Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Alexandru Negret, Balraj Singh	NDS 124,1 (2015)	30-Nov-2014

Q(β^-)=−5240 *14*; S(n)=11491 *3*; S(p)=9644.8 *11*; Q(α)=−6357.8 *14* 2012Wa38
S(2n)=20016.3 *16*, S(2p)=16661.8 *11* (2012Wa38).
^{86}Sr identified by mass spectrographic techniques by Aston, Nature 113, 856 (1924).
Other reactions:
^{85}Rb(p,n): IAR. Six resonances reported. See ^{85}Rb(p,n) dataset.
^{86}Sr(d,d): 1968Ko20.
^{86}Sr(t,t): 1970Ra10.
Measurements of isotope shifts, hyperfine structure, radii, etc.:
1992Ba55, 1991As06, 1990Bu12 (also 1988Si06), 1987Ea01, 1987An02, 1986Ma43, 1986An39, 1985Bu20, 1984Be44, 1983Lo13, 1983El04, 1983Bo35, 1981Be42, 1961He18.
^{88}Sr(^{12}C,^{14}C) E=87.5 MeV: 1995Ro11, Measured $\sigma(\theta)$, deduced reaction mechanisms.
^{92}Mo(n,X) E=2-250 MeV: 2000Ga46, measured excitation function for ^{86}Sr yield through the intensity of γ ray from the first excited state.
Additional information 1.

^{86}Sr Levels

All B(EL) values, given under comments, are from (e,e′).

Cross Reference (XREF) Flags

A	^{86}Rb β^- decay (18.642 d)	I	^{85}Rb(p,n) IAR	Q	^{87}Sr(d,t)
B	^{86}Y ε decay (14.74 h)	J	^{85}Rb(^{3}He,d)	R	^{88}Sr(p,t)
C	^{86}Y ε decay (47.4 min)	K	^{86}Sr(e,e′)	S	^{89}Y(μ^-,3nγ)
D	^{74}Ge(^{18}O,2n$\alpha\gamma$)	L	^{86}Sr(γ,γ')	T	^{89}Y(p,α)
E	^{76}Ge(^{13}C,3nγ)	M	^{86}Sr(p,p′),(pol p,p′)	U	^{90}Zr(d,^{6}Li)
F	^{82}Se(^{9}Be,5nγ)	N	^{86}Sr(d,d),(t,t)	V	^{90}Zr(^{3}He,^{7}Be)
G	^{84}Kr(^{3}He,n)	O	Coulomb excitation		
H	^{84}Kr(α,2nγ)	P	^{87}Sr(p,d),(pol p,d)		

E(level)[†]	J$^\pi$[‡]	T$_{1/2}$	XREF	Comments
0.0[&]	0$^+$	stable	ABCDEFGH JKLMNOPQRSTUV	J$^\pi$: optical spectroscopy (1931Fr01). RMS charge radius <r^2>$^{1/2}$=4.2307 fm *20* (2013An02). Δ<r^2>(^{86}Sr−^{88}Sr)=+0.050 fm^2 *8* (1990Bu12).
1076.68[&] *4*	2$^+$	1.46 ps +*9*−*8*	ABCDEF H JKLM OPQRSTUV	μ=+0.57 *3* (2012Ku14,2014StZZ) B(E2)↑=0.134 *8* (2013PrZY) β_2(p,p′)=0.158 *16*. J$^\pi$: L(p,t)=2; E2 γ to 0$^+$. T$_{1/2}$: weighted average of values from Coulomb excitation; 1.39 ps *7* (DSAM, 2012Ku14), 1.46 ps *15* (DSAM, 1988Ku01), B(E2)=0.118 *16* (1964Sy01), 0.087 *26* (1963Al31). Other: B(E2)=1.121 *5* in (e,e′) (1992Ki20). μ: transient field integral perturbed angular correlations. Other: +0.55 *10* (transient field, 1998Ku01).
1854.22 *7*	2$^+$	0.386 ps *20*	B EF H JKLM OPQR TUV	μ=+0.8 *3* (2012Ku14,2014StZZ) B(E2)↑=0.0145 *7* J$^\pi$: L(p,p′)=2. T$_{1/2}$: from B(E2) and adopted branching ratio. μ: transient field integral perturbed angular correlations.

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Adopted Levels, Gammas (continued)

