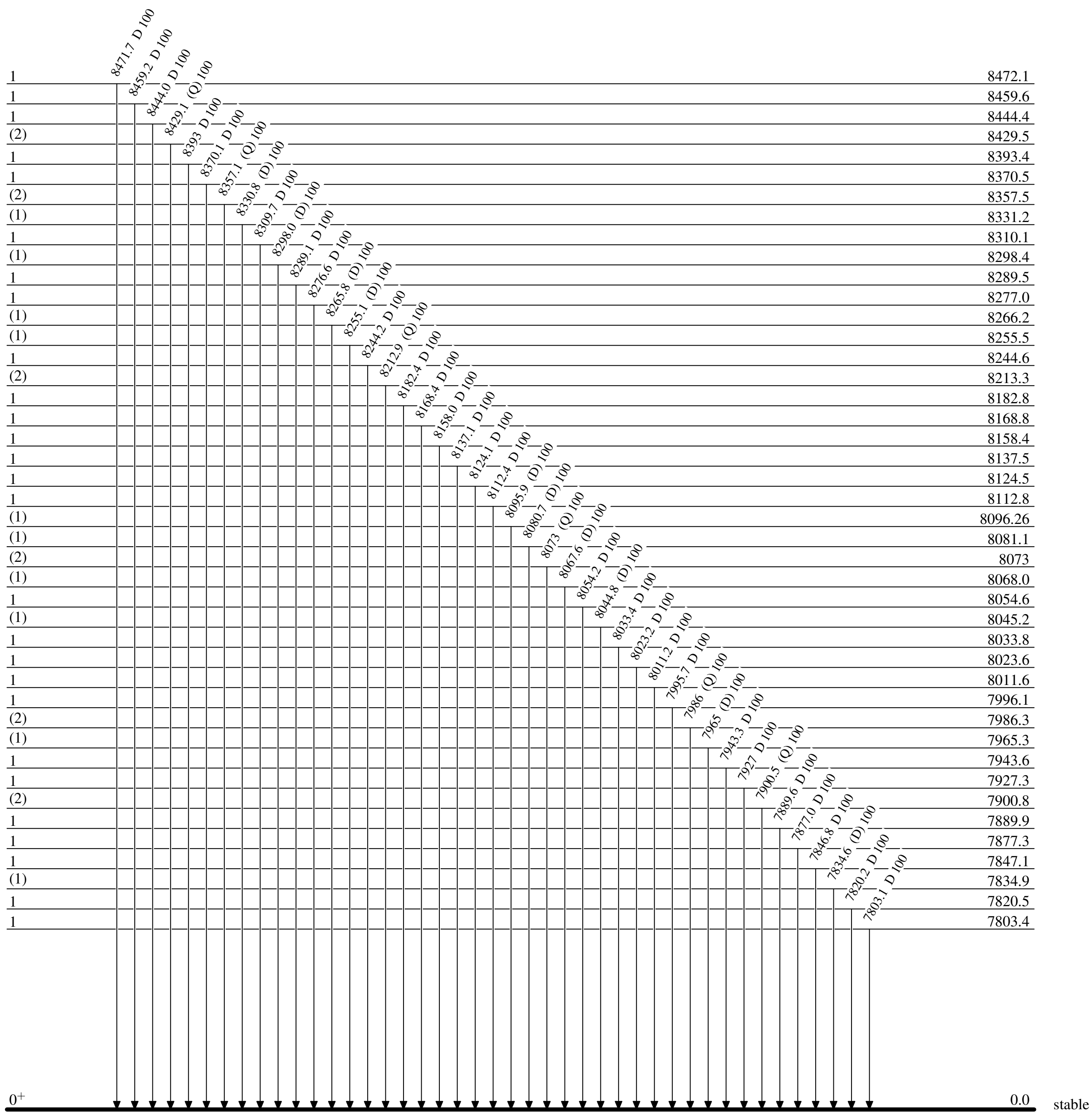


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

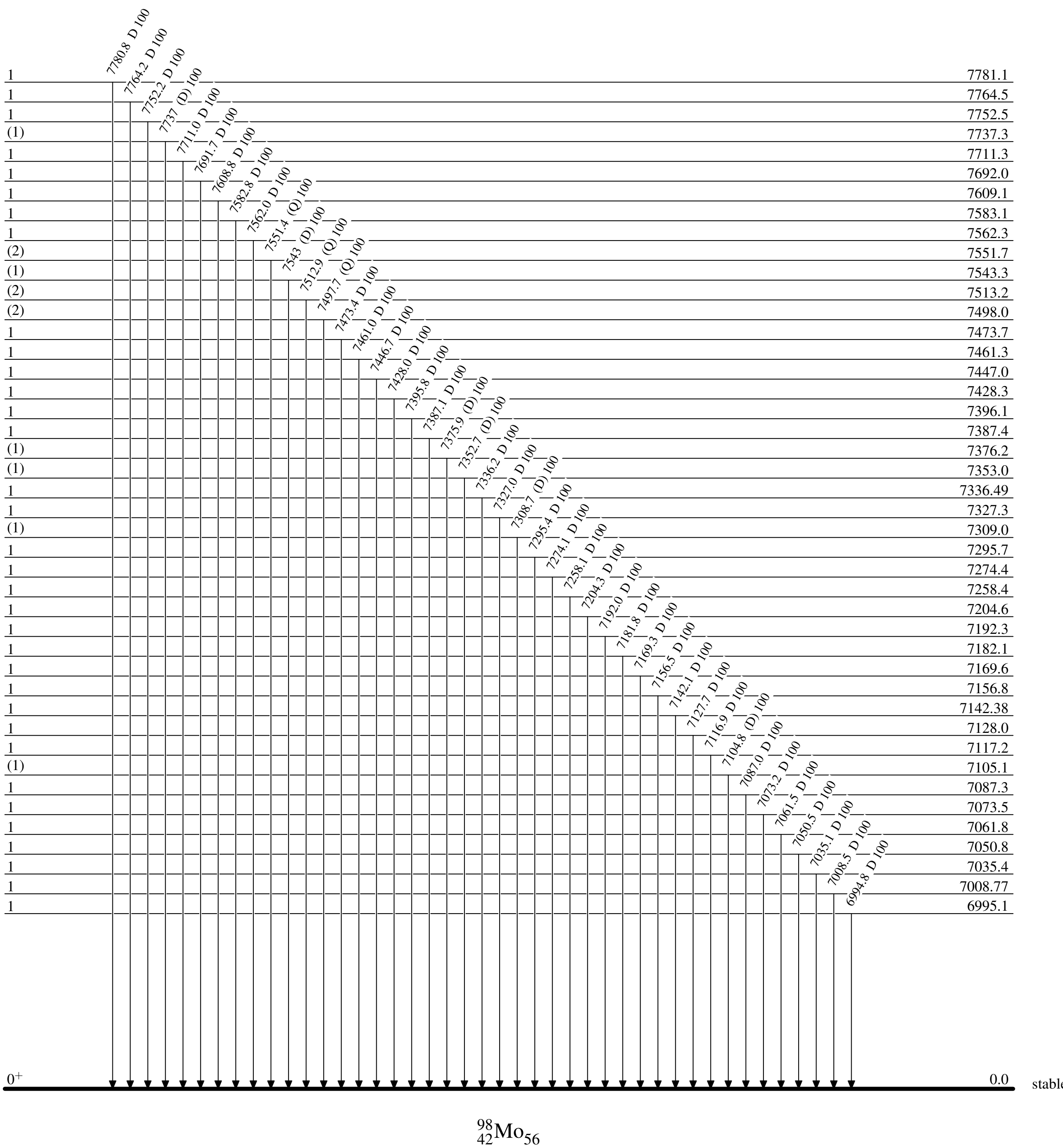


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

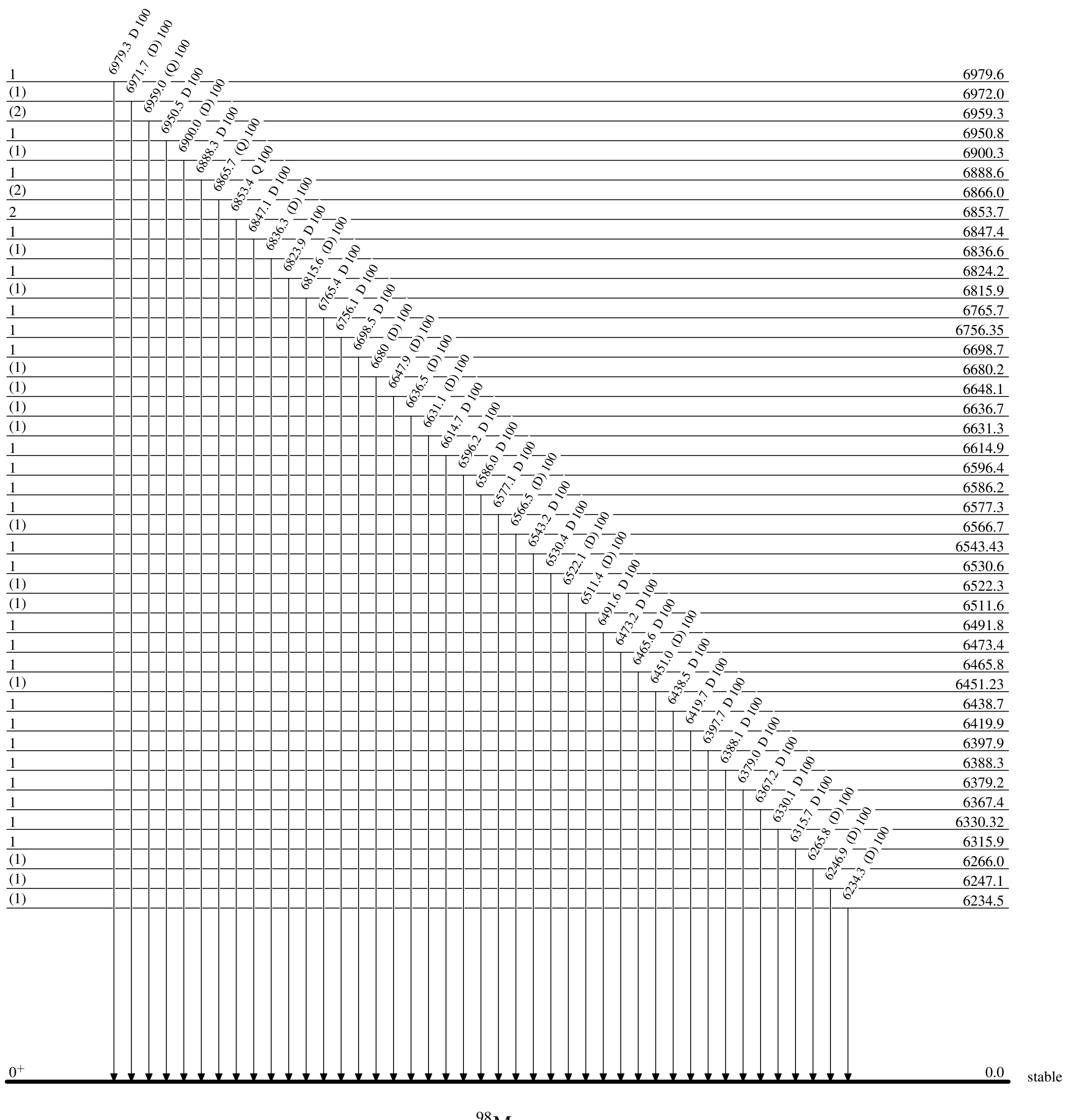
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

