Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	E. Browne, J. K. Tuli	NDS 145, 25 (2017)	1-Jul-2017

Q(β^-)=297.5 *10*; S(n)=8967 *3*; S(p)=6500.9 *9*; Q(α)=−2966.5 *10* 2017Wa10
Additional information 1.
Neutron resonances: 2006MuZX.
Isomeric shift: 1973Sh21.
Investigations of the hyperfine field by use of $\gamma\gamma$(H,θ) (1972Ra44,1971Wi08).
Measured total cross section ^{99}Tc(n,X) E=3-600 eV (1997GuZX).
Neutron resonance parameters (2000Gu13).
Other reactions:
^{99}Tc(n,n′γ): Measured cross section (2009Re01).
^{99}Tc(n,n′): E=0-20 MeV. Measured total and elastic cross sections (2008Ro01).
^{169}Tm(^{16}O,X): E=5.9 MeV/nucleon. Measured fission cross section (2008Si09).
^{136}Xe(p,X): E=1GeV/nucleon. Measured isotopic cross sections and kinetic energies (2007Na31).
Mo(p,xn): E=10-30 MeV. Measured production cross section (2006Kh03).
^{99}Mo(p,n): E=5-70 MeV. Measured production cross section (1993La29).
^{100}Mo(p,2n): E=6-38 MeV, (2003Ta09); E=7-65 MeV (1999Sc11).
^{99}Tc(n,X): E=0.003-150 keV. Measured total cross section (2000Gu13).
^{98}Mo(p,γ): E=6-45 MeV. Measured cross section (1999Sc11); E=1.5-3.0 MeV (1997Sa24).
^{99}Tc(γ,γ'): Induced emission of γ radiation from isomeric nuclei (1998Ol05), E=4 MeV bremsstrahlung, measured cross section (1995La26).
^{100}Mo(^{32}S,^{33}S): E=180 MeV. Measured elastic cross section (1995He17).
^{99}Ru(n,p): E=13-16.6 MeV. Measured cross section (1993Ki13).
^{96}Zr(^{7}Li,4nγ), E=35 MeV. Measured Eγ, Iγ, $\gamma\gamma$ coin, $\gamma\gamma$(θ) (DCO) Measured γ-ray multipolarities, deduced levels J, π, configurations, bands (2015Li17).Other: 2013De32.
^{2}He(^{136}Xe,X)^{99m}Tc E=500 MeV/nucleon (2015Al1).
Beta- decay: compilation (2015Mo10, 2012La25, 2011BeZW).
^{1}H(^{208}Pb,f), E=500 Mev/nucleon (2015Ro11).
^{100}Mo(p,2n)^{99}Tc, E < 40 MeV (2015Ta07, 2015Pu02, 2015Ta07, 2014Qa01, 2012Ga28).
^{235,238}U(n,f)^{99}Tc (2014Fa17).
^{232}Th(p,X)^{99}Tc,^{99}Mo (2013En02).
^{nat}Mo(α,X)^{99}Mo,^{99}Tc: 2012Di10.
Medical applications: 2012Ja04, 2011AlZW.
Nuclear structure: 2012Se10.
^{nat}Mo(d,X)^{99}Mo, ^{99}Tc: 2012Ta04, 2011Ta01.
^{100}Mo(p,X): Cyclotron production of ^{99m}Tc: 2011Ga50, 2011Le22, 2011Sc21.
^{232}Th(γ,f) E=50 − 3500 MeV: 2010De01.
^{nat}Mo(p,X) E=8.4 − 37.1 MeV; 2010Le13.

^{99}Tc Levels

Cross Reference (XREF) Flags

A	^{99}Mo β^- decay	F	^{99}Tc(d,d′)
B	^{99}Tc IT decay (6.0072 h)	G	Coulomb excitation
C	^{96}Zr(^{6}Li,3nγ)	H	^{98}Mo(^{3}He,pnγ)
D	^{98}Mo(p,p),(p,p′) IAR	I	^{96}Zr(^{7}Li,4nγ)
E	^{98}Mo(^{3}He,d)		

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Adopted Levels, Gammas (continued)

^{99}Tc Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$	XREF	Comments
0.0[#]	9/2$^+$	2.111×10^5 y *12*	ABCDEFGHI	%β^-=100 μ=+5.6847 *4* (2014StZZ) Q=−0.129 *6* (2014StZZ) J$^{\pi}$: from optical spectroscopy (1958Lo62), Electron-paramagnetic Res (1953Ke49); parity from L(^{3}He,d)=4. $T_{1/2}$: from 1984Co30. Others: 2.16×10^5 y *6* (1960Bo08), 2.12×10^5 y *4* (1951Fr05), 2.14x10^5 y *5* (1966Go10). μ: from 1952Wa02, NMR. Q: from 1982BuZE Atomic Beam Mag Res. Other: 1953Ke49.
140.5110[#] *10*	7/2$^+$	0.19 ns *2*	ABC EFGHI	μ=+4.48 *15* (2014StZZ) Additional information 2. J$^{\pi}$: M1+E2 γ to 9/2$^+$. E3 γ from 1/2$^-$. $T_{1/2}$: average of 0.237 ns *14* (1973Sh21), 0.192 ns *10* (1969St04), both from Mossbauer line width, 0.16 ns *2* (1971Mc02) from cece(t). Other: 0.11 ns *+8−6* from B(E2) in Coulomb excitation if δ(140.5γ)=+0.13 *4*. μ: from (1993Al23) IPAC. Others: 3.6 *9* (1973Sh21) Moss, +4.35 *85* (1969In07) IPAC.
142.6836[@] *11*	1/2$^-$	6.0072 h *9*	ABC E HI	%IT=99.9963 *6*; %β^-=0.0037 *6* (1980Al02) Additional information 3. E(level): From ^{99}Tc IT Decay (6.0072 h). J$^{\pi}$: from atomic beam magnetic resonance (1974Ru05). M4 γ to +. $T_{1/2}$: Value corrected for ionization chamber source-holder instability (2014Un01). $T_{1/2}$: The half-life depends on the electronic environment of the nucleus. Variations up to ≈0.3% have been reported (see 1980Ma03). A value of 6.0067 h *5* is that evaluated and recommended in 2004Wo02. Other values: 6.0076 h *12* (2004Sc04), 6.0071 h *21* (2004Da05), 6.0072 h *9* (saline solution) and 6.012 h *3* (acid solution) both from (2002Un02), and 6.0016 *53* measured in (2011Ki45). 6.0072 h *9* (saline solution) and 6.017 h *2* (acid solution), both from 1982HoZJ, 6.0062 h *7* (1983Wa26), 6.006 h *2* (1980Ho17), 6.02 h *1*, 6.049 h *35* (both 1972Em01), 6.031 h *12* (1970Le07), 6.014 h *4* (1969Vu03), 6.006 h *7* (1966Go22), 5.996 h *11* (1958Be92). Others: Evaluated data (2004WoZZ); 1994Ya02.
181.09423[#] *17*	5/2$^+$	3.61 ns *7*	A C EFGHI	μ=+3.48 *4* (2014StZZ) μ: from 1995Hi06, NMR on oriented nuclei, sign from +3.62 *5* (1993Al23) IPAC, +3.291 *63* (1971Wi08) TDPAC. Others: +3.6 *3* (1965An02,1959Bo43,1968Be75) IPAC, +3.8 *5* (1958Ra16). J$^{\pi}$: L(^{3}He,d)=2. E2 γ to 9/2$^+$. $T_{1/2}$: from γce(t) (1971Mc02). Some other measurements give values of about 3.4 ns (see β^- decay). Other: 3.8 ns *3* (α,2nγ) (1990An21), 3.44 ns 3 (1993Al23).
509.096[@] *10*	3/2$^-$		A C EF HI	J$^{\pi}$: L(^{3}He,d)=1; γ to 1/2$^-$ is ΔJ=1, D in (^{6}Li,3nγ).
534.44 *8*	(3/2$^+$)		A EF	J$^{\pi}$: L(^{3}He,d)=(2); γ to 1/2$^-$.
536.89 *10*			C	
612.37[@] *3*	5/2$^-$		C HI	J$^{\pi}$: γ to 1/2$^-$ is ΔJ=2, Q; excit.
625.53 *4*	(9/2)$^+$		C EFGH	J$^{\pi}$: L(^{3}He,d)=4; excit in (^{6}Li,3nγ).
652.77 *17*			C	
671.477[&] *11*	3/2$^-$		A C EF H	J$^{\pi}$: L(^{3}He,d)=1; γ to 1/2$^-$ is ΔJ=1, D in (^{6}Li,3nγ).
719.41 *4*	7/2$^+$		C E H	J$^{\pi}$: L(^{3}He,d)=4; γ to 5/2$^+$ is ΔJ=1, D.
726.75[#] *5*	11/2$^+$	1.8 ps *2*	C FGHI	J$^{\pi}$: γ to 7/2$^+$ is ΔJ=2, E2; γ to 9/2$^+$ is ΔJ=1, D+Q. $T_{1/2}$: from Doppler shift attenuation in Coul excit (1976Sv02).

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Adopted Levels, Gammas (continued)

^{99}Tc Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$	XREF	Comments
739.212 *25*	(7/2+)		HI	
761.782 *17*	5/2+	0.7 ps *4*	A C EFGH	Jπ: L(^{3}He,d)=2; Coulomb excitation excludes 3/2+. $T_{1/2}$: from Doppler shift attenuation in Coul excit (1976Sv02).
761.93[#] *5*	13/2+	2.4 ps *3*	C FGHI	Jπ: γ to 9/2+ is ΔJ=2, E2; excit. $T_{1/2}$: from Doppler shift attenuation in Coul excit (1976Sv02).
884.260[a] *25*	(5/2−)		H	
920.580[b] *11*	1/2+	<0.1 ns	A C EF H	Jπ: L(^{3}He,d)=0. $T_{1/2}$: from β− decay.
986.19[@] *4*	(7/2−)		C HI	Jπ: γ to 5/2− is ΔJ=1, (M1+E2); γ to 9/2+.
1004.068 *20*	3/2(−)		A H	Jπ: E1 to 5/2+. 1998Cr01 suggest π=(+) and assign it to 1/2+[431] band but their excitation function lies within the values for π=−.
1017.46 *7*	(3/2+,5/2+)		C EF	Jπ: L(^{3}He,d)=(2), D+Q γ to 5/2+.
1019.76[b] *4*	(5/2+)		H	
1072.23 *17*	(7/2+)		A Ef	XREF: E(1081). Jπ: γ's to (3/2+) and 9/2+. L(^{3}He,d)=(4) consistent with 7/2+.
1081.46 *8*	(11/2+)	0.9 ps *3*	C FGH	Jπ: γ to 9/2+ is ΔJ=1, D(+Q); γ to 7/2+ is ΔJ=2, E2. $T_{1/2}$: from Doppler shift attenuation in Coul excit (1976Sv02).
1127.40 *20*			H	
1129.105 *22*	(3/2)−		A H	Jπ: log *ft*=8.5, log $f^{1u}t$=8.1 from 1/2+. M1,E2 γ to 3/2−, excit.
1135.04[&] *4*	(5/2−)		H	
1141.854 *14*	3/2+		A E H	Jπ: log *ft*=7.4, log $f^{1u}t$=6.9 from 1/2+; L=2 in (^{3}He,d).
1149.43 *5*	(9/2+)		C H	Jπ: from excit, γ(θ), 181γ(θ) consistent with Δπ=no.
1172.05 *11*	3/2+		A	Jπ: log *ft*=9.2, log $f^{1u}t$=8.7 from 1/2+. M1(+E2) γ to 5/2+.
1176.47[@] *4*	9/2−		C HI	Jπ: γ to 5/2− is ΔJ=2, E2; no γ to J<5/2.
1198.89 *5*	(3/2−)		A H	Jπ: log *ft*=8.7, log $f^{1u}t$=8.1 from 1/2+; γ to 3/2−. Excit, DCO.
1203.46 *5*	(9/2+)		H	Jπ: from excit, γ(θ), DCO.
1205.0 *10*	(3/2)−		C EF	Jπ: L=3 in (d,d′); L=(1) in (^{3}He,d).
1207.26[a] *3*	(7/2−)		H	
1243.78[b] *5*	(7/2+)		H	
1268.69 *8*	(7/2+,9/2,11/2+)		C	Jπ: γ's to 7/2+ and (11/2+).
1306.28 *5*	(7/2+)		H	
1309.11 *15*			H	
1320.74 *4*	3/2−		E H	Jπ: L(^{3}He,d)=1, excit, γ(θ).
1329.40[&] *4*	(7/2−)		C H	Jπ: γ's to 7/2+ and 11/2+, and rotational structure.
1405.45 *5*	(1/2−,3/2−)		E H	
1426.22 *7*	(9/2+,7/2+)		H	
1435 *4*	(3/2)		E	Jπ: L(^{3}He,d)=2 from 1977Ch06. L(^{3}He,d)=1 from 1977Pe18. J=3/2 from J-dependence (1977Pe18).
1444.13 *5*	(3/2+,5/2)		H	
1469.0 *10*			C	
1494.16 *12*			H	
1503.71 *4*	(3/2+,5/2+)		E H	Jπ: L(^{3}He,d)=(2).
1507.04 *6*	(13/2+)		C H	Jπ: DCO, consistent only with Δπ=no for 745γ, 780γ; γ to 9/2+.
1526.40[#] *9*	(15/2+)		C HI	
1543.17? *21*			C	
1552.12 *15*	(3/2+)		H	
1552.48 *5*	(7/2+)		H	
1554.56 *20*	1/2+		E H	Jπ: L(^{3}He,d)=0.
1563.12 *5*	(5/2+,7/2+,9/2+)		H	
1565.06 *5*	(5/2+,7/2+,9/2+)		H	
1566.21 *20*	(11/2+)		H	
1581.20 *5*	(11/2+,13/2+)		C H	
1584.97[#] *7*	17/2+		C HI	Jπ: γ to 13/2+ is ΔJ=2, E2; DCO, consistent only with Δπ=no