^{86}Sr Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
2106 *6*	0^+		J LM PQR Tu	E(level): from (p,t). J^π: L(p,t)=0.
2203 *6*	0^+		CD L PQR Tuv	E(level): from (p,t). J^π: L(p,t)=0.
2229.81[&] *7*	4^+	1.73 ps *21*	BCDEF H JK M O QR Tuv	μ=−2.7 *20* (2012Ku14,2014StZZ) B(E4)↑=0.000308 *22* XREF: T(2223). $T_{1/2}$: from DSAM in Coul. ex. (2012Ku14). J^π: L(p,t)=L(e,e′)=4; ΔJ=2, E2 γ to 2^+. μ: transient field integral perturbed angular correlations.
2365 *12*			T	E(level): very weakly populated level.
2481.96[a] *7*	3^-	0.90 ps *7*	B EF H JKLM OPQR TU	B(E3)↑=0.0497 *18* (1992Ki20,2002Ki06) β_3(p,p′)=0.185 *19*. J^π: L(p,t)=L(p,p′)=L(e,e′)=3. $T_{1/2}$: from DSAM (2012Ku14).
2499 *6*			L	
2642.18 *25*	2^+	87 fs *19*	B JKLM PQR T	B(E2)↑=0.0121 *13* XREF: B(?). J^π: L(p,t)=2. $T_{1/2}$: from B(E2) and branching ratio as quoted here. $T_{1/2}$=182 fs *20* if the level decays by g.s. transition only.
2672.89[a] *8*	5^-	<5[#] ns	B EF H JK M OPQR T v	B(E5)↑=0.000289 *21* J^π: L(p,t)=L(e,e′)=5, L(p,d)=1 from $9/2^+$.
2788.9 *6*	2^+	25 fs *12*	B JKLM PQR T V	B(E2)↑=0.0038 *3* J^π: L(p,t)=2. $T_{1/2}$: from B(E2) in (e,e′) and adopted branching ratio.
2857.41[&] *12*	6^+	<5[#] ns	CDEF H K PQR T	B(E6)↑=8.3×10^{-7} *76* J^π: L(p,t)=6, L(p,d)=4 from $9/2^+$.
2878.32 *8*	$(4)^+$		B J M Q T	J^π: L(^{3}He,d)=1 from $5/2^-$; γ to 2^+; γ from 5^-.
2956.09[&] *12*	8^+	0.455 μs *7*	CDEF H K PQR T	%IT=100 μ=−1.93 *2* (1978Ha52,2014StZZ) μ: Differential perturbed angular distribution of γ rays (1978Ha52). Others: −1.944 *32* (Stroboscopic method, 1975Ma02), 1.93 *12* ($\gamma(\theta$,H,t), 1973Ha36). J^π: L(e,e′)=8; L(p,t)=(8). L(p,d)=4 from $9/2^+$. $T_{1/2}$: from γ(t). Weighted average of 0.40 μs *4* (1997Is13), 0.457 μs *7* (1978Ha52), 0.41 μs *5* (1975Ma02) and 0.46 μs *3* (1971Is04). Unweighted average is 0.432 μs *16*.
2997.41 *9*	3^-		B G JKLM PQR T v	B(E3)↑=0.014 *3* J^π: L(e,e′)=L(p,t)=3. L(p,α)=4 from $1/2^-$. L(p,d)=4+1 from $9/2^+$. E(level): doublet in (p,d) from L=4+1; other component with J=0 to 9, π=+.
3047 *6*			L v	
3055.87[a] *9*	5^-	<5[#] ns	B EF H JK M PQR T v	B(E5)↑=0.00061 *6* J^π: L(e,e′)=L(p,t)=5. Also L=4+1 in (p,d) from $9/2^+$. In ^{82}Se(^{9}Be,5nγ) J^π is assigned (6^-) based on an unlikely [M2+E3] multipolarity assigned for 826.02γ (2014Li25). E(level): doublet in (p,d) from L=4+1; other component with J=0 to 9, π=+.
3104 *6*	(0^+)		L QR t v	E(level): from (p,t). (p,t) and (p,α) indicate a doublet. J^π: L(p,t)=(0,3). Strong γ from (1).
3185	+		J m t	J^π: L(^{3}He,d)=1 from $5/2^-$.
3185.29 *7*	$(3)^-$	<5[#] ns	B H m PQR t	J^π: L(p,t)=3; L(p,d)=1 from $9/2^+$; M1 γ to $(3)^-$.

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Adopted Levels, Gammas (continued)

^{86}Sr Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
3291.46[a] *13*	6^-	<5[#] ns	B EF H J Q	J^{π}: L(^{3}He,d)=4 from $5/2^-$; ΔJ=1, M1 γ from 7^-; ΔJ=1 γ to 5^-.
3317.70 *10*	$(5)^-$		B M PQR T	J^{π}: L(p,t)=5; L(p,d)=1 from $9/2^+$.
3362.11 *11*	4^+		B K M QR T	B(E4)↑=0.00197 *12* J^{π}: L(e,e′)=L(p,t)=4.
3392 *7*	$^+$		J T v	J^{π}: L(^{3}He,d)=1 from $5/2^-$.
3430 *2*	2^+		M R T v	E(level): from (p,t). J^{π}: L(p,t)=2.
3482.3 *4*	6^+	<5[#] ns	H K pQR v	B(E6)↑=5.4×10^{-6} *14* E(level): doublet indicated by L(d,t)=3+4 from $9/2^+$; other component with negative parity and J=1 to 8. J^{π}: L(e,e′)=6.
3500.00 *10*	$(3,4,5)^-$		B m pQ v	J^{π}: L(d,t)=1 from $9/2^+$. Also L(p,d)=3 from $9/2^+$.
3500.5 *4*	$^+$		J m v	J^{π}: L(^{3}He,d)=3 from $5/2^-$.
3555.87 *12*	(4^+)		B J M T	J^{π}: L(^{3}He,d)=(3) from $5/2^-$; γ rays to $(3)^-$ and 5^-.
3645.00 *8*	(3^-)		B M R T	J^{π}: L(p,t)=3.
3664.41[a] *20*	7^-		EF	J^{π}: ΔJ=1, E1 γ rays to 6^+ and 8^+.
3665.3 *13*	$(5,6,7)^-$	<5[#] ns	H P	J^{π}: L(p,d)=3 from $9/2^+$ gives J=2 to 8, π=−; γ to 6^+.
3686.0 *5*	2^+		J m R t	J^{π}: L(p,t)=2.
3686.84 *21*	3^-		B m P t	J^{π}: L(p,d)=3. log *ft*=7.0 (log $f^{1u}t$=8.0) from 4^-. γ to 2^+.
3765.74 *8*	$3^-,4^-,5^-$	<5[#] ns	B H M p r	XREF: r(3770). J^{π}: log *ft*=6.1 (log $f^{1u}t$=7.0) from 4^-. M1,E2 γ to 5^-. π=− from the L(p,d)=1 component from $9/2^+$.
3774.98 *18*	$(4,5)^+$		B p r T	XREF: B(?)r(3770). J^{π}: log *ft*=7.4 (log $f^{1u}t$=8.3) from 4^-. γ to 5^-. π=+ from the L(p,d)=4 component from $9/2^+$.
3782.70[b] *24*	6^+		EF	J^{π}: ΔJ=2, E2 γ to 4^+; γ to 6^+.
3831.12 *12*	$(3,4)^-$		B PQ T	J^{π}: log *ft*=5.8 from 4^-. (M1) γ to $(3)^-$. L(p,d)=1 from $9/2^+$.
3871.5 *4*	3^-		B P T	J^{π}: log *ft*=7.4 (log $f^{1u}t$=8.3) from 4^-. γ to 2^+. L(p,d)=3 from $9/2^+$.
3926.04 *9*	$(4)^+$		B M R v	J^{π}: E1 γ to $(5)^-$; γ to $(3)^-$.
3942.46 *20*	3^-		B P T v	J^{π}: log *ft*=7.1 (log $f^{1u}t$=7.9) from 4^-. γ to 2^+. L(p,d)=1 from $9/2^+$.
3968.96 *13*	$3^-,4^-,5^-$		B P v	J^{π}: log *ft*=6.8 (log $f^{1u}t$=7.5) from 4^-. γ rays to 3^- and 5^-. L(p,d)=3 from $9/2^+$.
3973.1 *5*	$(6,7,8^+)$	<5[#] ns	H v	J^{π}: γ to 6^+.
4096 *10*	$^-$		P	J^{π}: L(p,d)=1 from $9/2^+$.
4146.21 *23*	$3,4^+$		B r	XREF: r(4160). J^{π}: log *ft*=6.9 (log $f^{1u}t$=7.6) from 4^-. γ to 2^+.
4148.5 *5*	(9)	<5[#] ns	H r	XREF: r(4160). J^{π}: ΔJ=(1), dipole γ to 8^+.
4154.28[b] *18*	8^+		EF	J^{π}: ΔJ=2, E2 γ to 6^+; ΔJ=1, E1 G to 7^-.
4173 *10*			P	E(level),J^{π}: doublet from L(p,d)=(4+1) from $9/2^+$; one with J=0 to 9 with positive parity, other with J=3 to 6 with negative parity.
4206.11 *10*	$(3^-,4,5^-)$		B	J^{π}: log *ft*=6.8 (log $f^{1u}t$=7.4) from 4^-. γ rays to 3^- and 5^-.
4251 *10*	$^-$		P	J^{π}: L(p,d)=3 from $9/2^+$.
4270 *10*			T	
4285 *10*	$^-$		P	J^{π}: L(p,d)=3 from $9/2^+$.
4339.3? *15*			B	
4410.7 *5*	3^-		B P	J^{π}: log *ft*=7.3 (log $f^{1u}t$=7.7) from 4^-. γ to 2^+. L(p,d)=3+1 from $9/2^+$.