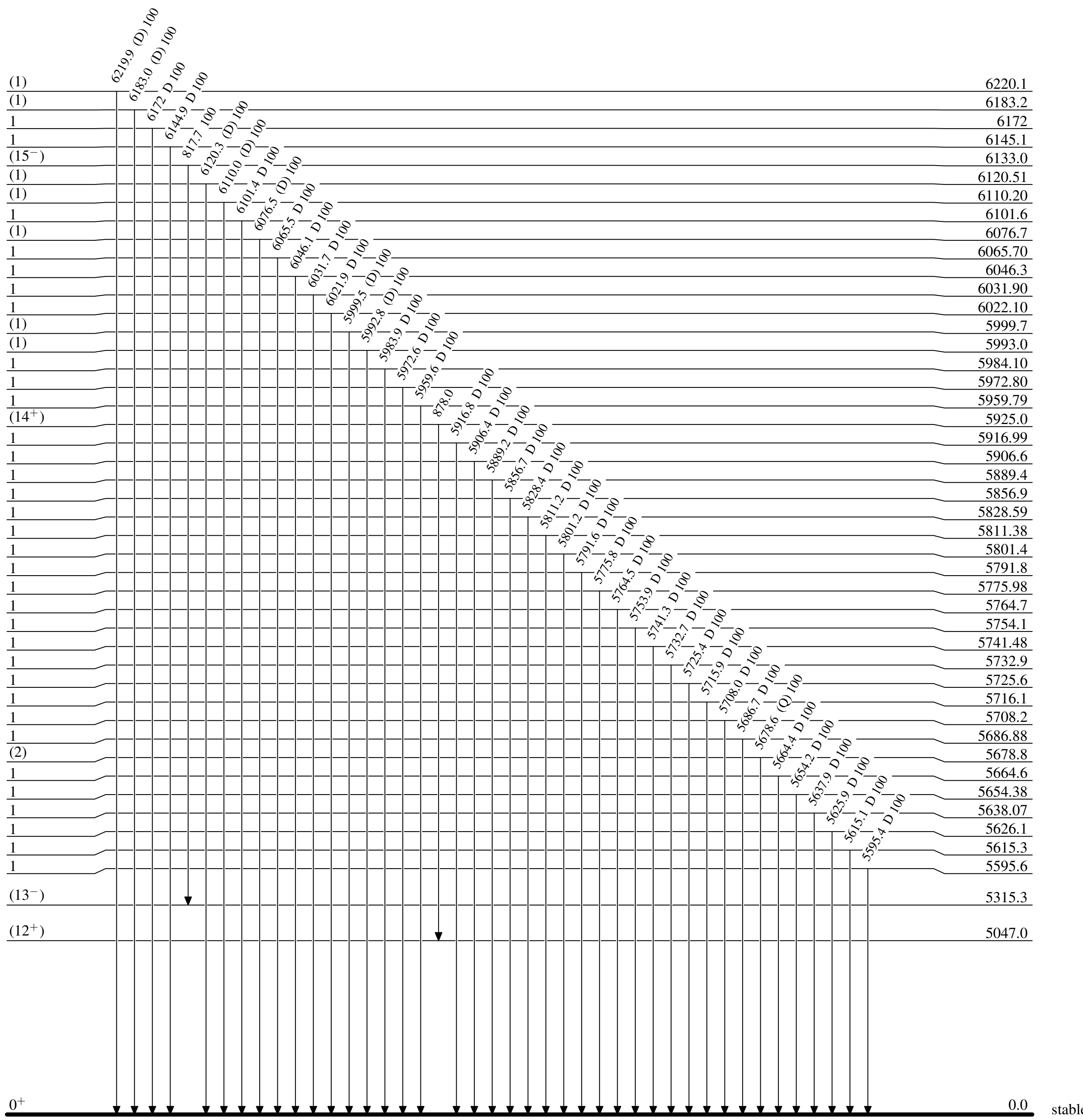


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

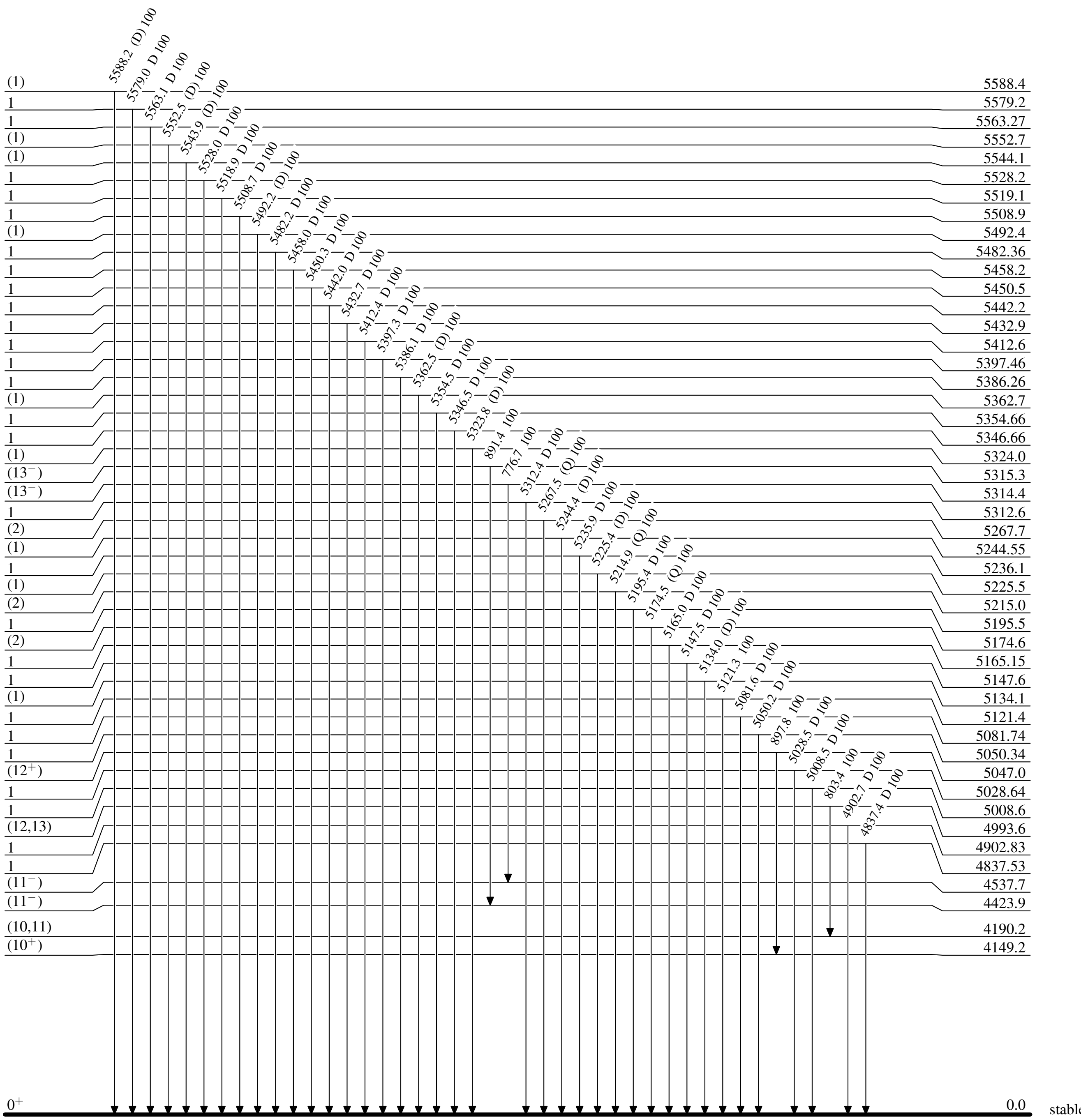