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Adopted Levels, Gammas (continued)

^{99}Tc Levels (continued)

E(level)[†]	Jπ[‡]	XREF	Comments
			for 823γ,
1604.43[@] *10*	(11/2⁻)	C HI	Jπ: γ to 7/2⁻ is ΔJ=2, E2.
1611.37 *15*	(1/2⁻,3/2⁻,5/2⁻)	H	Additional information 4.
1621.92 *20*		H	
1659.02 *5*	(3/2⁺,5/2⁺,7/2⁺)	H	
1678.14 *5*	(5/2)⁺	E H	Jπ: L(^{3}He,d)=2. Jπ=5/2⁺,7/2⁺,9/2⁺ from DCO.
1747.46[@] *8*	13/2⁻	C HI	Jπ: γ to 9/2⁻ is ΔJ=2, E2; excit.
1752.94 *21*		H	
1760 *5*	3/2⁺,5/2⁺	E	Jπ: L(^{3}He,d)=2.
1774.68 *8*	(5/2⁻,7/2,9/2⁻)	C	Jπ: γ's to 5/2⁻ and 9/2⁻.
1790.34 *21*		H	
1803 *5*	(1/2⁺)	E	Jπ: L(^{3}He,d)=(0).
1808.31 *20*	(3/2⁺,5/2⁺)	H	
1823.65 *15*	(3/2⁺,5/2⁺)	E H	Jπ: excit, L(^{3}He,d)=(2).
1853.28 *21*		H	
1874.89 *20*		H	Additional information 5.
1911 *6*	1/2⁺	E	Jπ: L(^{3}He,d)=0.
1947.28 *21*		H	
1982 *6*	(3/2⁺,5/2⁺)	E	Jπ: L(^{3}He,d)=(2).
2000 *6*	(3/2⁺,5/2⁺)	E	Jπ: L(^{3}He,d)=(2).
2064 *6*		E	
2072.90 *21*		I	
2111 *6*	3/2⁺,5/2⁺	E	Jπ: L(^{3}He,d)=2.
2155.19 *14*	(17/2⁺)	C I	Jπ: γ to 13/2⁺ is ΔJ=2, E2.
2160 *6*	(3/2⁺,5/2⁺)	E	Jπ: L(^{3}He,d)=(2).
2176 *7*	(1/2⁺)	E	Jπ: L(^{3}He,d)=(0).
2203 *7*	3/2⁺,5/2⁺	E	Jπ: L(^{3}He,d)=2.
2222.95[@] *9*	(15/2⁻)	C I	Jπ: γ to 13/2⁻ is ΔJ=1, D; possible member of band.
2241.7 *3*	(17/2⁺)	I	
2281 *7*	1/2⁺	E	Jπ: L(^{3}He,d)=0.
2330.05[@] *8*	17/2⁻	C HI	Jπ: γ to 13/2⁻ is ΔJ=2, E2; excit.
2363.40 *21*		E H	
2396 *7*	(3/2⁺,5/2⁺)	E	Jπ: L(^{3}He,d)=(2).
2414 *7*	(3/2⁺,5/2⁺)	E	Jπ: L(^{3}He,d)=(2).
2424.28 *13*	(17/2⁺)	C I	
2459.1 *3*		I	
2466 *7*	(1/2⁺)	E	Jπ: L(^{3}He,d)=(0).
2486 *7*	(1/2⁺)	E	Jπ: L(^{3}He,d)=(0).
2487.28[#] *10*	19/2⁺	C I	
2502.22[c] *9*	17/2⁻	I	Jπ: γ rays to 13/2⁻, 15/2⁻, 17/2⁻, and 15/2⁺.
2505.6 *3*		I	
2522 *8*	3/2⁺,5/2⁺	E	Jπ: L(^{3}He,d)=2.
2553.03[#] *15*	(21/2⁺)	C I	Jπ: γ to 17/2⁺ is ΔJ=2, E2.
2581 *8*	3/2⁺,5/2⁺	E	
2588.77 *10*		C	
2611 *8*		E	
2646.85[@] *9*	19/2⁻	C I	Jπ: γ to 17/2⁻ is ΔJ=1, M1; no γ to J<15/2.
2653 *8*	(1/2⁺)	E	Jπ: L(^{3}He,d)=(0).
2675 *8*	(1/2⁺)	E	Jπ: L(^{3}He,d)=(0).
2703.57 *12*	21/2⁺	C I	
2714 *8*	3/2⁺,5/2⁺	E	Jπ: L(^{3}He,d)=2.
2758.5 *3*	(19/2⁺)	I	
2760.82[c] *11*	19/2⁻	I	
2765 *8*	3/2⁺,5/2⁺	E	Jπ: L(^{3}He,d)=2.

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Adopted Levels, Gammas (continued)

^{99}Tc Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	XREF		Comments
2785.16[@] *11*	21/2$^-$	C	I	J$^{\pi}$: γ to 19/2$^-$ is ΔJ=1, D; γ to 17/2$^-$ is ΔJ=2, Q.
2846 *9*	3/2$^+$,5/2$^+$	E		J$^{\pi}$: L(^{3}He,d)=2.
2855.89 *14*	23/2$^+$	C	I	
2916 *9*		E		Additional information 6. Possibly a doublet with J$^{\pi}$=1/2$^+$ and 3/2$^+$, 5/2$^+$.
2997 *9*	3/2$^+$,5/2$^+$	E		J$^{\pi}$: L(^{3}He,d)=2.
3066 *9*	3/2$^+$,5/2$^+$	E		J$^{\pi}$: L(^{3}He,d)=2. Additional information 7.
3108.32[c] *13*	21/2$^-$		I	
3115 *9*	1/2$^+$	E		J$^{\pi}$: L(^{3}He,d)=0.
3129.71[@] *13*	(23/2$^-$)	C	I	J$^{\pi}$: γ to 21/2$^-$ is M1, no γ to J<21/2.
3186 *10*	(3/2$^+$,5/2$^+$)	E		J$^{\pi}$: L(^{3}He,d)=(2).
3203.7? *3*		C		
3245 *10*	(1/2$^+$)	E		J$^{\pi}$: L(^{3}He,d)=(0).
3295.96[c] *21*	23/2$^-$	C	I	
3376.75[@] *13*	(25/2$^-$)	C	I	J$^{\pi}$: γ to 21/2$^-$ is ΔJ=2, Q.
3559.24 *17*	23/2$^+$		I	
3622.91 *15*	(23/2,25/2)	C	I	J$^{\pi}$: γ to (21/2,23/2) is ΔJ=1, D; no γ to J<21/2.
3649.06[#] *17*	(25/2$^+$)	C	I	J$^{\pi}$: γ to 21/2$^+$ is ΔJ=2, Q.
3814.35 *17*		C		
3883.83[@] *21*	27/2$^-$	C	I	
3910.85 *21*	25/2$^+$		I	
4027.18 *19*	27/2$^-$		I	
4066.78 *18*	(25/2$^+$)		I	
4177.92? *21*		C		
4203.6[@] *3*	29/2$^-$		I	
4303.28[#] *19*	27/2$^+$		I	
4724.88 *22*	29/2$^+$	A	I	
4785.6[@] *3*	(31/2$^-$)		I	
4915.9 *4*	29/2$^+$		I	
5076.48[#] *23*	31/2$^+$		I	
5341.1[@] *3*	33/2$^-$		I	
5596.08[#] *25*	(33/2$^+$)		I	
6000.6[#] *3*	(35/2$^+$)		I	

[†] Deduced by evaluators from least-squares fit to adopted γ-ray energies, unless otherwise specified.

[‡] Spins and parities for which no arguments are given are proposed by the authors of (^{3}He,pnγ),(^{7}Li,4nγ) on the basis of angular distributions, excitation functions, and decay patterns. Authors do not give DCO ratios but give only A_2 values in most cases. Evaluators have not considered many of these assignments as definite.

[#] Band(A): π5/2[422] Quasi band.

[@] Band(B): π1/2[301] band.

[&] Band(C): π3/2[301] band.

[a] Band(D): π5/2[303] band.

[b] Band(E): π1/2[431] band.

[c] Band(F): Band based on 17/2$^-$.

Adopted Levels, Gammas (continued)

γ(^{99}Tc)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	$I_{(\gamma+ce)}$[@]	Comments
140.5110	7/2$^+$	140.511 *1*	100	0.0	9/2$^+$	M1+E2	+0.13 *4*	0.113 *4*		B(M1)(W.u.)=0.037 *4*; B(E2)(W.u.)=30 *19* α(K)=0.099 *3*; α(L)=0.0120 *5*; α(M)=0.00218 *9* α(N)=0.000345 *14*; α(O)=2.22×10^{-5} *6*
142.6836	1/2$^-$	2.1726 *4*		140.5110	7/2$^+$	E3		1.4×10^{10}	100	E$_\gamma$: Value recommended in 2000He14. ce(M)/(γ+ce)=0.884 *6* ce(N)/(γ+ce)=0.1165 *22*; ce(O)/(γ+ce)=2.54×10^{-6} *5* α(M)=1.211×10^{10} *17* α(N)=1.596×10^{9} *23*; α(O)=3.49×10^{4} *5* B(E3)(W.u.)=0.0299 *5*
		142.63 *3*		0.0	9/2$^+$	M4		40.3	0.90 *8*	B(M4)(W.u.)=8.8 *8* ce(K)/(γ+ce)=0.706 *8*; ce(L)/(γ+ce)=0.220 *4*; ce(M)/(γ+ce)=0.0430 *9* ce(N)/(γ+ce)=0.00652 *13*; ce(O)/(γ+ce)=0.000259 *5* α(K)=29.2 *4*; α(L)=9.08 *13*; α(M)=1.778 *25* α(N)=0.269 *4*; α(O)=0.01071 *15*
181.09423	5/2$^+$	40.58323 *17*	17.3 *5*	140.5110	7/2$^+$	M1(+E2)	+0.008 *8*	3.72		α(K)=3.24 *5*; α(L)=0.394 *6*; α(M)=0.0717 *11* α(N)=0.01135 *17*; α(O)=0.000734 *11* B(M1)(W.u.)=0.0080 *4*
		181.063 *8*	100.0 *14*	0.0	9/2$^+$	E2		0.1480		E$_\gamma$: Value recommended in 2000He14. B(E2)(W.u.)=15.1 *5* α(K)=0.1252 *18*; α(L)=0.0188 *3*; α(M)=0.00344 *5* α(N)=0.000523 *8*; α(O)=2.44×10^{-5} *4*
509.096	3/2$^-$	366.421 *15*	100	142.6836	1/2$^-$	M1+E2		0.0111 *21*		α(K)=0.0097 *18*; α(L)=0.0012 *3*; α(M)=0.00021 *5* α(N)=3.4×10^{-5} *8*; α(O)=2.1×10^{-6} *3*
534.44	(3/2$^+$)	391.7 *4*	100	142.6836	1/2$^-$					
536.89		355.8 *1*	100	181.09423	5/2$^+$					
612.37	5/2$^-$	103.5 *1*	7.7 *7*	509.096	3/2$^-$	(M1+E2)		0.68 *43*		α(K)=0.56 *34*; α(L)=0.102 *76*; α(M)=0.019 *14* α(N)=0.0028 *21*; α(O)=1.06×10^{-4} *56*
		469.8 *1*	100.0 *10*	142.6836	1/2$^-$	E2		0.00607		α(K)=0.00528 *8*; α(L)=0.000647 *9*; α(M)=0.0001174 *17* α(N)=1.84×10^{-5} *3*; α(O)=1.122×10^{-6} *16*