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Adopted Levels, Gammas (continued)

^{86}Sr Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
4478 *15*	−		P	J^{π}: L(p,d)=3+1 from $9/2^+$.
4526 *15*	−		P	J^{π}: L(p,d)=3 from $9/2^+$.
4600.6 *11*	$(6,7,8)^-$	<5[#] ns	H P	J^{π}: L(p,d)=3 from $9/2^+$; γ to $(6,7,8^+)$.
4665 *15*			P	
4709.13[&] *19*	10^+	<14[@] ps	DEF H	J^{π}: ΔJ=2, E2 γ to 8^+; band member.
4718.0 *17*	$3,4^{(+)}$		B P	J^{π}: log *ft*=7.4 (log $f^{1u}t$=7.4) from 4^-. γ to 2^+.
4738 *15*			P	
4845 *20*	−		P	J^{π}: L(p,d)=3 from $9/2^+$.
4890 *15*	+		P	J^{π}: L(p,d)=4 from $9/2^+$.
4924.6[a] *7*	$(9)^-$		EF	J^{π}: ΔJ=2, E2 γ to 7^-; band member.
4954 *6*	$3,4^{(+)}$		B P	XREF: P(4963). J^{π}: log *ft*=6.9 (log $f^{1u}t$=6.3) from 4^-. γ to 2^+. E(level): doublet in (p,d) from L=4+1 from $9/2^+$; one with J=0 to 9 with positive parity, other with J=3 to 6 with negative parity.
4976.22[b] *24*	$(10)^+$		EF	J^{π}: ΔJ=2, E2 G to 8^+; band member.
5012.7 *4*	(11^-)	<5[#] ns	EF H	J^{π}: ΔJ=1, (E1) γ to (10^+).
5035 *20*			P	E(level),J^{π}: doublet from L(p,d)=4+1 from $9/2^+$; one with J=0 to 9 with positive parity, other with J=3 to 6 with negative parity.
5102 *15*			P	
5166 *20*			P	
5191 *20*			P	E(level),J^{π}: doublet from L(p,d)=(4+3) from $9/2^+$; one with J=0 to 9 with positive parity, other with J=1 to 8 with negative parity.
5300 *20*			P	
5357 *20*			P	E(level),J^{π}: doublet from L(p,d)=(4+1) from $9/2^+$; one with J=0 to 9 with positive parity, other with J=3 to 6 with negative parity.
5403 *20*			P	
5425.6 *15*		<5[#] ns	H	J^{π}: γ to $(6,7,8)^-$.
5454 *20*	−		P	J^{π}: L(p,d)=3 from $9/2^+$.
5544.0 *4*	$(9)^-$		EF	J^{π}: ΔJ=1, E1 γ to 8^+; γ to $(10)^+$.
5660.6 *6*	(12^-)		EF	J^{π}: ΔJ=1, D+Q γ to (11^-).
5834.6[d] *3*	$(11)^-$	<21[@] ps	DEF H	J^{π}: ΔJ=1, E1 γ to 10^+.
5847.9 *5*	$(10)^-$		EF	J^{π}: ΔJ=1, M1 γ to $(9)^-$.
5984.3 *8*			EF	XREF: E(5985.0). J^{π}: γ to $(9)^-$.
5984.8[a] *4*	$(11)^-$		E	J^{π}: ΔJ=1, E1 γ to 10^+.
6041.1 *6*	(11)		EF	J^{π}: ΔJ=1, D+Q γ to $(10)^-$.
6061.3[d] *3*	$(12)^-$	10[@] ps *3*	DEF H	J^{π}: ΔJ=1, M1(+E2) γ to $(11)^-$.
6191.2[d] *3*	$(13)^-$	4.9[@] ps *14*	DEF H	J^{π}: ΔJ=1, M1(+E2) γ to $(12)^-$.
6205.1[b] *3*	$(12)^+$		EF	J^{π}: ΔJ=2, E2 γ to $(10)^+$.
6315.3 *6*			E	J^{π}: γ to $(12)^-$.
6687.4 *5*	(13^-)		EF	J^{π}: ΔJ=1, D+Q γ to (12^-); γ to (11).
6879.0[c] *3*	12^+		E	J^{π}: ΔJ=2, E2 γ to 10^+; ΔJ=0 γ to $(12)^+$.
6890.6[d] *4*	$(14)^-$		E	J^{π}: ΔJ=1, M1 γ to $(13)^-$.
7071.7 *8*			E	
7241.1 *5*	(14^-)		E	J^{π}: ΔJ=1, (M1) γ to (13^-).
7336.7[c] *4*	(13^+)		E	J^{π}: ΔJ=1, (M1) γ to 12^+.
7461.8[d] *5*	(15^-)		EF	J^{π}: ΔJ=1, M1 transition to (14^-).
7640.7[b] *4*	(14^+)		EF	J^{π}: E2 transition to (12^+).
7822.0 *23*	(1)	4.6 fs *23*	L	J^{π}: from systematics of g.s. widths (see (γ,γ')).