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

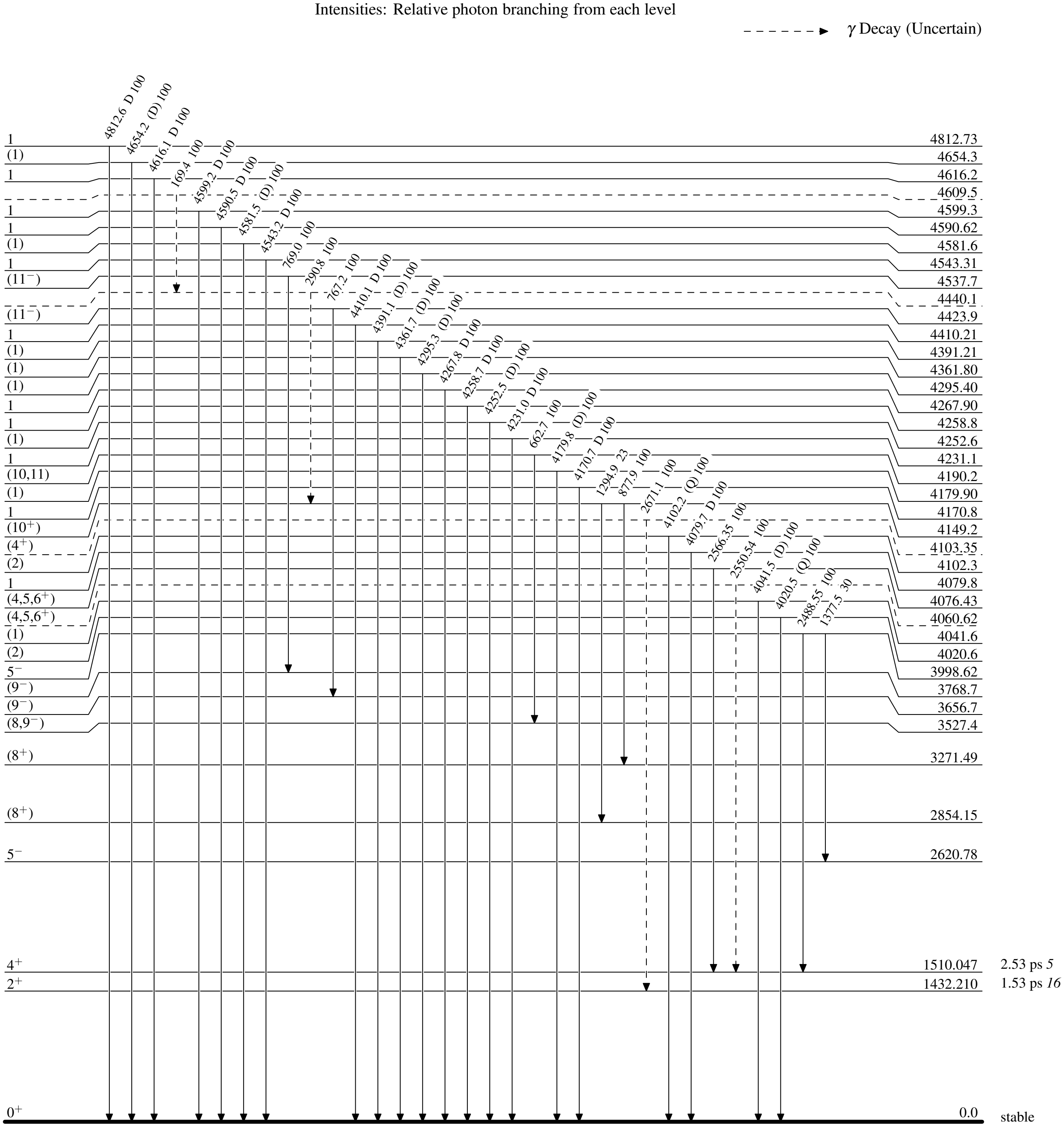


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

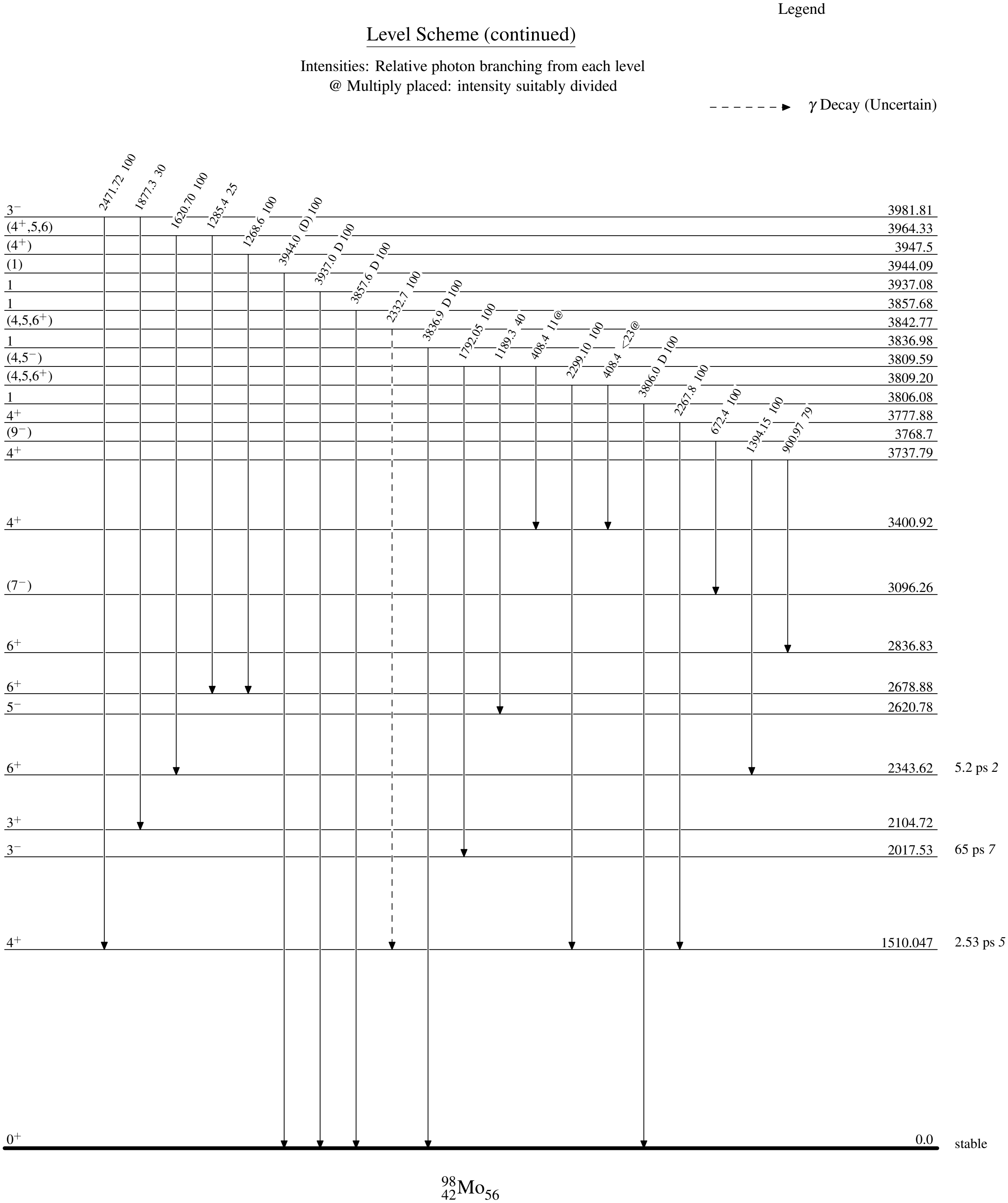