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
625.53	(9/2)$^+$	444.4 *2*	2	181.09423	5/2$^+$				
		484.98 *5*	20	140.5110	7/2$^+$				
		625.57 *5*	100	0.0	9/2$^+$	(M1+E2)	<−1	0.00255 *6*	α(K)=0.00224 *5*; α(L)=0.000257 *8*; α(M)=4.65×10^{-5} *14* α(N)=7.40×10^{-6} *20*; α(O)=4.93×10^{-7} *8*
652.77		471.7 *2*		181.09423	5/2$^+$				
		512.2 *3*		140.5110	7/2$^+$				
671.477	3/2$^-$	162.370 *15*	22.5 *11*	509.096	3/2$^-$				
		490.3 *1*	81 *14*	181.09423	5/2$^+$				
		528.788 *15*	100 *4*	142.6836	1/2$^-$	M1,E2		0.0040 *3*	α(K)=0.00350 *24*; α(L)=0.00041 *4*; α(M)=7.5×10^{-5} *8* α(N)=1.18×10^{-5} *11*; α(O)=7.6×10^{-7} *4*
719.41	7/2$^+$	538.31 *5*	100	181.09423	5/2$^+$	D			
		578.9 *2*	6.7	140.5110	7/2$^+$				
726.75	11/2$^+$	101.3 *2*		625.53	(9/2)$^+$				I$_\gamma$: weak. Seen only in γγ in Coul ex.
		586.2 *1*	16 *3*	140.5110	7/2$^+$	E2		0.00319	α(K)=0.00279 *4*; α(L)=0.000333 *5*; α(M)=6.03×10^{-5} *9* α(N)=9.52×10^{-6} *14*; α(O)=5.98×10^{-7} *9* B(E2)(W.u.)=23 *5*
		726.7 *1*	100 *2*	0.0	9/2$^+$	M1+E2	+0.9 *2*	0.00178 *3*	α(K)=0.001566 *22*; α(L)=0.000180 *3*; α(M)=3.26×10^{-5} *5* α(N)=5.18×10^{-6} *8*; α(O)=3.44×10^{-7} *5* B(M1)(W.u.)=0.015 *4*; B(E2)(W.u.)=22 *6*
739.212	(7/2$^+$)	558.17 *5*	10.8	181.09423	5/2$^+$				
		598.68 *5*	33.8	140.5110	7/2$^+$				
		739.15 *5*	100	0.0	9/2$^+$	M1+E2		1.71×10^{-3}	α(K)=0.001504 *21*; α(L)=0.000173 *4*; α(M)=3.13×10^{-5} *7* α(N)=4.98×10^{-6} *10*; α(O)=3.30×10^{-7} *7*
761.782	5/2$^+$	580.51 *7*	16.4 *14*	181.09423	5/2$^+$	(M1+E2)		0.00313 *16*	α(K)=0.00274 *13*; α(L)=0.000321 *23*; α(M)=5.8×10^{-5} *4* α(N)=9.2×10^{-6} *6*; α(O)=5.99×10^{-7} *18*
		621.1 *1*	100 *5*	140.5110	7/2$^+$	M1+E2	+0.19 *6*	0.00256	B(M1)(W.u.)=0.09 *6*; B(E2)(W.u.)=8 *7* α(K)=0.00225 *4*; α(L)=0.000256 *4*; α(M)=4.63×10^{-5} *7* α(N)=7.38×10^{-6} *11*; α(O)=4.99×10^{-7} *7*
		761.78 *8*	18	0.0	9/2$^+$			0.001589 *23*	α=0.001589 *23*; α(K)=0.001392 *20*; α(L)=0.0001625 *23*; α(M)=2.94×10^{-5} *5*; α(N+..)=4.96×10^{-6} α(N)=4.66×10^{-6} *7*; α(O)=3.02×10^{-7} *5*
761.93	13/2$^+$	(35.1[&] *2*)	[&]	726.75	11/2$^+$	(M1+E2)		29 *24*	α(K)=15 *11*; α(L)=12 *11*; α(M)=2.2 *21* α(N)=0.30 *29*; α(O)=0.0026 *16* E$_\gamma$: From level-energy difference.

$^{99}_{43}Tc_{56}$-7

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
761.93	13/2$^+$	762.0 *1*	100	0.0	9/2$^+$	E2		1.59×10^{-3}	α(K)=0.001391 *20*; α(L)=0.0001623 *23*; α(M)=2.94×10^{-5} *5* α(N)=4.65×10^{-6} *7*; α(O)=3.01×10^{-7} *5* B(E2)(W.u.)=34 *5*
884.260	(5/2$^-$)	212.94 *5*	86	671.477	3/2$^-$				
		271.94 *5*	100	612.37	5/2$^-$				
		375.7 *2*	7.8	509.096	3/2$^-$				
		702.94 *5*	41.2	181.09423	5/2$^+$				
		743.8 *2*	43.1	140.5110	7/2$^+$				
920.580	1/2$^+$	158.782 *15*	0.144 *6*	761.782	5/2$^+$				
		249.03 *3*	0.032 *4*	671.477	3/2$^-$				
		411.491 *15*	0.12 *2*	509.096	3/2$^-$	E1		0.00255	B(E1)(W.u.)>4.0×10^{-8} α(K)=0.00225 *4*; α(L)=0.000254 *4*; α(M)=4.59×10^{-5} *7* α(N)=7.28×10^{-6} *11*; α(O)=4.78×10^{-7} *7*
		739.50 *2*	100 *3*	181.09423	5/2$^+$	E2		1.71×10^{-3}	B(E2)(W.u.)>0.69 α(K)=0.001501 *21*; α(L)=0.0001756 *25*; α(M)=3.18×10^{-5} *5* α(N)=5.03×10^{-6} *7*; α(O)=3.25×10^{-7} *5*
		777.921 *20*	35.3 *8*	142.6836	1/2$^-$	E1		5.85×10^{-4}	B(E1)(W.u.)>1.7×10^{-6} α(K)=0.000515 *8*; α(L)=5.76×10^{-5} *8*; α(M)=1.040×10^{-5} *15* α(N)=1.654×10^{-6} *24*; α(O)=1.111×10^{-7} *16*
986.19	(7/2$^-$)	266.7 *2*	16.7	719.41	7/2$^+$				
		373.80 *5*	100	612.37	5/2$^-$	(M1+E2)	−2.5 *5*	0.0118 *3*	α(K)=0.01028 *25*; α(L)=0.00129 *4*; α(M)=0.000234 *7* α(N)=3.66×10^{-5} *10*; α(O)=2.17×10^{-6} *5*
		477.1 *2*	14.8	509.096	3/2$^-$	(E2)		0.00579	α(K)=0.00504 *7*; α(L)=0.000617 *9*; α(M)=0.0001119 *16* α(N)=1.757×10^{-5} *25*; α(O)=1.072×10^{-6} *15*
		805.12 *5*	40.7	181.09423	5/2$^+$	(E1)		5.45×10^{-4}	α(K)=0.000480 *7*; α(L)=5.36×10^{-5} *8*; α(M)=9.67×10^{-6} *14* α(N)=1.540×10^{-6} *22*; α(O)=1.035×10^{-7} *15*
		845.6 *2*	18.5	140.5110	7/2$^+$	(E1)		4.93×10^{-4}	α(K)=0.000434 *6*; α(L)=4.84×10^{-5} *7*; α(M)=8.74×10^{-6} *13* α(N)=1.392×10^{-6} *20*; α(O)=9.37×10^{-8} *14*
		986.1 *2*		0.0	9/2$^+$				
1004.068	3/2$^{(-)}$	242.29 *8*	1.9 *4*	761.782	5/2$^+$	[E1]		0.01049	α(K)=0.00922 *13*; α(L)=0.001053 *15*; α(M)=0.000190 *3* α(N)=3.00×10^{-5} *5*; α(O)=1.92×10^{-6} *3*
		469.63 *7*	2.1 *4*	534.44	(3/2$^+$)				
		822.97 *2*	100 *2*	181.09423	5/2$^+$	E1		5.21×10^{-4}	α(K)=0.000459 *7*; α(L)=5.12×10^{-5} *8*; α(M)=9.24×10^{-6} *13* α(N)=1.472×10^{-6} *21*; α(O)=9.90×10^{-8} *14*
		861.2 *9*	5 *3*	142.6836	1/2$^-$				

$^{99}_{43}Tc_{56}$-8

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
1017.46	(3/2$^+$,5/2$^+$)	836.4 *1*	88 *5*	181.09423	5/2$^+$	D+Q			
		876.9 *1*	100 *8*	140.5110	7/2$^+$				
1019.76	(5/2$^+$)	838.65 *5*	67	181.09423	5/2$^+$				
		879.26 *5*	100	140.5110	7/2$^+$				
1072.23	(7/2$^+$)	537.79 *15*	100	534.44	(3/2$^+$)				
1081.46	(11/2$^+$)	319.2 *2*	≤7	761.93	13/2$^+$	[M1,E2]		0.017 *4*	α(K)=0.015 *4*; α(L)=0.00181 *52*; α(M)=3.28×10^{-4} *95* α(N)=5.1×10^{-5} *15*; α(O)=3.1×10^{-6} *6*
		940.9 *1*	54 *3*	140.5110	7/2$^+$	E2		9.52×10^{-4}	B(E2)(W.u.)=11 *4* α(K)=0.000835 *12*; α(L)=9.60×10^{-5} *14*; α(M)=1.737×10^{-5} *25* α(N)=2.76×10^{-6} *4*; α(O)=1.82×10^{-7} *3*
		1081.3 *2*	100 *7*	0.0	9/2$^+$	(M1+E2)		0.00072 *3*	α(K)=0.000630 *23*; α(L)=7.13×10^{-5} *21*; α(M)=1.29×10^{-5} *4* α(N)=2.05×10^{-6} *7*; α(O)=1.38×10^{-7} *6*
1127.40		618.3 *2*	100	509.096	3/2$^-$				
1129.105	(3/2)$^-$	457.60 *3*	29.3[a] *22*	671.477	3/2$^-$	M1,E2		0.0059 *7*	α(K)=0.0052 *6*; α(L)=0.00062 *9*; α(M)=0.000112 *16* α(N)=1.76×10^{-5} *24*; α(O)=1.12×10^{-6} *10*
		620.03 *4*	100[a] *5*	509.096	3/2$^-$				
		986.44 *4*	5.2[a] *18*	142.6836	1/2$^-$				
1135.04	(5/2$^-$)	250.82 *5*	20	884.260	(5/2$^-$)				
		522.71 *5*	100	612.37	5/2$^-$				
		625.87 *5*	35	509.096	3/2$^-$				
		953.9 *2*	25	181.09423	5/2$^+$				
1141.854	3/2$^+$	380.13 *8*	11.0 *9*	761.782	5/2$^+$	M1+E2	1.3 *6*	0.0104 *11*	α(K)=0.0091 *9*; α(L)=0.00111 *14*; α(M)=0.000202 *25* α(N)=3.2×10^{-5} *4*; α(O)=1.94×10^{-6} *16*
		960.75 *2*	100 *3*	181.09423	5/2$^+$				
		1001.34 *2*	5.8 *5*	140.5110	7/2$^+$				Mult.: M2(+E3) based on α(K)exp=0.0018 *3* from 1969Ba54 is not consistent with Δπ.
1149.43	(9/2$^+$)	968.31 *5*	100	181.09423	5/2$^+$				
		1009.0 *1*	91	140.5110	7/2$^+$				
1172.05	3/2$^+$	410.27 *10*	100	761.782	5/2$^+$	M1(+E2)	0.5 *5*	0.0073 *8*	α(K)=0.0064 *6*; α(L)=0.00075 *10*; α(M)=0.000136 *17* α(N)=2.2×10^{-5} *3*; α(O)=1.41×10^{-6} *11*
1176.47	9/2$^-$	190.6 *2*	3.7	986.19	(7/2$^-$)	M1+E2		0.086 *38*	α(K)=0.073 *32*; α(L)=0.0102 *53*; α(M)=0.00186 *96* α(N)=2.9×10^{-4} *15*; α(O)=1.50×10^{-5} *56*
		437.15 *5*	12.2	739.212	(7/2$^+$)	E1		0.00219	α(K)=0.00193 *3*; α(L)=0.000218 *3*; α(M)=3.94×10^{-5} *6* α(N)=6.25×10^{-6} *9*; α(O)=4.11×10^{-7} *6*