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Adopted Levels, Gammas (continued)

^{86}Sr Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$	XREF	Comments
				$T_{1/2}$: from Γ=0.10 eV *5* measured in (γ,γ').
7844.4[c] *4*	(14$^+$)		E	J^{π}: (M1) transition to (13$^+$).
7895.0 *6*			E	
8158.8? *7*			F	
8267.4 *8*			E	
8338.0[c] *4*	(15$^+$)		E	J^{π}: (M1) transitions to (14$^+$) states.
8814.3[c] *5*	(16$^+$)		E	J^{π}: (M1) γ (15$^+$).
8964.7 *7*	(16$^-$)		E	J^{π}: (E2) γ to (14$^-$).
9402.7 *8*			E	
9431.0[c] *6*	(17$^+$)		E	J^{π}: M1 γ to (16$^+$).
10005.6[c] *7*	(18$^+$)		E	J^{π}: M1 γ to (17$^+$).
10873.8[c] *8*	(19$^+$)		E	J^{π}: (M1) γ to (18$^+$).
12064 *10*	(2$^-$)	47 keV *5*	I	E(level): analog of ^{86}Rb g.s., 2$^-$.
14328 *10*		36 keV *5*	I	
14437 *10*		25 keV *5*	I	
14857 *10*		26 keV *5*	I	
14960 *10*			I	
15079 *10*			I	

[†] From least-squares fit to Eγ values for levels populated in γ-ray studies.
[‡] In (p,t), only L=0 and L=2 are considered as reliable.
[#] From $\gamma\gamma$(t) in ^{84}Kr(α,2nγ).
[@] From recoil-distance Doppler-shift observed in (^{18}O,2nγ) (1986Wa25).
[&] Band(A): Yrast cascade. Probable member of $\nu g_{9/2}^{-2}$ multiplet.
[a] Band(B): γ cascade based on 3$^-$.
[b] Band(C): Band based on 6$^+$.
[c] Band(D): Band based on 12$^+$.
[d] Band(E): Band based on 11$^-$.

$\gamma(^{86}Sr)$

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	α#	Comments
1076.68	2^+	1076.65 *4*	100	0.0	0^+	E2			B(E2)(W.u.)=11.9 *7*
1854.22	2^+	777.39 *12*	100 *3*	1076.68	2^+	M1+E2	+0.251 *17*		B(M1)(W.u.)=0.065 *4*; B(E2)(W.u.)=7.7 *11*
		1854.38 *13*	76.5 *22*	0.0	0^+	E2			B(E2)(W.u.)=1.28 *8*
2229.81	4^+	1153.04 *8*	100	1076.68	2^+	E2			B(E2)(W.u.)=7.1 *9*
2481.96	3^-	252.05 *13*	1.14 *5*	2229.81	4^+	E1		0.00690	α(K)=0.00611 *9*; α(L)=0.000665 *10*; α(M)=0.0001113 *16* α(N)=1.386×10^{-5} *20*; α(O)=8.73×10^{-7} *13* B(E1)(W.u.)=0.000269 *25*
		627.73 *9*	100 *3*	1854.22	2^+	E1+M2	−0.07 *3*		B(E1)(W.u.)=0.00152 *12*; B(M2)(W.u.)=9.E+1 *8* B(M2)(W.u.): exceeds RUL(IV)=1.
		1404.8 *4*	0.56 *15*	1076.68	2^+				
		2482.08 *17*	0.354 *25*	0.0	0^+	[E3]			B(E3)(W.u.)=18.3 *20*
2642.18	2^+	1564.4@ *5*	110 *30*	1076.68	2^+				
		2641.9 *4*	100 *25*	0.0	0^+	[E2]			B(E2)(W.u.)=1.1 *4*
2672.89	5^-	190.73 *13*	6.00 *20*	2481.96	3^-	E2		0.0958	α(K)=0.0831 *12*; α(L)=0.01073 *16*; α(M)=0.00180 *3* α(N)=0.000217 *3*; α(O)=1.135×10^{-5} *17* B(E2)(W.u.)>0.9 I_γ: from ^{86}Y ε decay (14.74 h). In in-beam γ-ray data, branching ratio of 11.0 *10* in (α,2nγ) (1983Fi05) and 22.1 *8* in (^{9}Be,5nγ) are high by a factor of 2 to 4 as compared to that in decay data.
		443.14 *8*	100 *3*	2229.81	4^+	E1+M2	+0.083 *11*	0.00159 *3*	α(K)=0.00141 *3*; α(L)=0.000153 *3*; α(M)=2.56×10^{-5} *5* α(N)=3.20×10^{-6} *6*; α(O)=2.06×10^{-7} *4* B(E1)(W.u.)>7.4×10^{-7}; B(M2)(W.u.)>0.083
2788.9	2^+	1711.6 *7*	100 *19*	1076.68	2^+				
		2790.0 *10*	6 *3*	0.0	0^+	[E2]			B(E2)(W.u.)=0.34 *24*
2857.41	6^+	184.5 *4*	5.7 *25*	2672.89	5^-	D			I_γ: unweighted average of values from (^{9}Be,5nγ) and (^{13}C,3nγ).
		627.61 *10*	100 *1*	2229.81	4^+	E2		0.00190	α(K)=0.001675 *24*; α(L)=0.000187 *3*; α(M)=3.14×10^{-5} *5* α(N)=3.91×10^{-6} *6*; α(O)=2.46×10^{-7} *4* B(E2)(W.u.)>0.052 Mult.: from $\gamma(\theta)$ and γ(lin pol) in (^{18}O,2nγ).
2878.32	$(4)^+$	648.6 *10*		2229.81	4^+				
		1024.04 *10*	100 *4*	1854.22	2^+	(E2)			Mult.: M1,E2 from α(K)exp. E2 from adopted ΔJ^π.
		1801.70 *10*	43.5 *13*	1076.68	2^+	(E2)			Mult.: M1,E2 from α(K)exp. E2 from adopted ΔJ^π.
2956.09	8^+	98.68 *3*	100	2857.41	6^+	E2		1.068	α(K)=0.895 *13*; α(L)=0.1461 *21*; α(M)=0.0246 *4* α(N)=0.00284 *4*; α(O)=0.0001137 *16* B(E2)(W.u.)=2.85 *5* Mult.: from α deduced from intensity balance in IT decay.
2997.41	3^-	355.1 *3*	0.48 *12*	2642.18	2^+				
		515.18 *20*	23.5 *7*	2481.96	3^-	M1,E2		0.0029 *5*	α(K)=0.0026 *4*; α(L)=0.00029 *5*; α(M)=4.8×10^{-5} *9* α(N)=6.0×10^{-6} *10*; α(O)=3.8×10^{-7} *6* α: overlaps M1 and E2.