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided



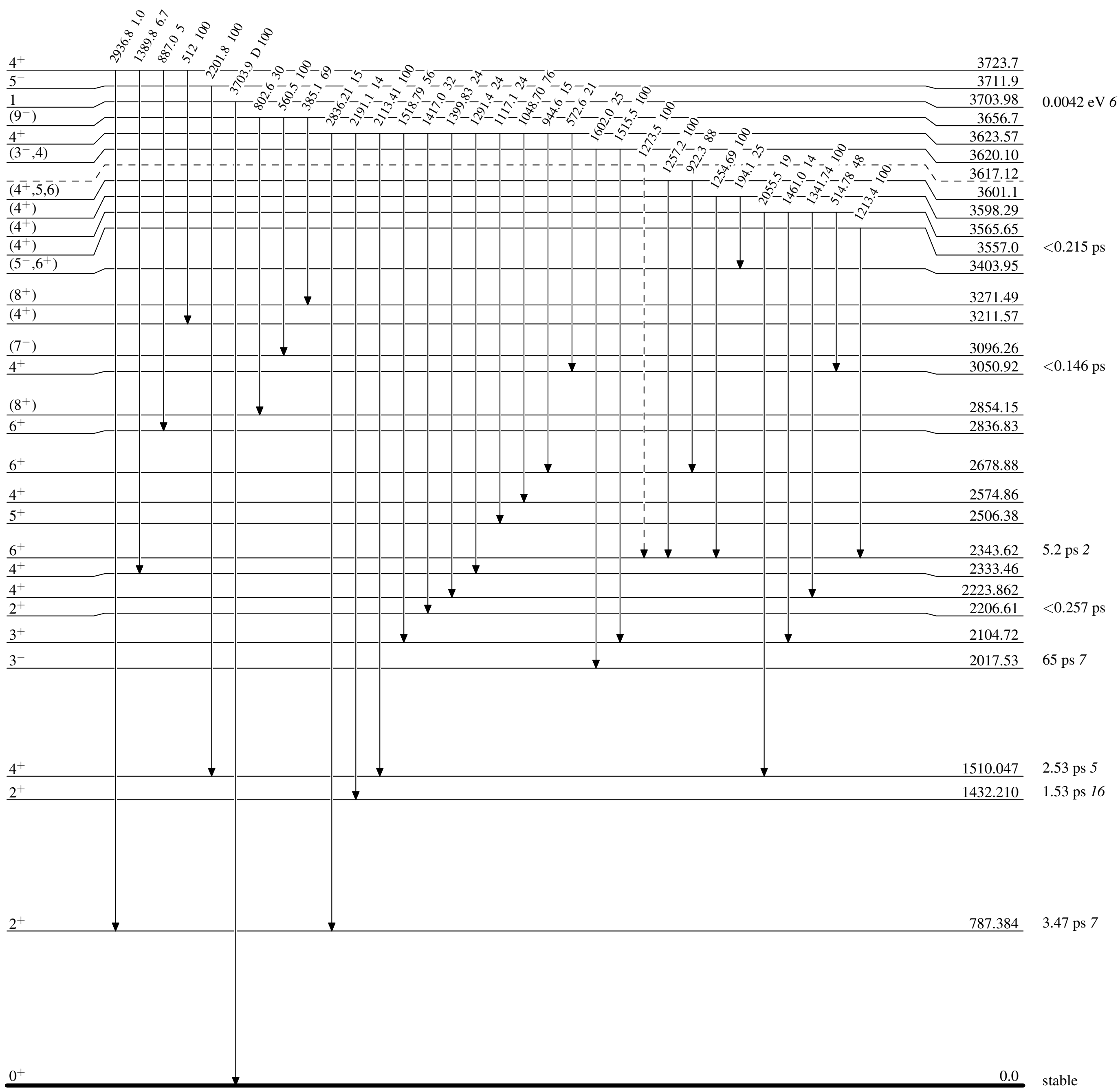
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