$^{99}_{43}Tc_{56}$-9

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	α[b]	Comments
1176.47	9/2⁻	564.17 *5*	100	612.37	5/2⁻	E2	0.00355	α(K)=0.00310 *5*; α(L)=0.000372 *6*; α(M)=6.75×10⁻⁵ *10* α(N)=1.063×10⁻⁵ *15*; α(O)=6.65×10⁻⁷ *10*
		1036.0 *3*	3.7	140.5110	7/2⁺	(E1)	3.31×10⁻⁴	α(K)=0.000292 *4*; α(L)=3.24×10⁻⁵ *5*; α(M)=5.85×10⁻⁶ *9* α(N)=9.33×10⁻⁷ *13*; α(O)=6.31×10⁻⁸ *9*
1198.89	(3/2⁻)	689.6 *9*	39 *17*	509.096	3/2⁻			
		1017.0 *10*	56 *22*	181.09423	5/2⁺			
		1056.20 *5*	100 *8*	142.6836	1/2⁻			
1203.46	(9/2⁺)	1062.5 *2*	100	140.5110	7/2⁺			
		1203.48 *5*	40.5	0.0	9/2⁺			
1207.26	(7/2⁻)	323.00 *5*	100	884.260	(5/2⁻)			
		535.72 *5*	90.5	671.477	3/2⁻			
		581.7 *2*	19.1	625.53	(9/2)⁺			
		1026.14 *5*	66.7	181.09423	5/2⁺			
		1207.32 *5*	61.9	0.0	9/2⁺			
1243.78	(7/2⁺)	618.2 *2*	13.3	625.53	(9/2)⁺			
		1062.72 *5*	100	181.09423	5/2⁺			
		1103.1 *2*	20.0	140.5110	7/2⁺			
		1243.4 *2*	56.7	0.0	9/2⁺			
1268.69	(7/2⁺,9/2,11/2⁺)	187.1 *1*	100 *12*	1081.46	(11/2⁺)			
		1128.3 *1*	50 *8*	140.5110	7/2⁺			
1306.28	(7/2⁺)	1125.20 *5*	100	181.09423	5/2⁺			
		1165.5 *2*	21.9	140.5110	7/2⁺			
1309.11		1128.4 *2*	100	181.09423	5/2⁺			
		1168.2 *2*	66.7	140.5110	7/2⁺			
1320.74	3/2⁻	708.30 *5*	68.8	612.37	5/2⁻			
		811.70 *5*	100	509.096	3/2⁻			
1329.40	(7/2⁻)	609.98 *5*	100	719.41	7/2⁺			
		716.97 *5*	93.3	612.37	5/2⁻			
		1188.94 *5*	100	140.5110	7/2⁺			
1405.45	(1/2⁻,3/2⁻)	733.95 *5*	100	671.477	3/2⁻			
		896.6 *2*	40.0	509.096	3/2⁻			
1426.22	(9/2⁺,7/2⁺)	699.47 *5*	100	726.75	11/2⁺			
		1285.7 *2*	93.3	140.5110	7/2⁺			
1444.13	(3/2⁺,5/2)	832.2 *2*	38.5	612.37	5/2⁻			
		935.2 *2*	46.2	509.096	3/2⁻			
		1262.99 *5*	100	181.09423	5/2⁺			
1469.0		707.1	100	761.93	13/2⁺			
1494.16		508.1 *2*	57.1	986.19	(7/2⁻)			
		609.8 *2*	85.7	884.260	(5/2⁻)			
		1353.6 *2*	100	140.5110	7/2⁺			
1503.71	(3/2⁺,5/2⁺)	764.55 *5*	100	739.212	(7/2⁺)			
		1363.13 *5*	80	140.5110	7/2⁺			
1507.04	(13/2⁺)	745.10 *5*	86.7	761.93	13/2⁺			

$^{99}_{43}Tc_{56}$-10

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	δ[#c]	α[b]	Comments
1507.04	(13/2$^+$)	780.28 *5*	100	726.75	11/2$^+$				
		1507.1 *2*	73.3	0.0	9/2$^+$				
1526.40	(15/2$^+$)	764.5 *2*	100.0 *7*	761.93	13/2$^+$	M1+E2	+0.7 *2*	1.58×10^{-3}	α(K)=0.001390 *20*; α(L)=0.0001588 *23*; α(M)=2.87×10^{-5} *5* α(N)=4.57×10^{-6} *7*; α(O)=3.06×10^{-7} *5*
		799.9 *2*	61.6 *7*	726.75	11/2$^+$	E2		1.41×10^{-3}	α(K)=0.001233 *18*; α(L)=0.0001433 *20*; α(M)=2.59×10^{-5} *4* α(N)=4.11×10^{-6} *6*; α(O)=2.67×10^{-7} *4*
1543.17?		367[d]	100	1176.47	9/2$^-$				
1552.12	(3/2$^+$)	410.3 *2*	54.6	1141.854	3/2$^+$				
		631.5 *2*	100	920.580	1/2$^+$				
1552.48	(7/2$^+$)	1371.36 *5*	100	181.09423	5/2$^+$				
		1412.2 *2*	60	140.5110	7/2$^+$				
1554.56	1/2$^+$	412.7 *2*	100	1141.854	3/2$^+$				
1563.12	(5/2$^+$,7/2$^+$,9/2$^+$)	1422.60 *5*	100	140.5110	7/2$^+$				
1565.06	(5/2$^+$,7/2$^+$,9/2$^+$)	1424.54 *5*	100	140.5110	7/2$^+$				
1566.21	(11/2$^+$)	1566.2 *2*	100.0	0.0	9/2$^+$				
1581.20	(11/2$^+$,13/2$^+$)	819.28 *5*	71.4	761.93	13/2$^+$				
		854.0 *2*	21.4	726.75	11/2$^+$				
		955.67 *5*	100.0	625.53	(9/2)$^+$				
1584.97	17/2$^+$	(58.6 *2*)		1526.40	(15/2$^+$)	(M1+E2)		4.9 *37*	α(K)=3.5 *25*; α(L)=1.11 *98*; α(M)=0.21 *19* α(N)=0.030 *26*; α(O)=6.2×10^{-4} *37* E_γ: From level-energy difference.
		77.9 *1*	8.0 *5*	1507.04	(13/2$^+$)				
		823.1 *1*	100.0 *11*	761.93	13/2$^+$	E2		1.31×10^{-3}	α(K)=0.001149 *16*; α(L)=0.0001333 *19*; α(M)=2.41×10^{-5} *4* α(N)=3.82×10^{-6} *6*; α(O)=2.49×10^{-7} *4*
1604.43	(11/2$^-$)	618.1 *1*	100	986.19	(7/2$^-$)	E2		0.00276	α(K)=0.00241 *4*; α(L)=0.000286 *4*; α(M)=5.19×10^{-5} *8* α(N)=8.19×10^{-6} *12*; α(O)=5.18×10^{-7} *8*
1611.37	(1/2$^-$,3/2$^-$,5/2$^-$)	726.9 *2*	62.5	884.260	(5/2$^-$)				
		999.2 *2*	100	612.37	5/2$^-$				
1621.92		1481.4 *2*	100	140.5110	7/2$^+$				
1659.02	(3/2$^+$,5/2$^+$,7/2$^+$)	1477.91 *5*	100	181.09423	5/2$^+$				
1678.14	(5/2)$^+$	939.4 *2*	45.5	739.212	(7/2$^+$)				
		1537.59 *5*	100.0	140.5110	7/2$^+$				
1747.46	13/2$^-$	142.6[&] *1*	6.7[&] *22*	1604.43	(11/2$^-$)	(M1+E2)		0.23 *13*	α(K)=0.19 *10*; α(L)=0.029 *19*; α(M)=0.0054 *35* α(N)=8.2×10^{-4} *51*; α(O)=3.8×10^{-5} *18*
		204.3 *2*	3.0 *6*	1543.17?					
		571.0 *1*	100.0 *9*	1176.47	9/2$^-$	E2		0.00343	α(K)=0.00300 *5*; α(L)=0.000359 *5*;

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Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[b]	Comments
								α(M)=6.51×10^{-5} *10* α(N)=1.026×10^{-5} *15*; α(O)=6.43×10^{-7} *9*
1747.46	13/2$^-$	985.60 *20*	10.7 *6*	761.93	13/2$^+$	D+Q		
1752.94		1127.4 *2*	100	625.53	(9/2)$^+$			
1774.68	(5/2$^-$,7/2,9/2$^-$)	598.1 *1*		1176.47	9/2$^-$			
		1162.4 *1*		612.37	5/2$^-$			
1790.34		1164.8 *2*	100	625.53	(9/2)$^+$			
1808.31	(3/2$^+$,5/2$^+$)	1627.2 *2*	100	181.09423	5/2$^+$			
1823.65	(3/2$^+$,5/2$^+$)	1061.9 *2*	89	761.782	5/2$^+$			
		1084.4 *2*	100	739.212	(7/2$^+$)			
1853.28		676.8 *2*	100	1176.47	9/2$^-$			
1874.89		1113.1 *2*	100	761.782	5/2$^+$			
1947.28		770.8[&] *2*	100[&]	1176.47	9/2$^-$			
2072.90		1346.1 *2*	100	726.75	11/2$^+$			
2155.19	(17/2$^+$)	570.2[&] *4*	18[&] *7*	1584.97	17/2$^+$	M1+E2	0.00328 *18*	α(K)=0.00287 *15*; α(L)=0.00034 *3*; α(M)=6.1×10^{-5} *5* α(N)=9.6×10^{-6} *7*; α(O)=6.27×10^{-7} *21*
		1393.3 *2*	100 *3*	761.93	13/2$^+$	E2	4.54×10^{-4}	α(K)=0.000357 *5*; α(L)=4.02×10^{-5} *6*; α(M)=7.26×10^{-6} *11* α(N)=1.156×10^{-6} *17*; α(O)=7.78×10^{-8} *11*; α(IPF)=4.87×10^{-5} *7*
2222.95	(15/2$^-$)	475.4 *1*	100 *21*	1747.46	13/2$^-$			
		618.0[&] *2*	31[&] *19*	1604.43	(11/2$^-$)	(E2)	0.00276	α(K)=0.00241 *4*; α(L)=0.000286 *4*; α(M)=5.19×10^{-5} *8* α(N)=8.19×10^{-6} *12*; α(O)=5.18×10^{-7} *8*
		1460.9[&] *2*	77[&] *4*	761.93	13/2$^+$	(E1)	3.90×10^{-4}	α(K)=0.0001583 *23*; α(L)=1.748×10^{-5} *25*; α(M)=3.15×10^{-6} *5* α(N)=5.03×10^{-7} *7*; α(O)=3.43×10^{-8} *5*; α(IPF)=0.000210 *3*
2241.7	(17/2$^+$)	656.8[&] *5*	53[&] *16*	1584.97	17/2$^+$	M1+E2	0.00229 *6*	α(K)=0.00201 *5*; α(L)=0.000233 *10*; α(M)=4.21×10^{-5} *18* α(N)=6.69×10^{-6} *25*; α(O)=4.39×10^{-7} *7*
		715.3[&] *3*	100[&] *30*	1526.40	(15/2$^+$)	(M1+E2)	0.00186	α(K)=0.001628 *24*; α(L)=0.000188 *5*; α(M)=3.40×10^{-5} *9* α(N)=5.40×10^{-6} *13*; α(O)=3.57×10^{-7} *6*
2330.05	17/2$^-$	107.0[&] *1*	13[&] *4*	2222.95	(15/2$^-$)	(M1+E2)	0.61 *38*	α(K)=0.50 *30*; α(L)=0.090 *66*; α(M)=0.016 *12* α(N)=0.0025 *18*; α(O)=9.5×10^{-5} *50*
		582.6 *1*	100.0 *11*	1747.46	13/2$^-$	E2	0.00325	α(K)=0.00283 *4*; α(L)=0.000339 *5*; α(M)=6.14×10^{-5} *9* α(N)=9.69×10^{-6} *14*; α(O)=6.08×10^{-7} *9*
		744.9[&] *2*	16[&] *3*	1584.97	17/2$^+$			