$^{86}_{38}Sr_{48}$-6

$\gamma(^{86}$Sr) (continued)

E_i(level)	J^π_i	E_γ †	I_γ †	E_f	J^π_f	Mult. ‡	δ ‡	α #	Comments
2997.41	3^-	767.63 13	11.5 16	2229.81	4^+				
		1142.3@ 10	0.48 16	1854.22	2^+				
		1920.72 13	100 3	1076.68	2^+	E1(+M2)	−0.01 3		
		2997.6 5	0.040 20	0.0	0^+	[E3]			
3055.87	5^-	383.04 18	100 3	2672.89	5^-	M1		0.00494	α(K)=0.00437 7; α(L)=0.000481 7; α(M)=8.08×10^{-5} 12 α(N)=1.015×10^{-5} 15; α(O)=6.61×10^{-7} 10 Mult.: from 2014KuZZ.
		826.04 12	90.9 23	2229.81	4^+	E1			B(E1)(W.u.)>5.9×10^{-8} Mult.: [M2+E3] in ^{82}Se(^{9}Be,5nγ) from DCO (2014Li25) seems unlikely in view of short half-life of 3055.87 level. δ(M2/E1)=+0.012 19.
3185.29	$(3)^-$	187.87 13	8.18 27	2997.41	3^-	M1		0.0297	α(K)=0.0262 4; α(L)=0.00294 5; α(M)=0.000495 7 α(N)=6.20×10^{-5} 9; α(O)=3.99×10^{-6} 6 B(M1)(W.u.)>3.9×10^{-5}
		307.00 10	22.5 5	2878.32	$(4)^+$	E1		0.00399	α(K)=0.00354 5; α(L)=0.000384 6; α(M)=6.43×10^{-5} 9 α(N)=8.02×10^{-6} 12; α(O)=5.10×10^{-7} 8 B(E1)(W.u.)>3.9×10^{-7}
		512.42 16		2672.89	5^-				
		703.34 10	100 3	2481.96	3^-	M1+E2	+0.25 5	1.21×10^{-3} 2	B(M1)(W.u.)>8.4×10^{-6}; B(E2)(W.u.)>0.00077 α(K)=0.001076 16; α(L)=0.0001167 17; α(M)=1.96×10^{-5} 3 α(N)=2.46×10^{-6} 4; α(O)=1.614×10^{-7} 24
		955.35 20	6.74 27	2229.81	4^+				
		2108.9 3	0.32 5	1076.68	2^+				
3291.46	6^-	235.47 19	100 4	3055.87	5^-	D+Q			Mult.: from DCO in ^{82}Se(^{9}Be,5nγ) (2014Li25) and in ^{76}Ge(^{13}C,3nγ) (2014KuZZ).
		503.0@ 4	23 8	2788.9	2^+	[M4]			E_γ: placement of 503.0γ to 2^+ level in ^{86}Y ε decay (14.74 h) is highly questionable as its implied M4 multipolarity is inconsistent with short half-life of 3291 level. Also this γ ray has not been confirmed in (α,2nγ) (1983Fi05), (^{9}Be,5nγ) (2014Li25) and (^{13}C,3nγ) (2014KuZZ) experiments.
		619.06 23	54 8	2672.89	5^-				
3317.70	$(5)^-$	132.34 10	3.77 19	3185.29	$(3)^-$				
		439.5 3	4.5 15	2878.32	$(4)^+$				
		644.8 10	50 8	2672.89	5^-	(M1+E2)	+0.27 6	1.48×10^{-3} 2	α(K)=0.001313 21; α(L)=0.0001429 23; α(M)=2.40×10^{-5} 4 α(N)=3.02×10^{-6} 5; α(O)=1.97×10^{-7} 3
		835.7 10	100 13	2481.96	3^-	(E2)			
		1087.6 5	0.94 19	2229.81	4^+				
3362.11	4^+	689.29 25	49 9	2672.89	5^-				

$^{86}_{38}$Sr$_{48}$-7

$\gamma(^{86}Sr)$ (continued)

E_i(level)	J^{π}_i	E_γ†	I_γ†	E_f	J^{π}_f	Mult.‡	δ‡	α#	Comments
3362.11	4^+	1133.3 *10*	84 *7*	2229.81	4^+				
		1507.86 *10*	100 *12*	1854.22	2^+				
3482.3	6^+	809.4 *4*	100	2672.89	5^-				
3500.00	$(3,4,5)^-$	182.34@ *20*	16 *5*	3317.70	$(5)^-$				
		444.18 *23*	99 *25*	3055.87	5^-				
		1017.93 *23*	28 *18*	2481.96	3^-				
		1270.16 *13*	100 *15*	2229.81	4^+				
3555.87	(4^+)	237.9 *3*	25 *5*	3317.70	$(5)^-$				
		264.53 *13*	100 *5*	3291.46	6^-				
		882.96 *17*	46 *15*	2672.89	5^-				
3645.00	(3^-)	144.5 *3*	1.39 *15*	3500.00	$(3,4,5)^-$				
		1163.03 *10*	52.4 *18*	2481.96	3^-	M1+E2(+E0)			
		1415.20 *23*	15 *4*	2229.81	4^+				
		1790.90 *10*	44.3 *18*	1854.22	2^+	E1+M2	−0.16 *7*		
		2567.97 *18*	100 *5*	1076.68	2^+	E1+M2	+0.19 *2*	1.03×10^{-3}	α(K)=5.03×10^{-5} *10*; α(L)=5.32×10^{-6} *11*; α(M)=8.91×10^{-7} *18* α(N)=1.123×10^{-7} *22*; α(O)=7.43×10^{-9} *15*; α(IPF)=0.000971 *15*
3664.41	7^-	372.8 *4*	8 *4*	3291.46	6^-	M1		0.00528	α(K)=0.00467 *7*; α(L)=0.000514 *8*; α(M)=8.64×10^{-5} *13* α(N)=1.084×10^{-5} *16*; α(O)=7.06×10^{-7} *10*
		708.5 *5*	10 *3*	2956.09	8^+	E1			γ reported in (^{13}C,3nγ) only.
		807.0 *3*	100 *5*	2857.41	6^+	E1			
3665.3	$(5,6,7)^-$	183.0 *12*	100	3482.3	6^+				
3686.84	3^-	2610.11 *20*	100	1076.68	2^+				
3765.74	$3^-,4^-,5^-$	209.80@ *23*	8.3 *3*	3555.87	(4^+)				
		448.10@ *10*	1.6 *5*	3317.70	$(5)^-$				
		580.57 *10*	100.0 *29*	3185.29	$(3)^-$	(M1)		0.00186	B(M1)(W.u.)>1.1×10^{-5} α(K)=0.001644 *23*; α(L)=0.000179 *3*; α(M)=3.01×10^{-5} *5* α(N)=3.78×10^{-6} *6*; α(O)=2.47×10^{-7} *4*
		709.90 *10*	54.8 *16*	3055.87	5^-	M1,E2			
		768.3 *10*	6.7 *22*	2997.41	3^-				
		887.40 *17*	9.1 *9*	2878.32	$(4)^+$				
		1092.68 *13*	14.5 *9*	2672.89	5^-				
		1283.96 *13*	6.0 *22*	2481.96	3^-				
		1535.67 *13*	2.4 *7*	2229.81	4^+				
3774.98	$(4,5)^+$	719.17 *23*	100 *15*	3055.87	5^-				
		1102.02 *23*	89 *11*	2672.89	5^-				
3782.70	6^+	925.3 *4*	39 *5*	2857.41	6^+				