- - - - - ► γ Decay (Uncertain)



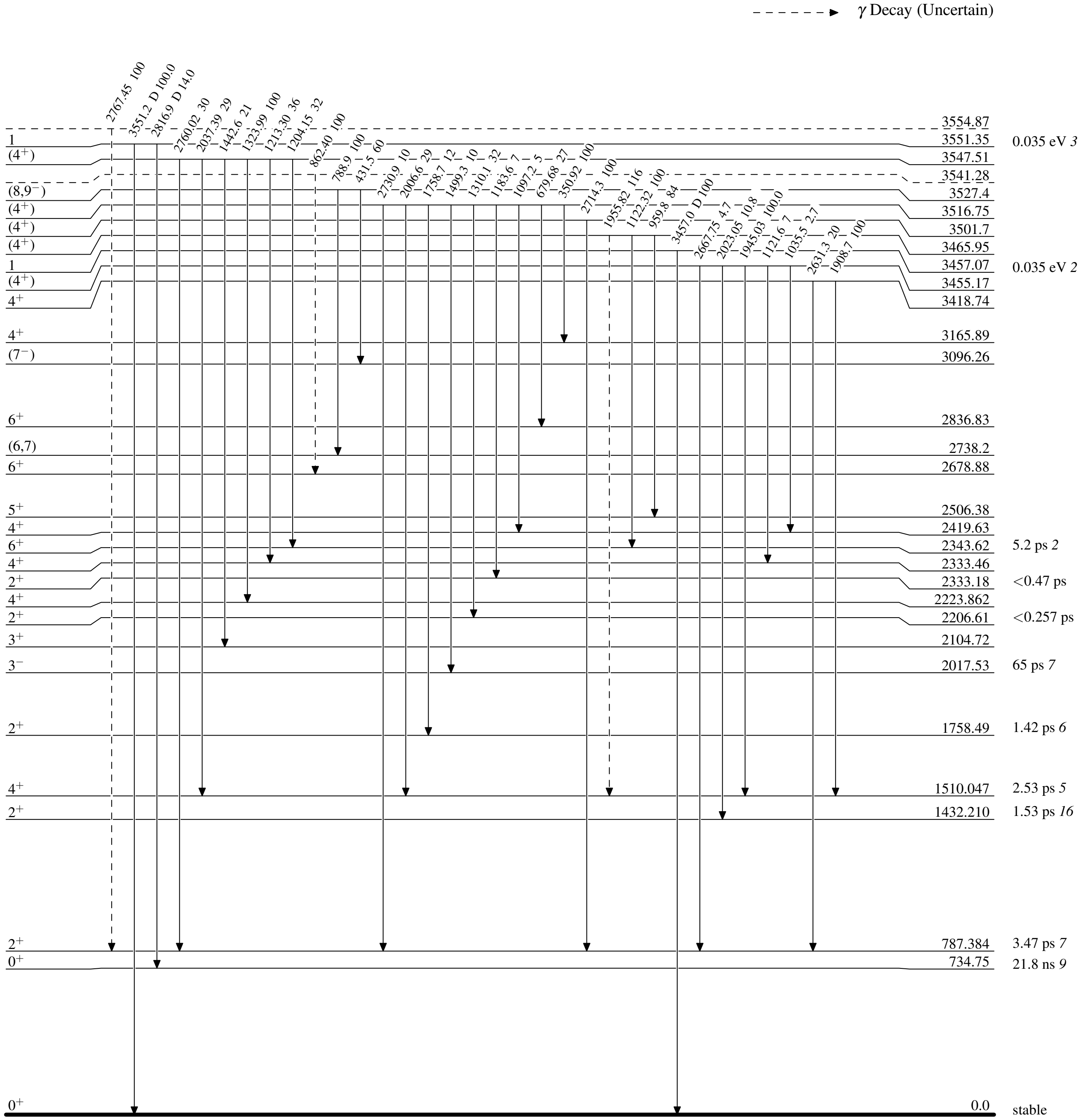
$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided



$^{98}_{42}Mo_{56}$

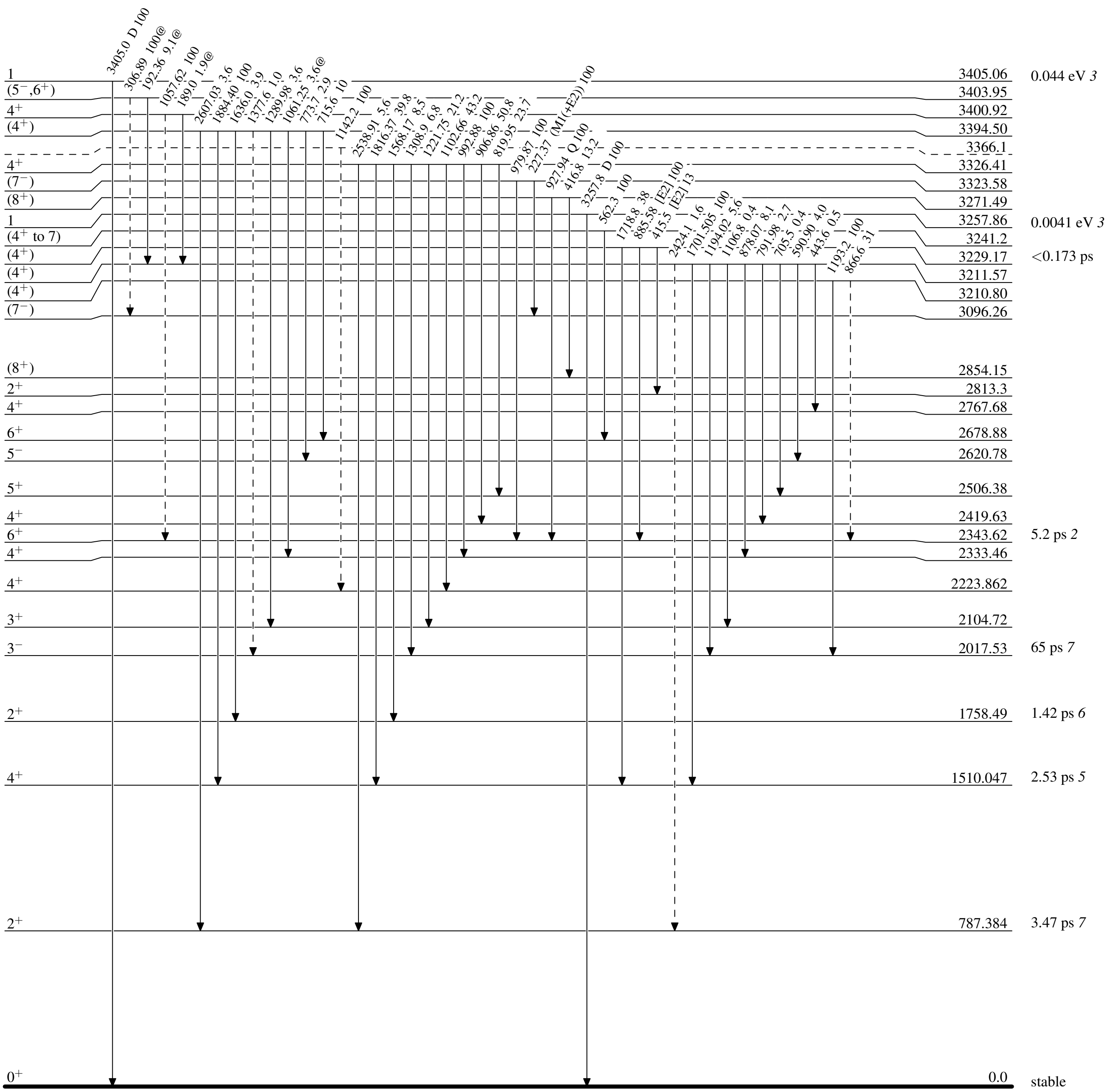
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level
@ Multiply placed: intensity suitably divided