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Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[b]	Comments
2330.05	17/2$^-$	803.7 *1*	23.4 *4*	1526.40	(15/2$^+$)			
2363.40		782.2 *2*	100	1581.20	(11/2$^+$,13/2$^+$)			
2424.28	(17/2$^+$)	269.1 *1*	100	2155.19	(17/2$^+$)	(M1+E2)	0.0282 *87*	α(K)=0.0245 *73*; α(L)=0.0031 *12*; α(M)=5.7×10^{-4} *21* α(N)=8.9×10^{-5} *31*; α(O)=5.2×10^{-6} *13*
2459.1		386.2[&] *2*	100[&]	2072.90				
2487.28	19/2$^+$	902.3[&] *1*	93[&] *19*	1584.97	17/2$^+$	M1+E2	0.00107 *3*	α(K)=0.00094 *3*; α(L)=0.0001074 *20*; α(M)=1.94×10^{-5} *4* α(N)=3.09×10^{-6} *7*; α(O)=2.07×10^{-7} *8*
		960.9[&] *1*	100[&] *26*	1526.40	(15/2$^+$)	E2	9.06×10^{-4}	α(K)=0.000796 *12*; α(L)=9.13×10^{-5} *13*; α(M)=1.652×10^{-5} *24* α(N)=2.62×10^{-6} *4*; α(O)=1.731×10^{-7} *25*
2502.22	17/2$^-$	172.4[&] *1*	100[&] *6*	2330.05	17/2$^-$			
		279.4[&] *1*	49[&] *5*	2222.95	(15/2$^-$)			
		754.8[&] *1*	59[&] *6*	1747.46	13/2$^-$			
		975.9[&] *2*	32[&] *14*	1526.40	(15/2$^+$)			
2553.03	(21/2$^+$)	968.1 *2*	100	1584.97	17/2$^+$	E2	8.91×10^{-4}	α(K)=0.000782 *11*; α(L)=8.97×10^{-5} *13*; α(M)=1.623×10^{-5} *23* α(N)=2.58×10^{-6} *4*; α(O)=1.702×10^{-7} *24*
2588.77		164.5 *1*	29 *3*	2424.28	(17/2$^+$)			
		258.7 *1*	100 *3*	2330.05	17/2$^-$			
2646.85	19/2$^-$	316.8 *1*	100 *1*	2330.05	17/2$^-$	M1+E2	0.017 *5*	α(K)=0.015 *4*; α(L)=0.00185 *54*; α(M)=3.36×10^{-4} *98* α(N)=5.3×10^{-5} *15*; α(O)=3.2×10^{-6} *7*
		423.7[&] *2*	7[&] *3*	2222.95	(15/2$^-$)	E2	0.00832	α(K)=0.00723 *11*; α(L)=0.000898 *13*; α(M)=0.0001630 *23* α(N)=2.55×10^{-5} *4*; α(O)=1.526×10^{-6} *22*
		1061.9 *1*	45.5 *11*	1584.97	17/2$^+$			
2703.57	21/2$^+$	1118.6[&] *1*	100[&]	1584.97	17/2$^+$	E2	6.45×10^{-4}	α(K)=0.000566 *8*; α(L)=6.44×10^{-5} *9*; α(M)=1.164×10^{-5} *17* α(N)=1.85×10^{-6} *3*; α(O)=1.234×10^{-7} *18*; α(IPF)=1.078×10^{-6} *16*
2758.5	(19/2$^+$)	603.4 *2*	100	2155.19	(17/2$^+$)	(M1+E2)	0.00283 *12*	α(K)=0.00248 *10*; α(L)=0.000290 *18*; α(M)=5.2×10^{-5} *4* α(N)=8.3×10^{-6} *5*; α(O)=5.43×10^{-7} *13*
2760.82	19/2$^-$	258.6 *1*	100 *40*	2502.22	17/2$^-$	M1+E2	0.032 *11*	α(K)=0.0277 *87*; α(L)=0.0036 *14*; α(M)=6.5×10^{-4} *25* α(N)=1.01×10^{-4} *38*; α(O)=5.8×10^{-6} *16*
		431.0 *3*	<20	2330.05	17/2$^-$			
		1175.9 *2*	78 *20*	1584.97	17/2$^+$	E1	2.89×10^{-4}	α(K)=0.000231 *4*; α(L)=2.56×10^{-5} *4*; α(M)=4.62×10^{-6} *7* α(N)=7.37×10^{-7} *11*; α(O)=5.00×10^{-8} *7*; α(IPF)=2.74×10^{-5} *4*
2785.16	21/2$^-$	138.3[&] *3*	26[&] *4*	2646.85	19/2$^-$	M1+E2	0.25 *14*	α(K)=0.21 *12*; α(L)=0.033 *22*; α(M)=0.0061 *40* α(N)=9.2×10^{-4} *58*; α(O)=4.2×10^{-5} *20*
		297.6[&] *1*	23[&] *9*	2487.28	19/2$^+$			

$^{99}_{43}Tc_{56}$-13

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[b]	Comments
2785.16	21/2$^-$	455.1[&] *1*	100[&] *19*	2330.05	17/2$^-$	E2	0.00668	α(K)=0.00581 *9*; α(L)=0.000715 *10*; α(M)=0.0001297 *19* α(N)=2.03×10^{-5} *3*; α(O)=1.232×10^{-6} *18*
2855.89	23/2$^+$	152.3 *1*		2703.57	21/2$^+$	M1+E2	0.181 *94*	α(K)=0.153 *77*; α(L)=0.023 *14*; α(M)=0.0042 *26* α(N)=6.4×10^{-4} *39*; α(O)=3.1×10^{-5} *14*
		368.6 *2*		2487.28	19/2$^+$			
3108.32	21/2$^-$	347.5 *1*	100 *18*	2760.82	19/2$^-$	M1+E2	0.013 *3*	α(K)=0.0113 *23*; α(L)=0.0014 *4*; α(M)=2.52×10^{-4} *63* α(N)=4.0×10^{-5} *10*; α(O)=2.4×10^{-6} *4*
		606.1 *2*	52 *24*	2502.22	17/2$^-$			
3129.71	(23/2$^-$)	344.6 *1*	100	2785.16	21/2$^-$	M1	0.01051	α(K)=0.00921 *13*; α(L)=0.001066 *15*; α(M)=0.000193 *3* α(N)=3.07×10^{-5} *5*; α(O)=2.06×10^{-6} *3*
		482.8[&] *2*	11[&] *6*	2646.85	19/2$^-$	(E2)	0.00559	α(K)=0.00487 *7*; α(L)=0.000594 *9*; α(M)=0.0001078 *16* α(N)=1.694×10^{-5} *24*; α(O)=1.036×10^{-6} *15*
		576.4[&] *3*	<5[&]	2553.03	(21/2$^+$)	(E1)	1.13×10^{-3}	α(K)=0.000994 *14*; α(L)=0.0001118 *16*; α(M)=2.02×10^{-5} *3* α(N)=3.21×10^{-6} *5*; α(O)=2.13×10^{-7} *3*
3203.7?		347.6[d] *2*	100	2855.89	23/2$^+$			
3295.96	23/2$^-$	187.1 *1*	45 *15*	3108.32	21/2$^-$	(M1+E2)	0.091 *41*	α(K)=0.078 *34*; α(L)=0.0109 *57*; α(M)=0.0020 *11* α(N)=3.1×10^{-4} *16*; α(O)=1.59×10^{-5} *60*
		534.6 *1*	46 *12*	2760.82	19/2$^-$	(E2)	0.00414	α(K)=0.00362 *5*; α(L)=0.000436 *7*; α(M)=7.91×10^{-5} *11* α(N)=1.245×10^{-5} *18*; α(O)=7.73×10^{-7} *11*
		743.4 *3*	100 *18*	2553.03	(21/2$^+$)	(E1)	6.44×10^{-4}	α(K)=0.000567 *8*; α(L)=6.34×10^{-5} *9*; α(M)=1.145×10^{-5} *16* α(N)=1.82×10^{-6} *3*; α(O)=1.221×10^{-7} *18*
3376.75	(25/2$^-$)	81.0[&] *2*	45[&] *9*	3295.96	23/2$^-$	(M1+E2)	1.6 *11*	α(K)=1.25 *82*; α(L)=0.28 *23*; α(M)=0.051 *42* α(N)=0.0076 *61*; α(O)=2.3×10^{-4} *13*
		247.0 *1*	26.3 *10*	3129.71	(23/2$^-$)			
		591.6 *1*	100 *9*	2785.16	21/2$^-$	Q		
3559.24	23/2$^+$	1006.3 *3*	65 *27*	2553.03	(21/2$^+$)	M1+E2	0.00084 *3*	α(K)=0.000738 *25*; α(L)=8.37×10^{-5} *22*; α(M)=1.51×10^{-5} *4* α(N)=2.41×10^{-6} *7*; α(O)=1.62×10^{-7} *7*
		1072.0 *2*	100 *46*	2487.28	19/2$^+$	E2	7.07×10^{-4}	α(K)=0.000621 *9*; α(L)=7.09×10^{-5} *10*; α(M)=1.281×10^{-5} *18* α(N)=2.04×10^{-6} *3*; α(O)=1.354×10^{-7} *19*
3622.91	(23/2,25/2)	493.3 *1*	100	3129.71	(23/2$^-$)	M1+E2	0.0048 *5*	α(K)=0.0042 *4*; α(L)=0.00050 *6*; α(M)=9.0×10^{-5} *11* α(N)=1.43×10^{-5} *16*; α(O)=9.2×10^{-7} *6*
		837.5[&] *2*	46[&] *13*	2785.16	21/2$^-$	(E2)	1.26×10^{-3}	α(K)=0.001101 *16*; α(L)=0.0001276 *18*; α(M)=2.31×10^{-5} *4* α(N)=3.66×10^{-6} *6*; α(O)=2.39×10^{-7} *4*
3649.06	(25/2$^+$)	1096.0[&] *1*	100[&]	2553.03	(21/2$^+$)	E2	6.73×10^{-4}	α(K)=0.000592 *9*; α(L)=6.74×10^{-5} *10*; α(M)=1.219×10^{-5} *17* α(N)=1.94×10^{-6} *3*; α(O)=1.290×10^{-7} *18*
3814.35		437.6 *1*	100	3376.75	(25/2$^-$)			
3883.83	27/2$^-$	507.6 *3*	100	3376.75	(25/2$^-$)	M1+E2	0.0045 *4*	α(K)=0.0039 *3*; α(L)=0.00046 *5*; α(M)=8.3×10^{-5} *9* α(N)=1.32×10^{-5} *14*; α(O)=8.5×10^{-7} *5*
		753.9[&] *2*	22[&] *15*	3129.71	(23/2$^-$)	(E2)	1.63×10^{-3}	α(K)=0.001429 *20*; α(L)=0.0001669 *24*; α(M)=3.02×10^{-5} *5* α(N)=4.79×10^{-6} *7*; α(O)=3.09×10^{-7} *5*