$^{86}_{38}Sr_{48}$-8

Adopted Levels, Gammas (continued)

$\gamma(^{86}Sr)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	δ‡	α#	Comments
3782.70	6^+	1552.9 *4*	100 *4*	2229.81	4^+	E2			
3831.12	$(3,4)^-$	331.08 *23*	9.10 *27*	3500.00	$(3,4,5)^-$	M1(+E2)	0.3 *3*	0.0076 *13*	α(K)=0.0067 *11*; α(L)=0.00075 *14*; α(M)=0.000126 *23* α(N)=1.6×10^{-5} *3*; α(O)=1.01×10^{-6} *15*
		645.9 *10*	100 *12*	3185.29	$(3)^-$	(M1)		1.46×10^{-3}	α(K)=0.001290 *19*; α(L)=0.0001401 *21*; α(M)=2.35×10^{-5} *4* α(N)=2.96×10^{-6} *5*; α(O)=1.94×10^{-7} *3*
		833.7 *10*	16 *4*	2997.41	3^-				
		1349.15 *10*	32.2 *10*	2481.96	3^-	M1,E2			
3871.5	3^-	2017.1 *6*	64 *8*	1854.22	2^+				
		2794.9 *4*	100 *8*	1076.68	2^+				
3926.04	$(4)^+$	370.28 *17*	41.0 *20*	3555.87	(4^+)				
		425.97 *23*	15.2 *8*	3500.00	$(3,4,5)^-$				
		608.29 *10*	100 *7*	3317.70	$(5)^-$	E1+M2	0.2 *1*	0.00087 *19*	α(K)=0.00077 *17*; α(L)=8.4×10^{-5} *19*; α(M)=1.4×10^{-5} *4* α(N)=1.8×10^{-6} *4*; α(O)=1.1×10^{-7} *3*
		634.78@ *10*	4.5 *12*	3291.46	6^-				
		740.81 *13*	67.6 *25*	3185.29	$(3)^-$				
		1253.11 *10*	76.2 *25*	2672.89	5^-	E1(+M2)	0.2 *2*		
		1696.25 *13*	31.6 *8*	2229.81	4^+				
3942.46	3^-	256.4@ *4*	20 *7*	3686.84	3^-				
		2088.09 *25*	65 *7*	1854.22	2^+				
		2865.9 *3*	100 *17*	1076.68	2^+				
3968.96	$3^-,4^-,5^-$	469.24 *25*	55 *5*	3500.00	$(3,4,5)^-$				
		783.6 *3*	48 *6*	3185.29	$(3)^-$				
		971.43 *18*	50 *6*	2997.41	3^-				
		1296.03 *23*	100 *6*	2672.89	5^-				
3973.1	$(6,7,8^+)$	490.80 *20*	100	3482.3	6^+				
4146.21	$3,4^+$	380.4 *3*	100 *7*	3765.74	$3^-,4^-,5^-$				
		2291.8 *5*	27.3 *18*	1854.22	2^+				
		3069.7 *4*	25 *4*	1076.68	2^+				
4148.5	(9)	1192.4 *4*	100	2956.09	8^+	D			
4154.28	8^+	371.6 *3*	20 *6*	3782.70	6^+	E2		0.00938	α(K)=0.00824 *12*; α(L)=0.000961 *14*; α(M)=0.0001613 *23* α(N)=1.99×10^{-5} *3*; α(O)=1.182×10^{-6} *17*
		489.85 *23*	100.0 *18*	3664.41	7^-	E1		1.18×10^{-3}	α(K)=0.001049 *15*; α(L)=0.0001133 *16*; α(M)=1.90×10^{-5} *3* α(N)=2.38×10^{-6} *4*; α(O)=1.533×10^{-7} *22*
		1198.15 *21*	35 *11*	2956.09	8^+	(E2)			
		1296.9 *4*	8.6 *19*	2857.41	6^+	E2			

$^{86}_{38}Sr_{48}$-9

Adopted Levels, Gammas (continued)