γ Decay (Uncertain)



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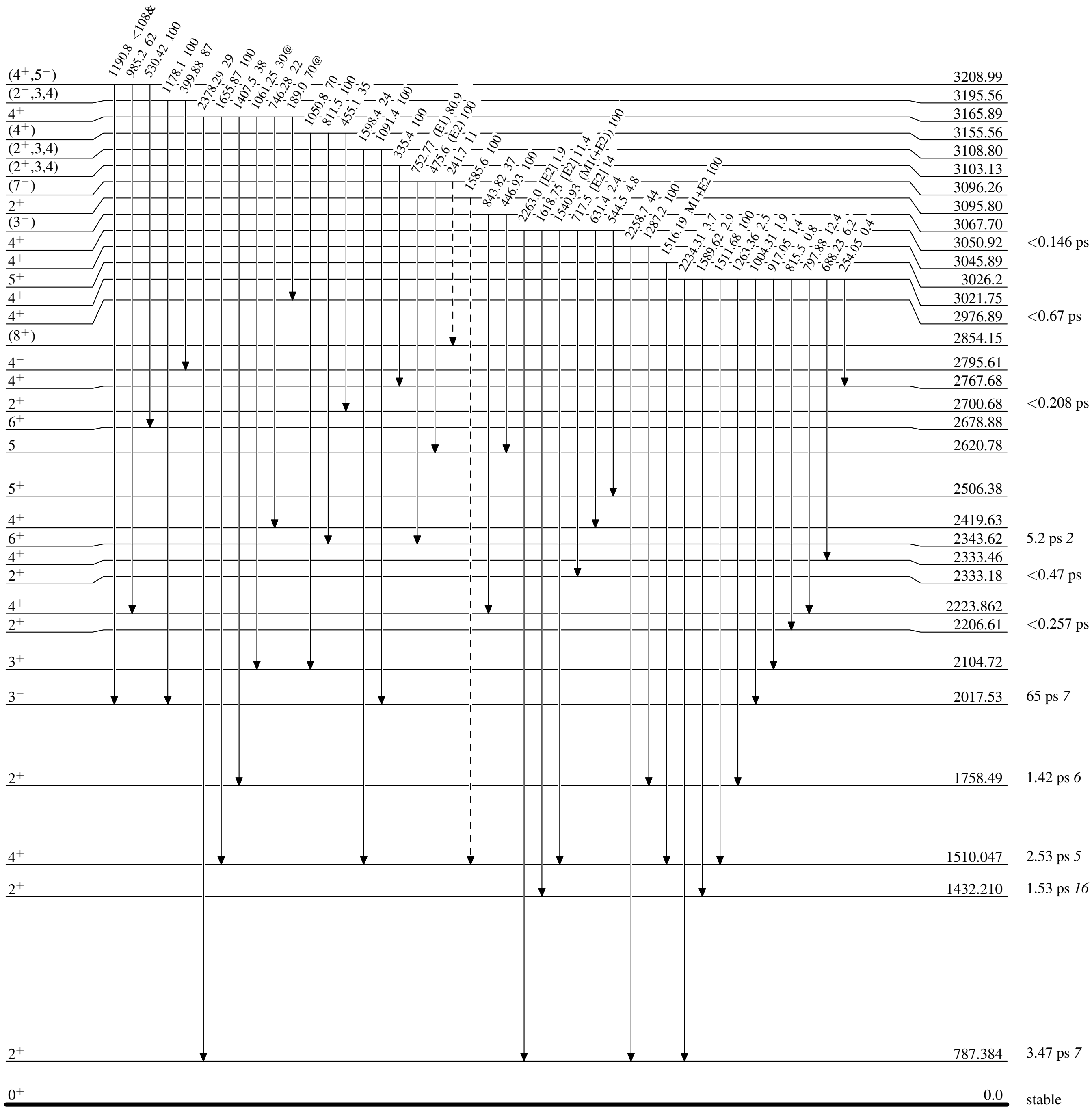
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)