$^{99}_{43}Tc_{56}$-14

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[b]	Comments
3910.85	25/2$^+$	1054.9 *2*	100 *60*	2855.89	23/2$^+$	M1+E2	0.00076 *3*	α(K)=0.000665 *24*; α(L)=7.53×10^{-5} *21*; α(M)=1.36×10^{-5} *4* α(N)=2.17×10^{-6} *7*; α(O)=1.46×10^{-7} *7*
		1207.4 *3*	79 *50*	2703.57	21/2$^+$	E2	5.55×10^{-4}	α(K)=0.000480 *7*; α(L)=5.44×10^{-5} *8*; α(M)=9.83×10^{-6} *14* α(N)=1.565×10^{-6} *22*; α(O)=1.047×10^{-7} *15*; α(IPF)=8.64×10^{-6} *13*
4027.18	27/2$^-$	404.4 *2*	68 *21*	3622.91	(23/2,25/2)	(M1+E2)	0.0084 *13*	α(K)=0.0073 *11*; α(L)=0.00088 *17*; α(M)=0.00016 *3* α(N)=2.5×10^{-5} *5*; α(O)=1.57×10^{-6} *19* Final level J^π=15/2$^-$ in 2015Li17 is a misprint, it should be 25/2$^-$.
		650.3 *2*	100 *74*	3376.75	(25/2$^-$)	M1+E2	0.00235 *7*	α(K)=0.00206 *6*; α(L)=0.000239 *11*; α(M)=4.32×10^{-5} *19* α(N)=6.9×10^{-6} *3*; α(O)=4.50×10^{-7} *7*
4066.78	(25/2$^+$)	417.7 *1*	100 *42*	3649.06	(25/2$^+$)	(M1+E2)	0.0076 *11*	α(K)=0.0067 *10*; α(L)=0.00080 *14*; α(M)=0.00015 *3* α(N)=2.3×10^{-5} *4*; α(O)=1.44×10^{-6} *16*
		507.6 *2*	92 *33*	3559.24	23/2$^+$	(M1+E2)	0.0045 *4*	α(K)=0.0039 *3*; α(L)=0.00046 *5*; α(M)=8.3×10^{-5} *9* α(N)=1.32×10^{-5} *14*; α(O)=8.5×10^{-7} *5*
4177.92?		293.3[d] *1*	100 *4*	3883.83	27/2$^-$			
		363.3[d] *1*	63 *4*	3814.35				
4203.6	29/2$^-$	319.8 *2*	8 *5*	3883.83	27/2$^-$	(M1+E2)	0.017 *4*	α(K)=0.014 *4*; α(L)=0.00180 *52*; α(M)=3.26×10^{-4} *94* α(N)=5.1×10^{-5} *14*; α(O)=3.1×10^{-6} *6*
		826.6	100 *12*	3376.75	(25/2$^-$)	E2	1.30×10^{-3}	α(K)=0.001137 *16*; α(L)=0.0001319 *19*; α(M)=2.39×10^{-5} *4* α(N)=3.78×10^{-6} *6*; α(O)=2.47×10^{-7} *4*
4303.28	27/2$^+$	236.5 *1*	100 *59*	4066.78	(25/2$^+$)	(M1+E2)	0.042 *16*	α(K)=0.037 *13*; α(L)=0.0048 *21*; α(M)=8.8×10^{-4} *37* α(N)=1.36×10^{-4} *56*; α(O)=7.7×10^{-6} *23*
		654.2 *2*	82 *27*	3649.06	(25/2$^+$)	M1+E2	0.00231 *6*	α(K)=0.00203 *5*; α(L)=0.000235 *10*; α(M)=4.26×10^{-5} *18* α(N)=6.8×10^{-6} *3*; α(O)=4.44×10^{-7} *7*
		744.1 *3*	<1	3559.24	23/2$^+$	(E2)	1.69×10^{-3}	α(K)=0.001477 *21*; α(L)=0.0001727 *25*; α(M)=3.13×10^{-5} *5* α(N)=4.95×10^{-6} *7*; α(O)=3.20×10^{-7} *5*
4724.88	29/2$^+$	421.6 *2*	84 *32*	4303.28	27/2$^+$	M1+E2	0.0074 *11*	α(K)=0.0065 *9*; α(L)=0.00078 *14*; α(M)=0.000141 *25* α(N)=2.2×10^{-5} *4*; α(O)=1.40×10^{-6} *15*
		1075.8 *2*	100 *42*	3649.06	(25/2$^+$)	E2	7.02×10^{-4}	α(K)=0.000617 *9*; α(L)=7.03×10^{-5} *10*; α(M)=1.271×10^{-5} *18* α(N)=2.02×10^{-6} *3*; α(O)=1.343×10^{-7} *19*
4785.6	(31/2$^-$)	582.0 *2*	<100	4203.6	29/2$^-$	(M1+E2)	0.00311 *16*	α(K)=0.00272 *13*; α(L)=0.000318 *22*; α(M)=5.8×10^{-5} *4* α(N)=9.1×10^{-6} *6*; α(O)=5.95×10^{-7} *18*
		901.8 *3*	<100	3883.83	27/2$^-$	(E2)	1.05×10^{-3}	α(K)=0.000923 *13*; α(L)=0.0001063 *15*; α(M)=1.92×10^{-5} *3* α(N)=3.05×10^{-6} *5*; α(O)=2.01×10^{-7} *3*
4915.9	29/2$^+$	1266.8 *3*	100 *66*	3649.06	(25/2$^+$)	E2	5.12×10^{-4}	α(K)=0.000434 *6*; α(L)=4.91×10^{-5} *7*; α(M)=8.87×10^{-6} *13* α(N)=1.411×10^{-6} *20*; α(O)=9.47×10^{-8} *14*; α(IPF)=1.89×10^{-5} *3*
5076.48	31/2$^+$	351.6 *2*	79 *60*	4724.88	29/2$^+$	M1+E2	0.013 *3*	α(K)=0.0109 *22*; α(L)=0.0013 *4*; α(M)=0.00024 *6* α(N)=3.8×10^{-5} *9*; α(O)=2.3×10^{-6} *4*
		773.2 *2*	100 *79*	4303.28	27/2$^+$	(E2)	1.53×10^{-3}	α(K)=0.001341 *19*; α(L)=0.0001563 *22*; α(M)=2.83×10^{-5} *4* α(N)=4.48×10^{-6} *7*; α(O)=2.91×10^{-7} *4*

$^{99}_{43}Tc_{56}$-15

Adopted Levels, Gammas (continued)

γ(^{99}Tc) (continued)

E_i(level)	J_i^π	E_γ [†]	I_γ [‡]	E_f	J_f^π	Mult.[#]	α[b]	Comments
5341.1	33/2$^-$	555.5 *2*	<49	4785.6	(31/2$^-$)	(M1+E2)	0.00351 *21*	α(K)=0.00307 *18*; α(L)=0.00036 *3*; α(M)=6.5×10^{-5} *6* α(N)=1.03×10^{-5} *8*; α(O)=6.7×10^{-7} *3*
		1137.5 *2*	100 *62*	4203.6	29/2$^-$	E2	6.23×10^{-4}	α(K)=0.000546 *8*; α(L)=6.20×10^{-5} *9*; α(M)=1.121×10^{-5} *16* α(N)=1.783×10^{-6} *25*; α(O)=1.190×10^{-7} *17*; α(IPF)=1.87×10^{-6} *3*
5596.08	(33/2$^+$)	519.6 *2*	57 *43*	5076.48	31/2$^+$	(M1+E2)	0.0042 *4*	α(K)=0.0037 *3*; α(L)=0.00043 *5*; α(M)=7.8×10^{-5} *8* α(N)=1.24×10^{-5} *12*; α(O)=8.0×10^{-7} *5*
		871.2 *2*	100 *90*	4724.88	29/2$^+$	(E2)	1.14×10^{-3}	α(K)=0.001001 *14*; α(L)=0.0001157 *17*; α(M)=2.09×10^{-5} *3* α(N)=3.32×10^{-6} *5*; α(O)=2.18×10^{-7} *3*
6000.6	(35/2$^+$)	404.5 *2*	<100	5596.08	(33/2$^+$)	(M1+E2)	0.0083 *13*	α(K)=0.0073 *11*; α(L)=0.00088 *17*; α(M)=0.00016 *3* α(N)=2.5×10^{-5} *5*; α(O)=1.57×10^{-6} *19*
		924.1 *3*	<100	5076.48	31/2$^+$	(E2)	9.93×10^{-4}	α(K)=0.000871 *13*; α(L)=0.0001002 *14*; α(M)=1.81×10^{-5} *3* α(N)=2.88×10^{-6} *4*; α(O)=1.89×10^{-7} *3* Mult.: (M1/E2) in 2015Li17 is a misprint, ΔJ^π requires (E2).

[†] Either weighted average of β^- decay, (^{6}Li,3nγ), and Coulomb excitation or from (^{3}He,pnγ), unless otherwise specified.
[‡] Relative photon branching for each level (either wt avg of β^- decay, (^{6}Li,3nγ), and Coulomb excitation, or from (^{3}He,pnγ)), unless otherwise specified.
[#] From β^- decay, (^{6}Li,3nγ), and Coulomb excitation.
[@] Total (γ+ce) branching from IT decay.
[&] From ^{96}Zr(^{7}Li,4nγ).
[a] From β^- decay.
[b] Additional information 8.
[c] If No value given it was assumed δ=1.00 for E2/M1, δ=1.00 for E3/M2 and δ=0.10 for the other multipolarities.
[d] Placement of transition in the level scheme is uncertain.

$^{99}_{43}Tc_{56}$-16

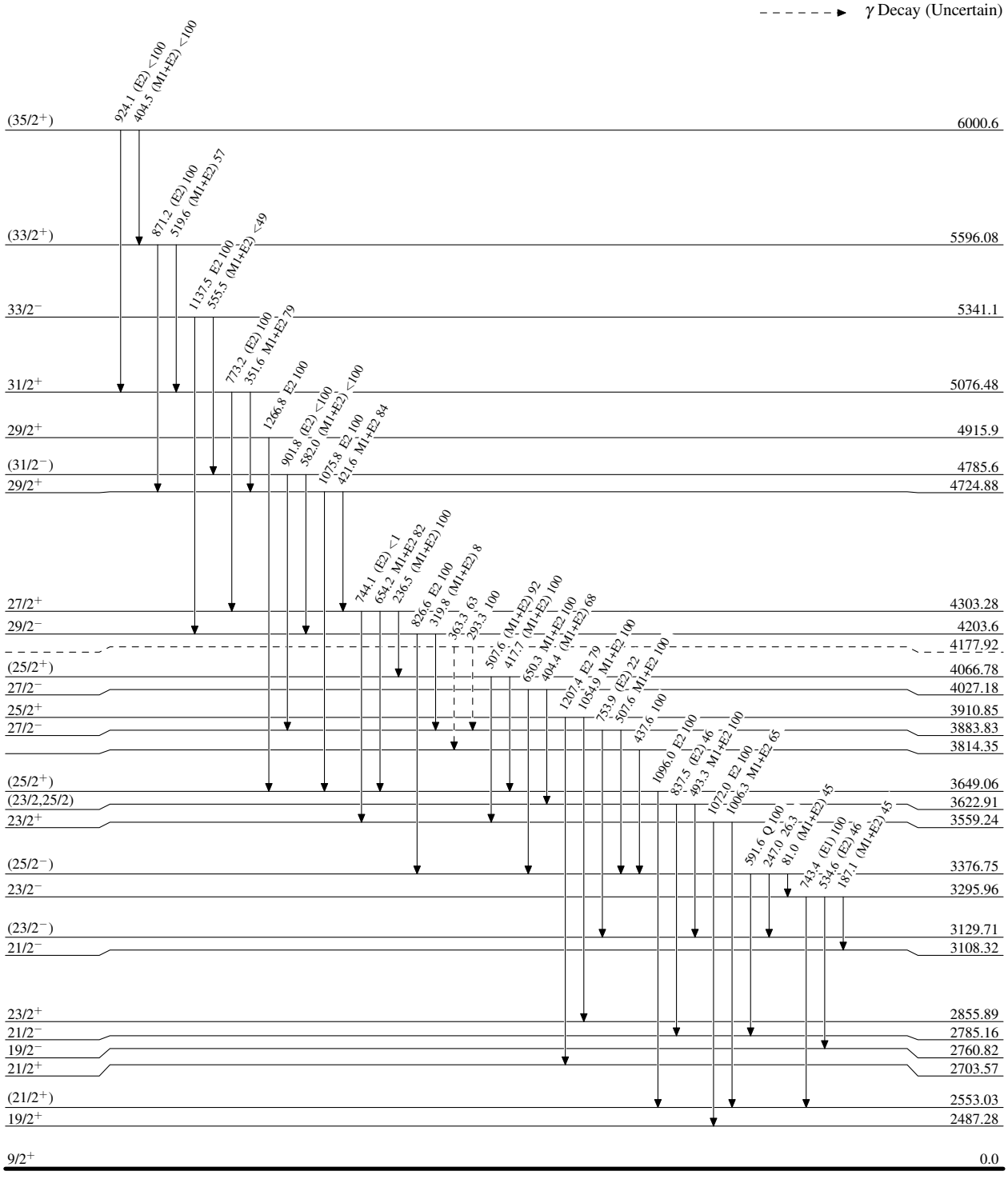
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{99}_{43}Tc_{56}$