$\gamma(^{86}Sr)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. ‡	δ ‡	α #	Comments
4206.11	$(3^-,4,5^-)$	1150.3 *10*		3055.87	5^-				
		1327.5 *5*	16 *7*	2878.32	$(4)^+$				
		1533.19 *13*	40 *6*	2672.89	5^-				
		1724.15 *10*	100 *7*	2481.96	3^-				
4339.3?		1154.0@ *15*	100	3185.29	$(3)^-$				
4410.7	3^-	2180.8 *10*	27 *7*	2229.81	4^+				
		3334.0 *5*	100 *13*	1076.68	2^+				
4600.6	$(6,7,8)^-$	627.5 *10*	100	3973.1	$(6,7,8^+)$				
4709.13	10^+	1753.03 *15*	100	2956.09	8^+	E2			B(E2)(W.u.)>0.11 Mult.: from $\gamma(\theta)$ and γ(lin pol) in (^{18}O,2nγ), and from DCO in ^{76}Ge(^{13}C,3nγ).
4718.0	$3,4^{(+)}$	2862 *3*	22 *10*	1854.22	2^+				
		3642 *2*	100 *20*	1076.68	2^+				
4924.6	$(9)^-$	1260.2 *6*	100	3664.41	7^-	E2			Mult.: from DCO in ^{76}Ge(^{13}C,3nγ) (2014KuZZ).
4954	$3,4^{(+)}$	3877 *6*	100	1076.68	2^+				
4976.22	$(10)^+$	821.9 *2*	100	4154.28	8^+	E2			
5012.7	(11^-)	303.6 *3*	100	4709.13	10^+	(E1)		0.00412	α(K)=0.00365 *6*; α(L)=0.000396 *6*; α(M)=6.63×10^{-5} *10* α(N)=8.27×10^{-6} *12*; α(O)=5.25×10^{-7} *8*
5425.6		825.0 *10*	100	4600.6	$(6,7,8)^-$				
5544.0	$(9)^-$	567.8 *4*	72 *27*	4976.22	$(10)^+$				
		1389.8 *4*	100 *7*	4154.28	8^+	E1			
5660.6	(12^-)	648.0 *7*	100	5012.7	(11^-)	D+Q			
5834.6	$(11)^-$	1125.59 *22*	100	4709.13	10^+	E1			B(E1)(W.u.)>1.2×10^{-5} Mult.,δ: from $\gamma(\theta)$ and γ(lin pol) in (^{18}O,2nγ); δ(E2/M1)=−0.02 *4*.
5847.9	$(10)^-$	303.9 *4*	100	5544.0	$(9)^-$	M1		0.00871	α(K)=0.00770 *11*; α(L)=0.000852 *13*; α(M)=0.0001434 *21* α(N)=1.80×10^{-5} *3*; α(O)=1.166×10^{-6} *17*
5984.3		1059.7 *4*	100	4924.6	$(9)^-$				
5984.8	$(11)^-$	1275.5 *5*	100	4709.13	10^+	E1			
6041.1	(11)	193.4 *6*	100	5847.9	$(10)^-$	D+Q			
6061.3	$(12)^-$	76.3 *5*	13 *3*	5984.8	$(11)^-$				
		226.68 *4*	100 *5*	5834.6	$(11)^-$	M1(+E2)	−0.05 *5*	0.0183 *4*	α(K)=0.0162 *4*; α(L)=0.00181 *4*; α(M)=0.000304 *7* α(N)=3.82×10^{-5} *8*; α(O)=2.46×10^{-6} *5* B(M1)(W.u.)=0.19 *6*; B(E2)(W.u.)=10 *+21−10* Mult.,δ: from $\gamma(\theta)$ and γ(lin pol) in (^{18}O,2nγ).
6191.2	$(13)^-$	129.83 *3*	100	6061.3	$(12)^-$	M1(+E2)	−0.02 *3*	0.0795 *13*	α(K)=0.0701 *12*; α(L)=0.00796 *14*; α(M)=0.001340 *24* α(N)=0.000168 *3*; α(O)=1.069×10^{-5} *17* B(M1)(W.u.)=1.9 *5* B(M1)(W.u.)=1.9 *6*; B(E2)(W.u.)=5.E+1 *+16−5* Mult.,δ: from $\gamma(\theta)$; γ(lin pol) in (^{18}O,2nγ).

$\gamma(^{86}$Sr) (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	α#	Comments
6205.1	$(12)^+$	1228.8 2	100	4976.22	$(10)^+$	E2		
6315.3		254.0 5	100	6061.3	$(12)^-$			
6687.4	(13^-)	646.4 5	77 25	6041.1	(11)			
		1026.8 5	100 25	5660.6	(12^-)			Mult.: D+Q in 2014Li25 and (E2) in 2014KuZZ.
6879.0	12^+	674.0 5	100 11	6205.1	$(12)^+$	(E2)		Mult.: ΔJ=0 transition (2014KuZZ).
		817.9 7	20 8	6061.3	$(12)^-$			
		894.2 7	23 8	5984.8	$(11)^-$			
		1044.0 7	16 9	5834.6	$(11)^-$			
		1902.6 7	19 5	4976.22	$(10)^+$	(E2)		
		2169.7 5	50 11	4709.13	10^+	E2		
6890.6	$(14)^-$	699.6 3	100	6191.2	$(13)^-$	M1		
7071.7		756.4 5	100	6315.3				
7241.1	(14^-)	554.0 5	100	6687.4	(13^-)	(M1)	0.00207	α(K)=0.00183 3; α(L)=0.000199 3; α(M)=3.35×10^{-5} 5 α(N)=4.21×10^{-6} 6; α(O)=2.76×10^{-7} 4
7336.7	(13^+)	457.6 3	100 6	6879.0	12^+	(M1)	0.00323	α(K)=0.00286 4; α(L)=0.000313 5; α(M)=5.26×10^{-5} 8 α(N)=6.61×10^{-6} 10; α(O)=4.31×10^{-7} 6
		649.0 7	27 9	6687.4	(13^-)			
		1131.8 7	15 6	6205.1	$(12)^+$	M1+E2		
7461.8	(15^-)	571.3 3	100	6890.6	$(14)^-$	M1	0.00193	α(K)=0.001706 24; α(L)=0.000186 3; α(M)=3.12×10^{-5} 5 α(N)=3.92×10^{-6} 6; α(O)=2.57×10^{-7} 4
7640.7	(14^+)	1435.5 3	100	6205.1	$(12)^+$	E2		
7822.0	(1)	4718 5	33 9	3104	(0^+)			
		4775 5	21 7	3047				
		5034 5	30 8	2788.9	2^+			
		5180 5	15 7	2642.18	2^+			
		5323 5	20 7	2499				
		5619 5	16 7	2203	0^+			
		5716 5	29 6	2106	0^+			
		5969 5	59 8	1854.22	2^+			
		6744 5	21 5	1076.68	2^+			
		7820 5	100 9	0.0	0^+			
7844.4	(14^+)	507.6 3	100 12	7336.7	(13^+)	(M1)	0.00253	α(K)=0.00224 4; α(L)=0.000245 4; α(M)=4.11×10^{-5} 6 α(N)=5.17×10^{-6} 8; α(O)=3.38×10^{-7} 5
		603.7 5	35.7 22	7241.1	(14^-)			
		1639.3 7	12 4	6205.1	$(12)^+$			
7895.0		1833.7 5	100	6061.3	$(12)^-$			
8158.8?		697.0@ 5		7461.8	(15^-)			
8267.4		1376.7 7	100	6890.6	$(14)^-$			
8338.0	(15^+)	493.5 3	100 11	7844.4	(14^+)	(M1)	0.00271	α(K)=0.00239 4; α(L)=0.000262 4; α(M)=4.40×10^{-5} 7 α(N)=5.52×10^{-6} 8; α(O)=3.61×10^{-7} 5