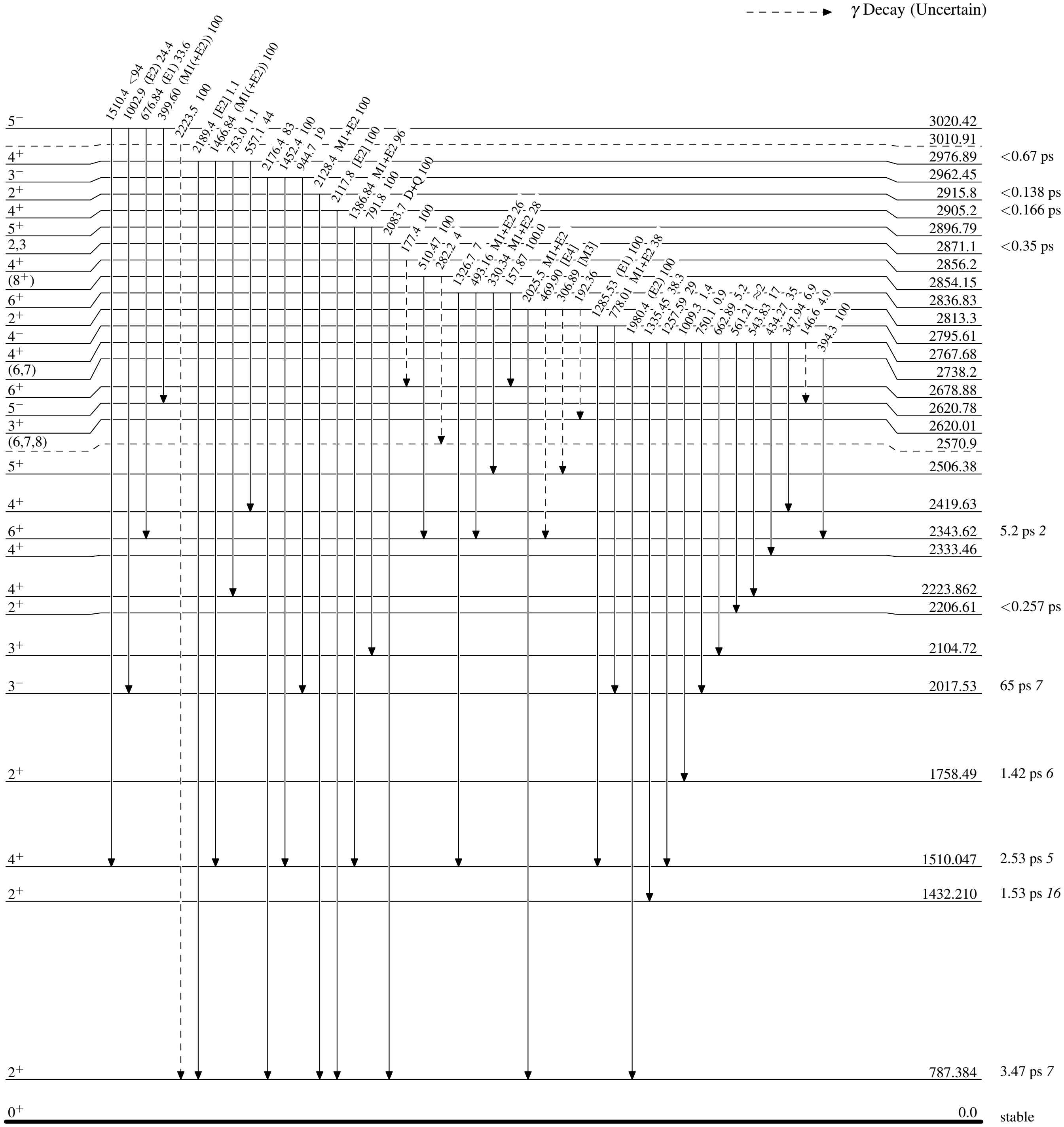


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

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

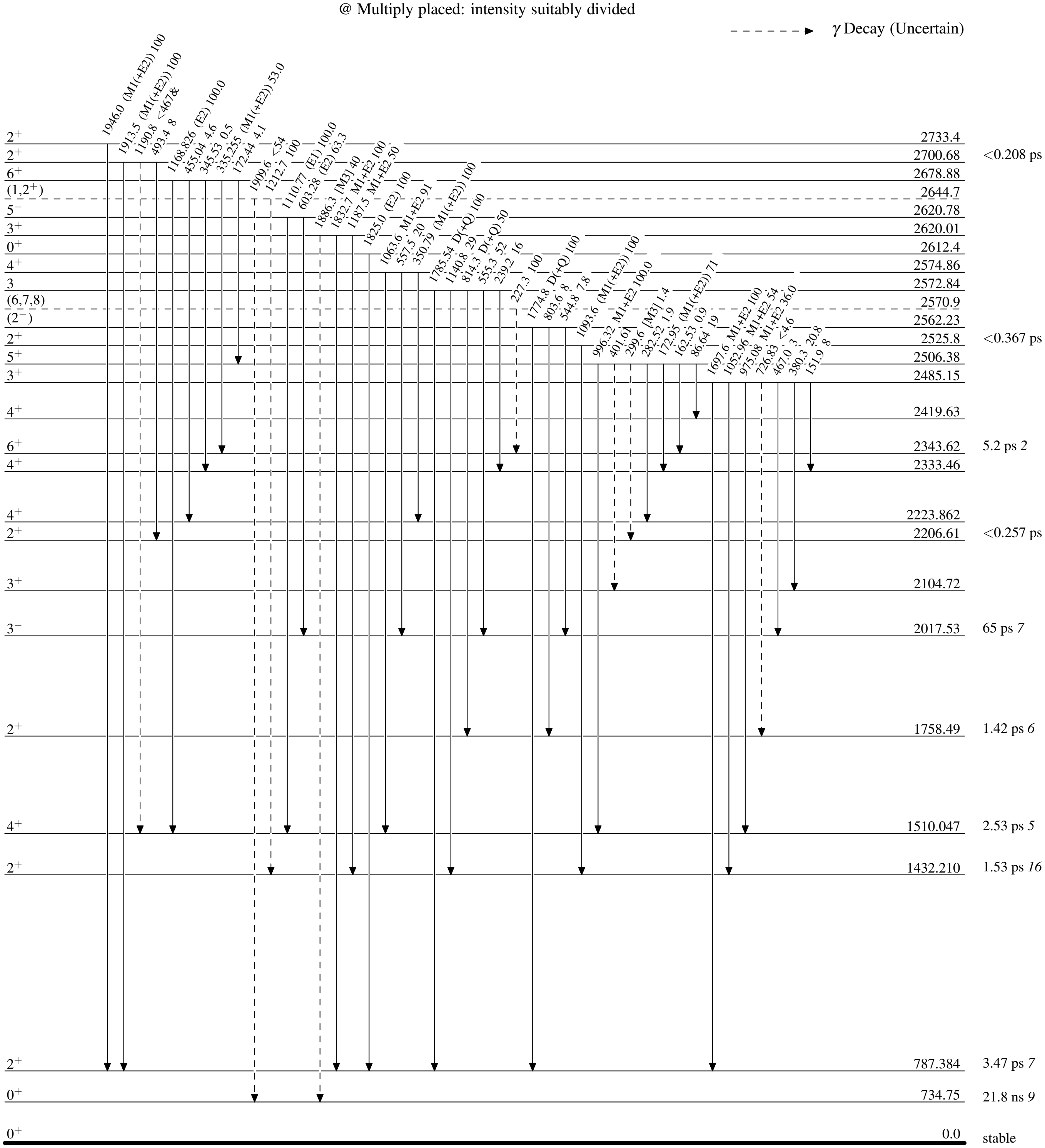


Adopted Levels, Gammas

Level Scheme (continued)