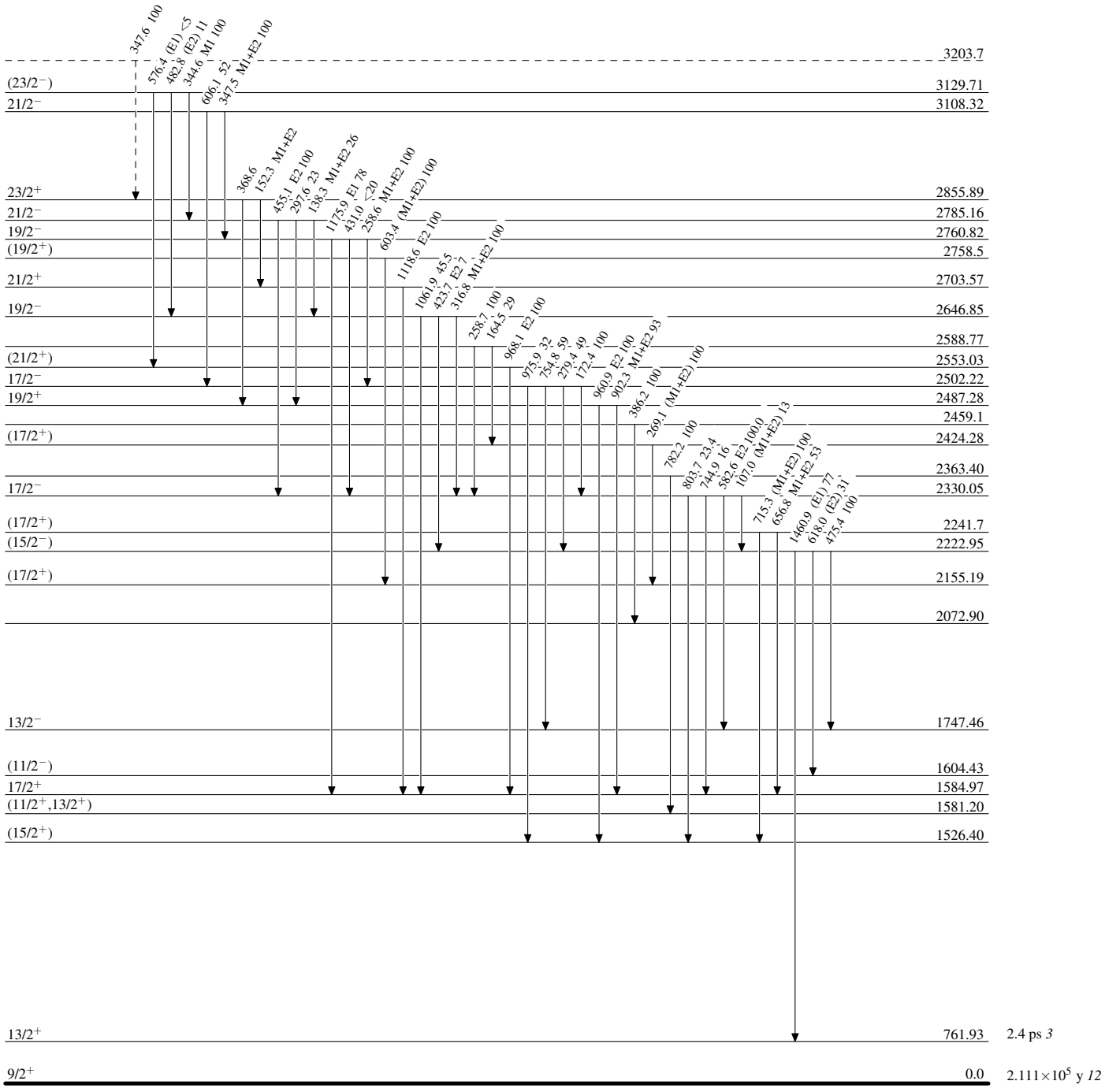
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)



$^{99}_{43}Tc_{56}$

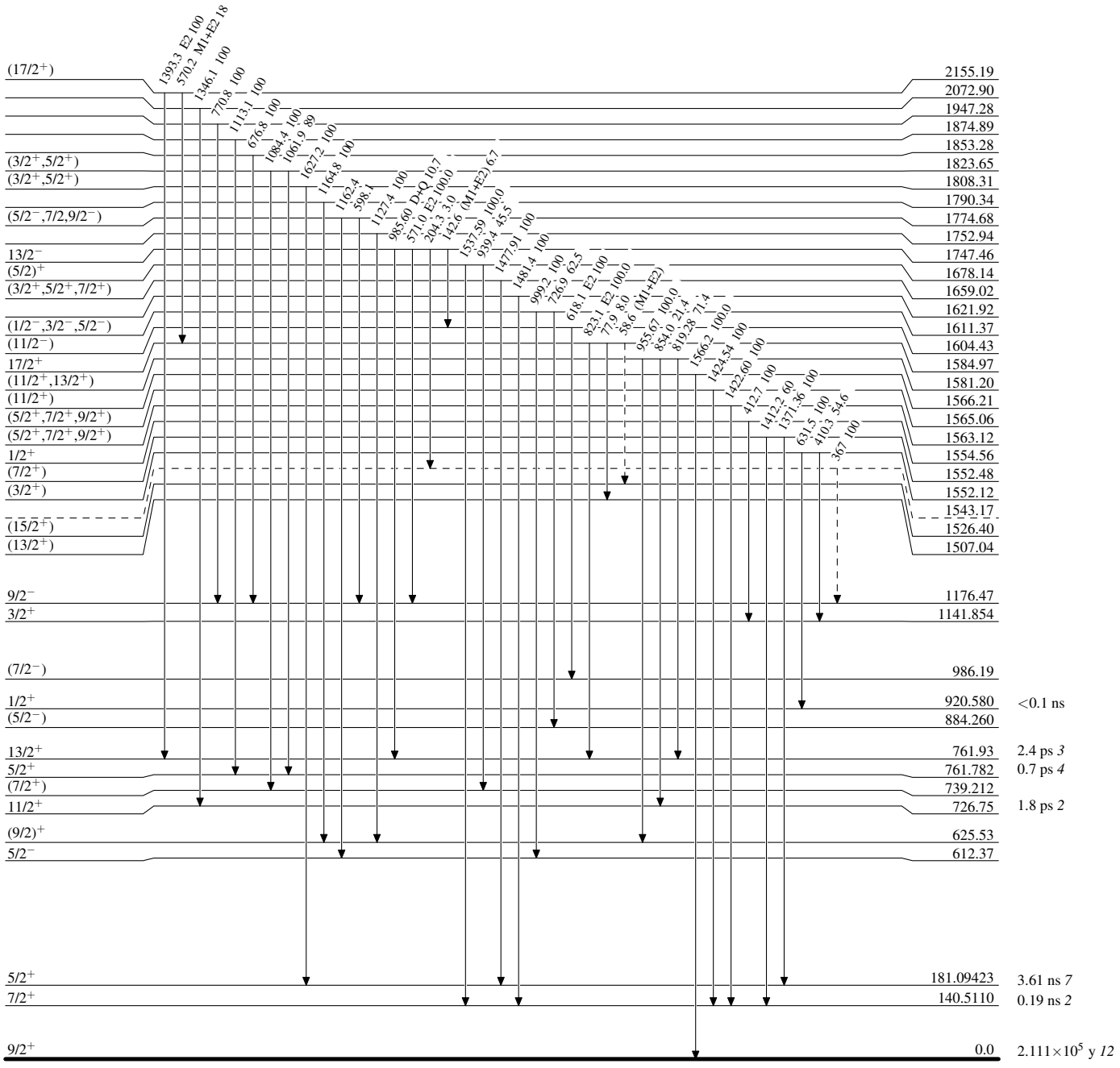
Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

γ Decay (Uncertain)

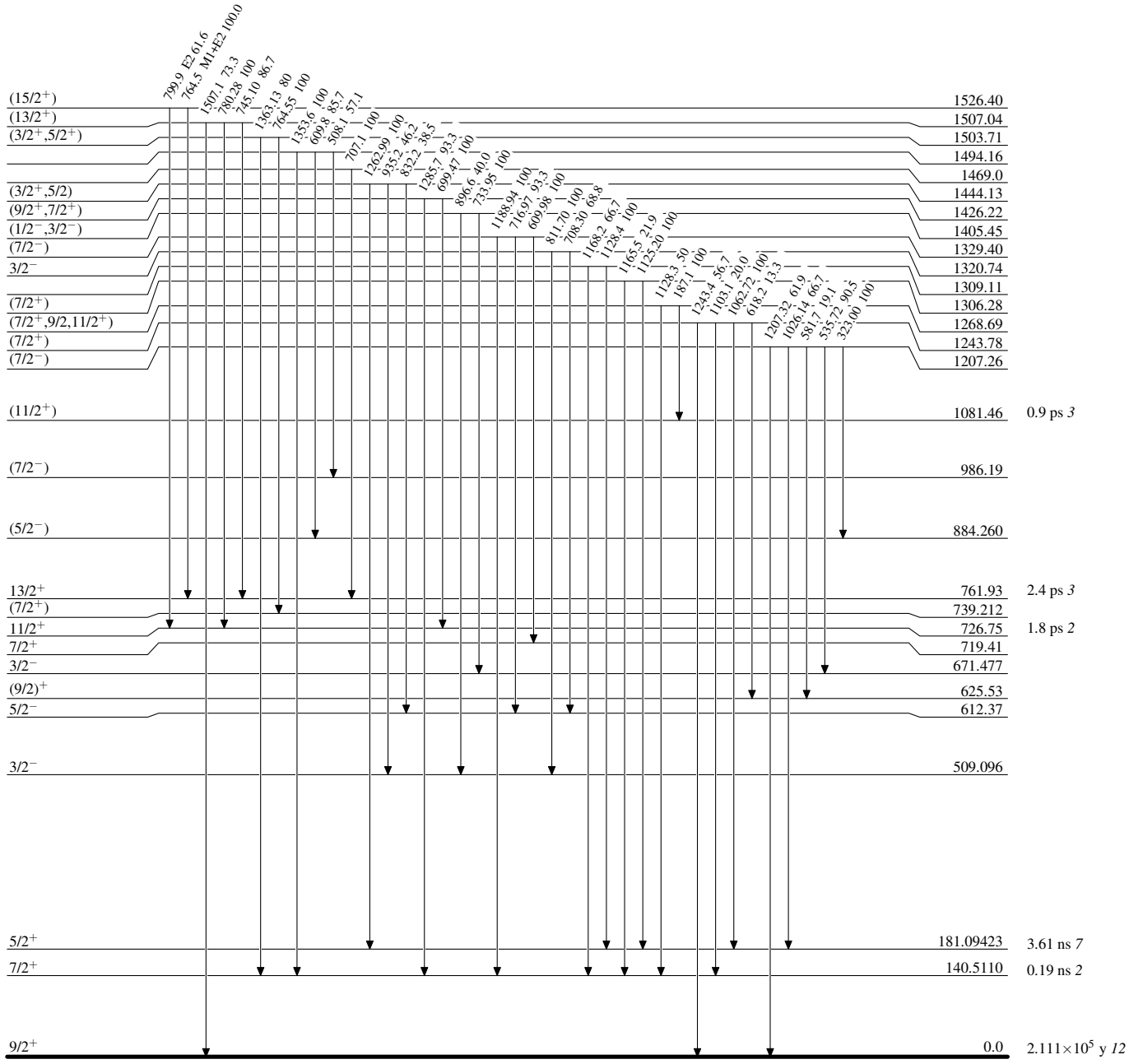


$^{99}_{43}Tc_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

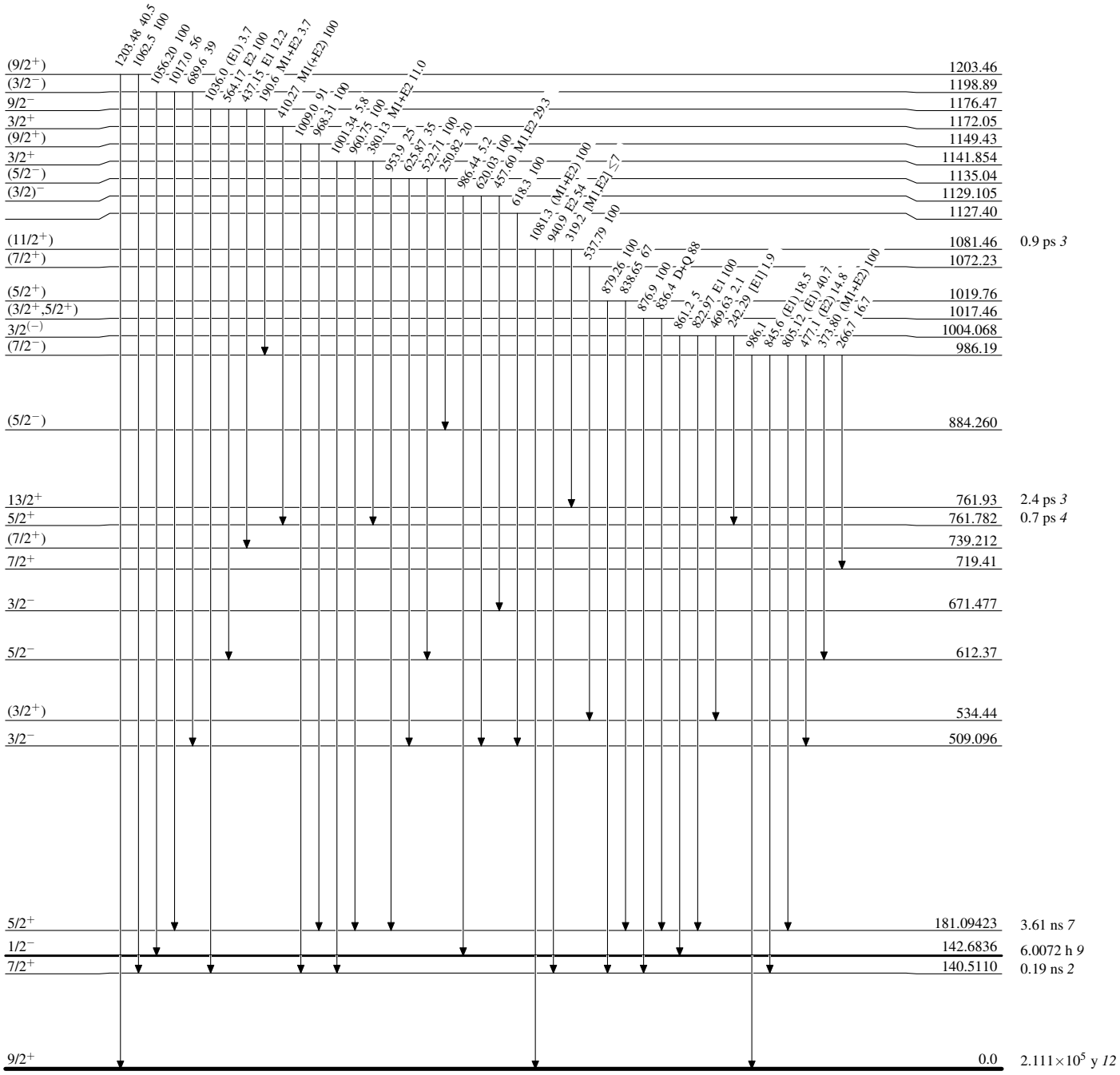


$^{99}_{43}Tc_{56}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{99}_{43}Tc_{56}$

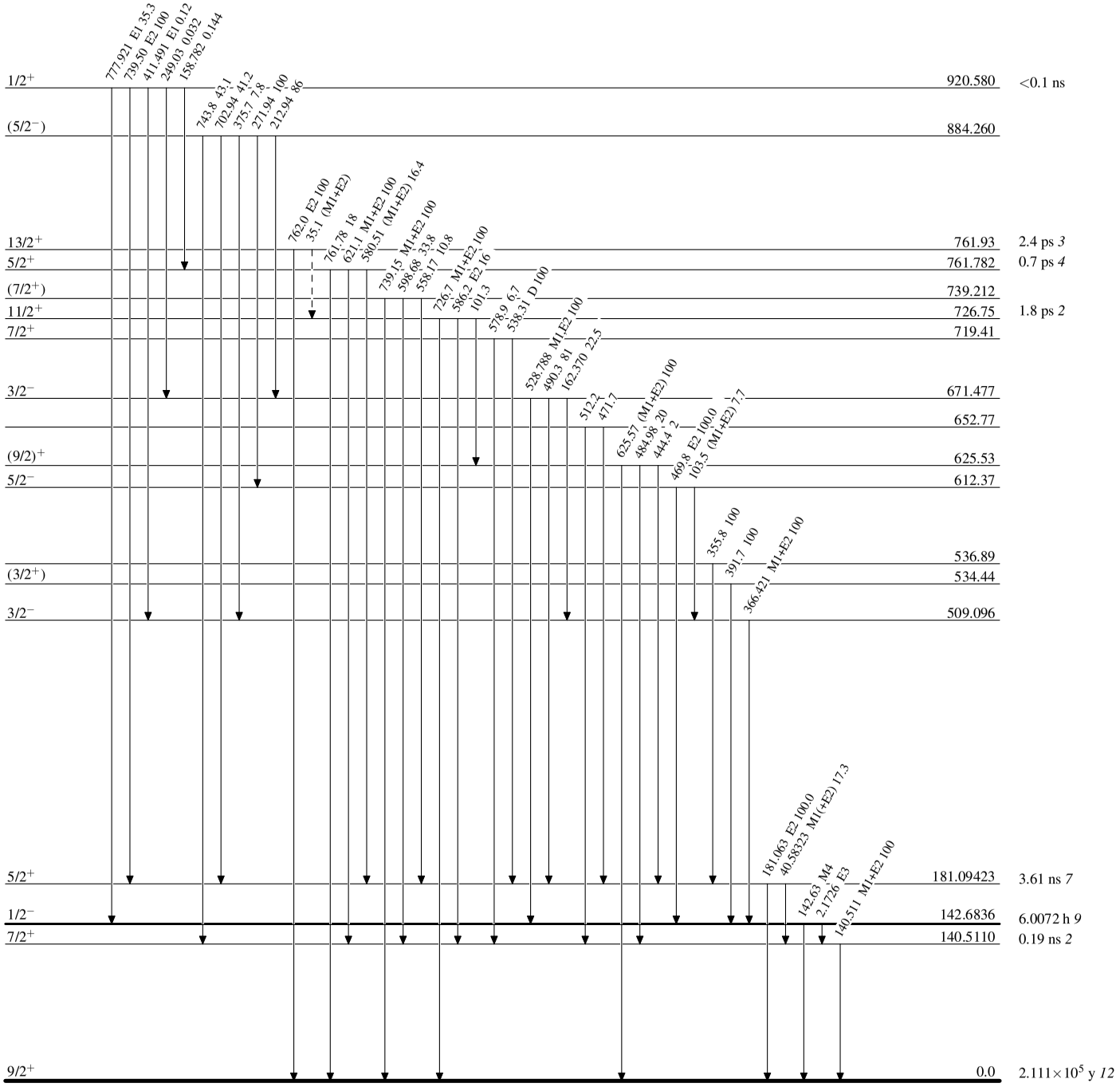
Adopted Levels, Gammas

Legend

Level Scheme (continued)

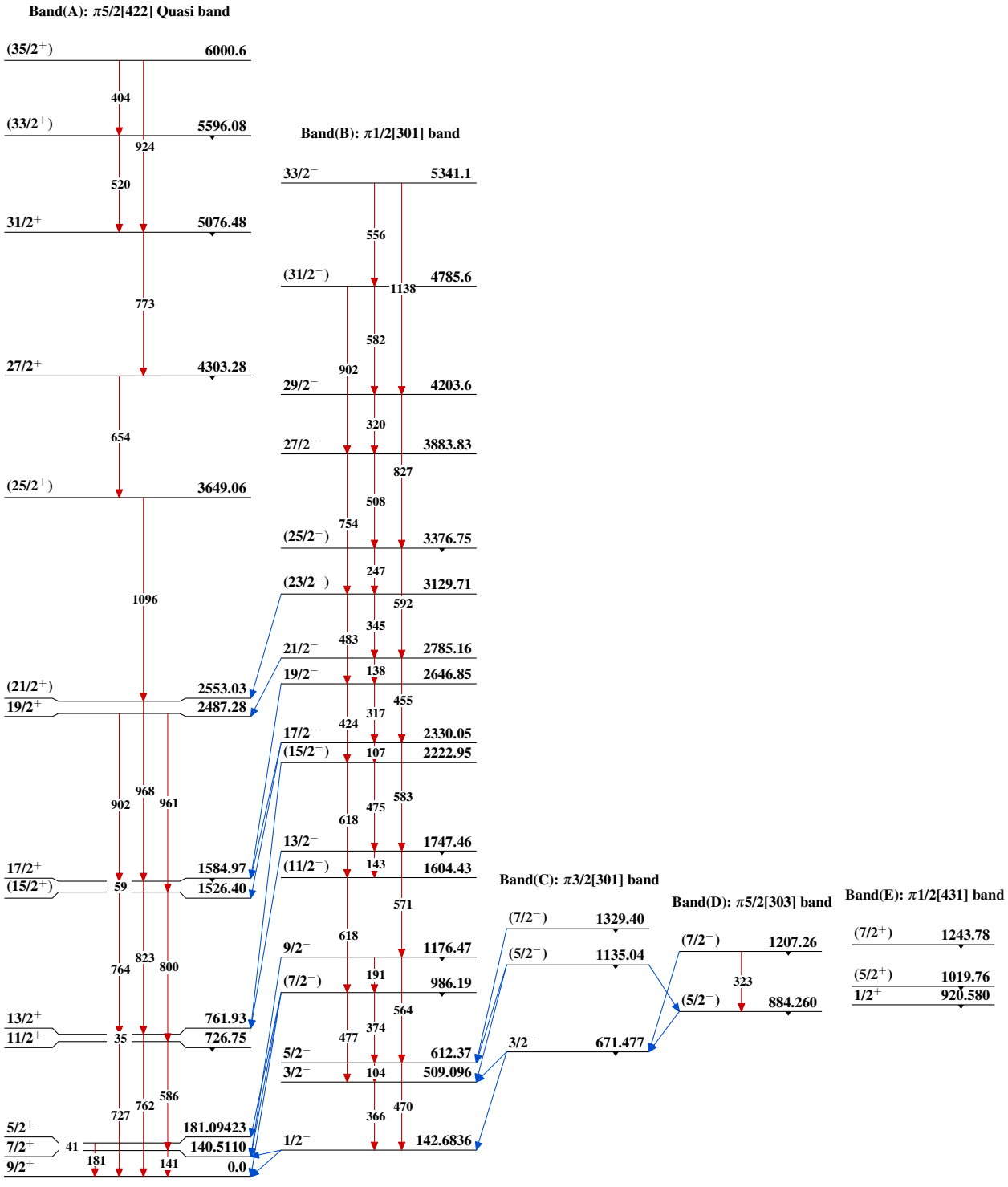
Intensities: Relative photon branching from each level

γ Decay (Uncertain)



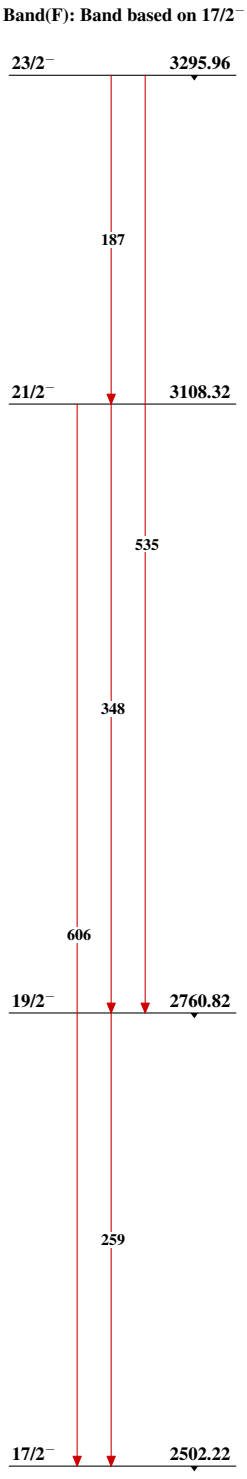
$^{99}_{43}Tc_{56}$

Adopted Levels, Gammas



$^{99}_{43}Tc_{56}$

Adopted Levels, Gammas (continued)



$^{99}_{43}Tc_{56}$