Legend

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

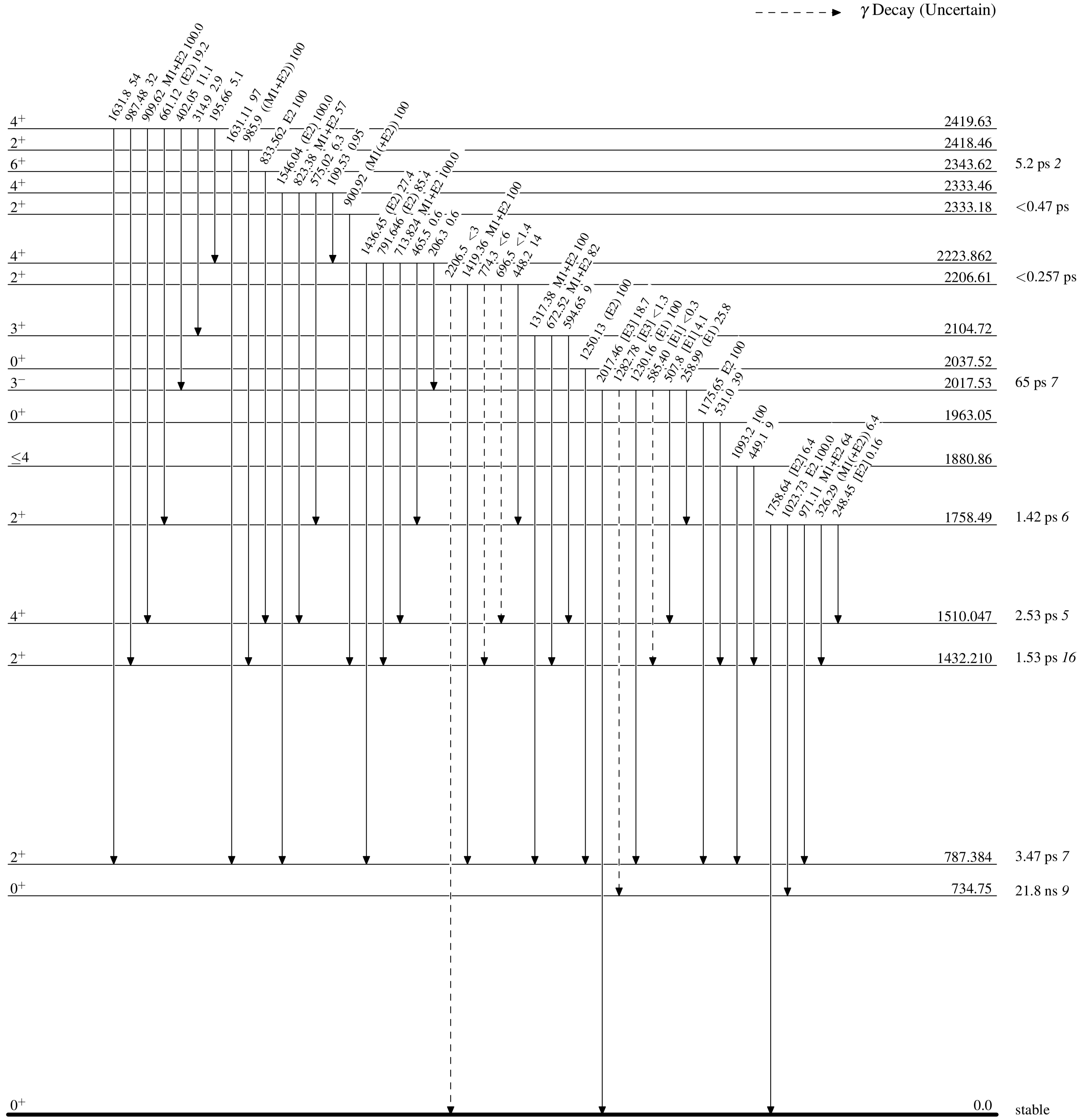


$^{98}_{42}Mo_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{98}_{42}Mo_{56}$

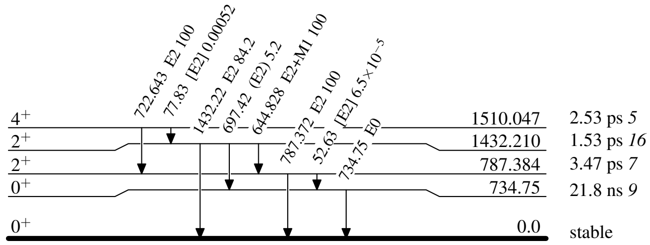
Adopted Levels, Gammas

Level Scheme (continued)

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

Legend

γ Decay (Uncertain)



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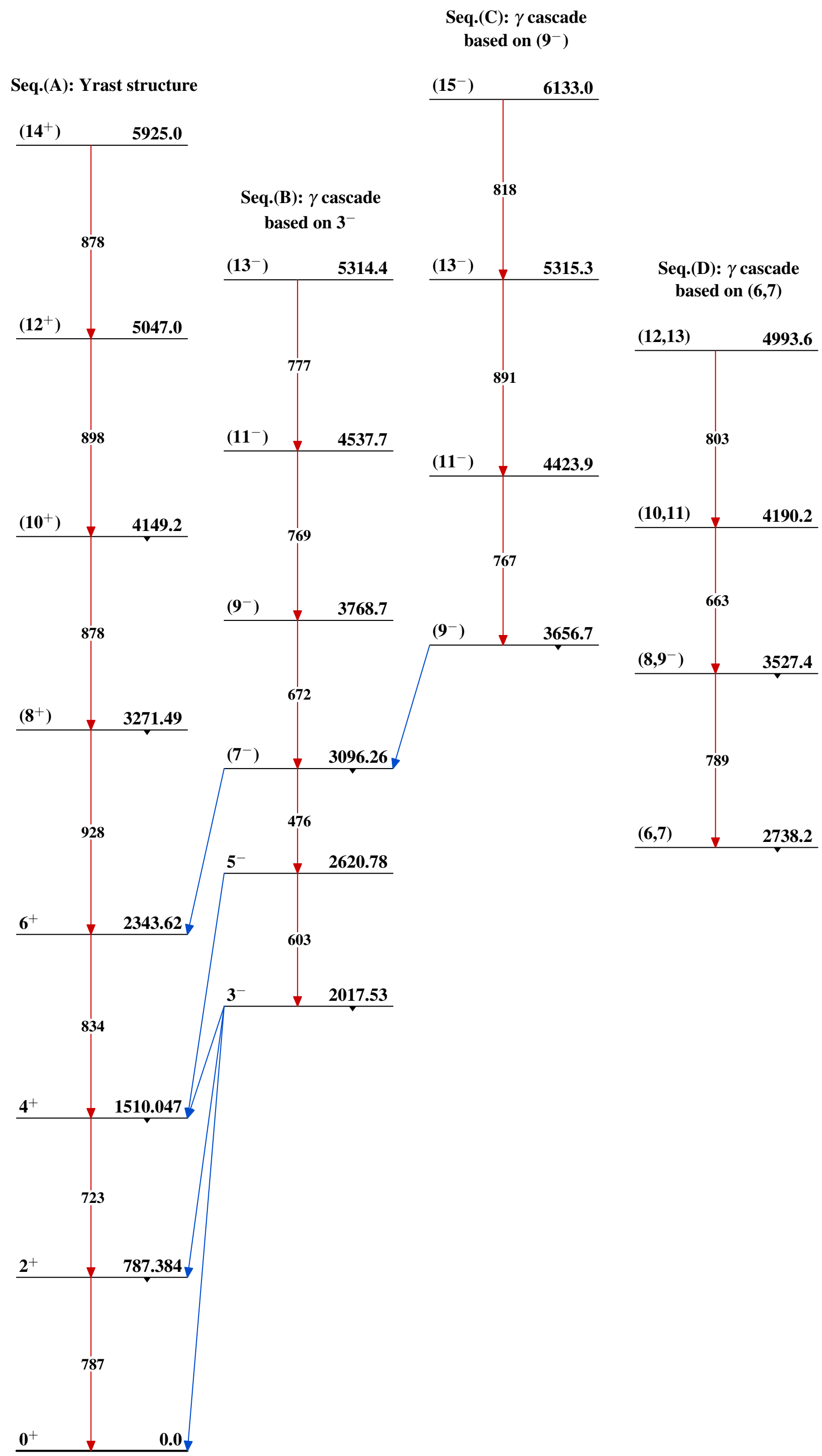
Adopted Levels, Gammas



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