$\gamma(^{86}Sr)$ (continued)

E_i(level)	J^π_i	E_γ†	I_γ†	E_f	J^π_f	Mult.‡	α#	Comments
8338.0	(15+)	697.2 *3*	78 *8*	7640.7	(14+)	(M1)	1.23×10^{-3}	α(K)=0.001087 *16*; α(L)=0.0001178 *17*; α(M)=1.98×10^{-5} *3* α(N)=2.49×10^{-6} *4*; α(O)=1.634×10^{-7} *23*
8814.3	(16+)	476.2 *3*		8338.0	(15+)	(M1)	0.00294	α(K)=0.00260 *4*; α(L)=0.000285 *4*; α(M)=4.78×10^{-5} *7* α(N)=6.01×10^{-6} *9*; α(O)=3.93×10^{-7} *6*
		1353.0 *7*		7461.8	(15−)			
8964.7	(16−)	2074.0 *5*	100	6890.6	(14)−	(E2)		
9402.7		1507.6 *5*	100	7895.0				
9431.0	(17+)	616.7 *3*	100	8814.3	(16+)	M1	1.62×10^{-3}	α(K)=0.001433 *21*; α(L)=0.0001557 *22*; α(M)=2.62×10^{-5} *4* α(N)=3.29×10^{-6} *5*; α(O)=2.16×10^{-7} *3*
10005.6	(18+)	574.6 *3*	100	9431.0	(17+)	M1	0.00190	α(K)=0.001684 *24*; α(L)=0.000183 *3*; α(M)=3.08×10^{-5} *5* α(N)=3.87×10^{-6} *6*; α(O)=2.53×10^{-7} *4*
10873.8	(19+)	868.2 *5*	100	10005.6	(18+)	(M1)		

† Weighted averages taken when a level is populated in more than one decay or reaction.

‡ From $\gamma\gamma(\theta)$ and ce data in ε decay (14.74 h), unless indicated otherwise.

Total theoretical internal conversion coefficients, calculated using the BrIcc code (2008Ki07) with Frozen orbital approximation based on γ-ray energies, assigned multipolarities, and mixing ratios, unless otherwise specified.

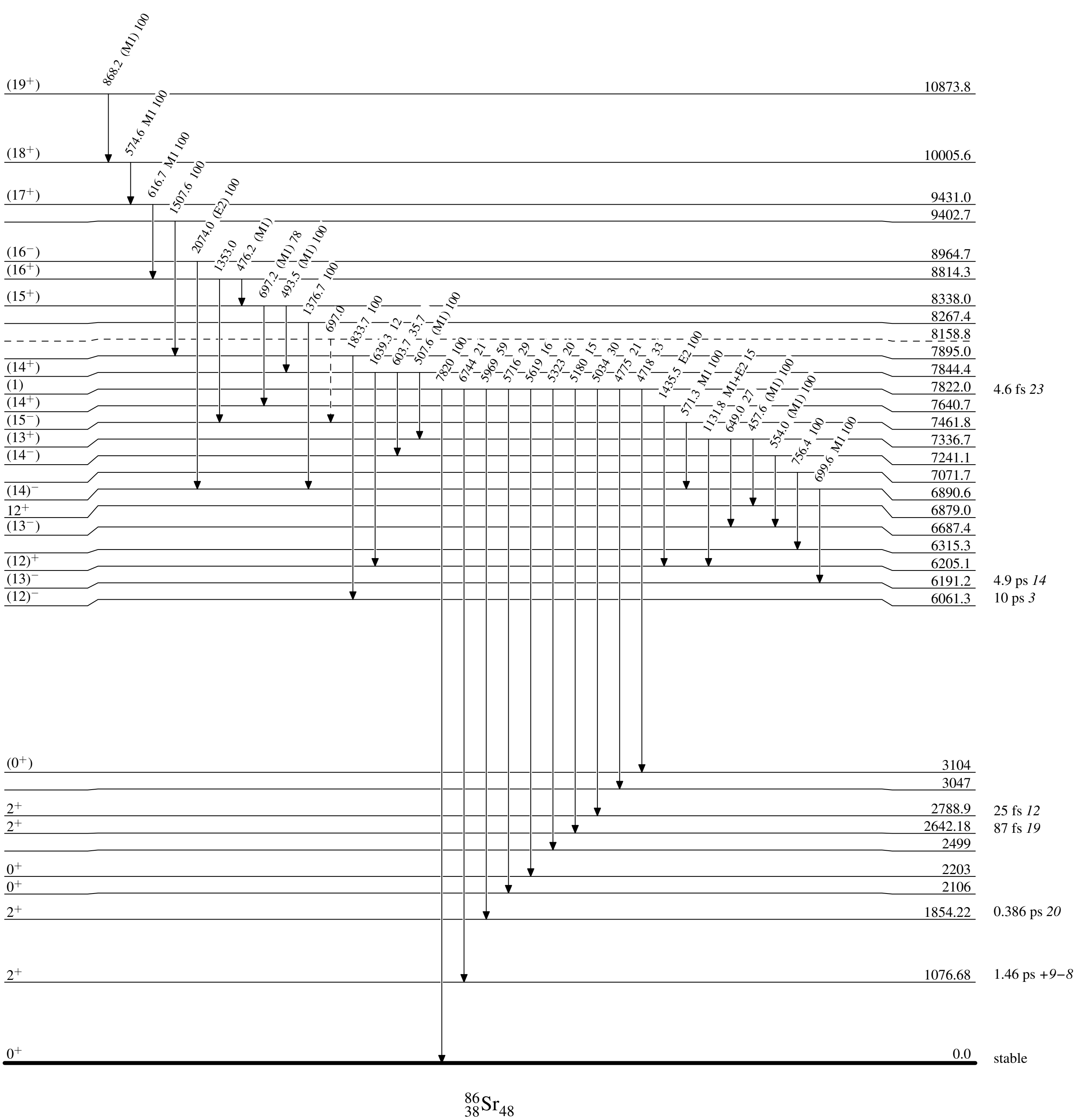
@ Placement of transition in the level scheme is uncertain.

$^{86}_{38}Sr_{48}$-12

Adopted Levels, Gammas

Level Scheme

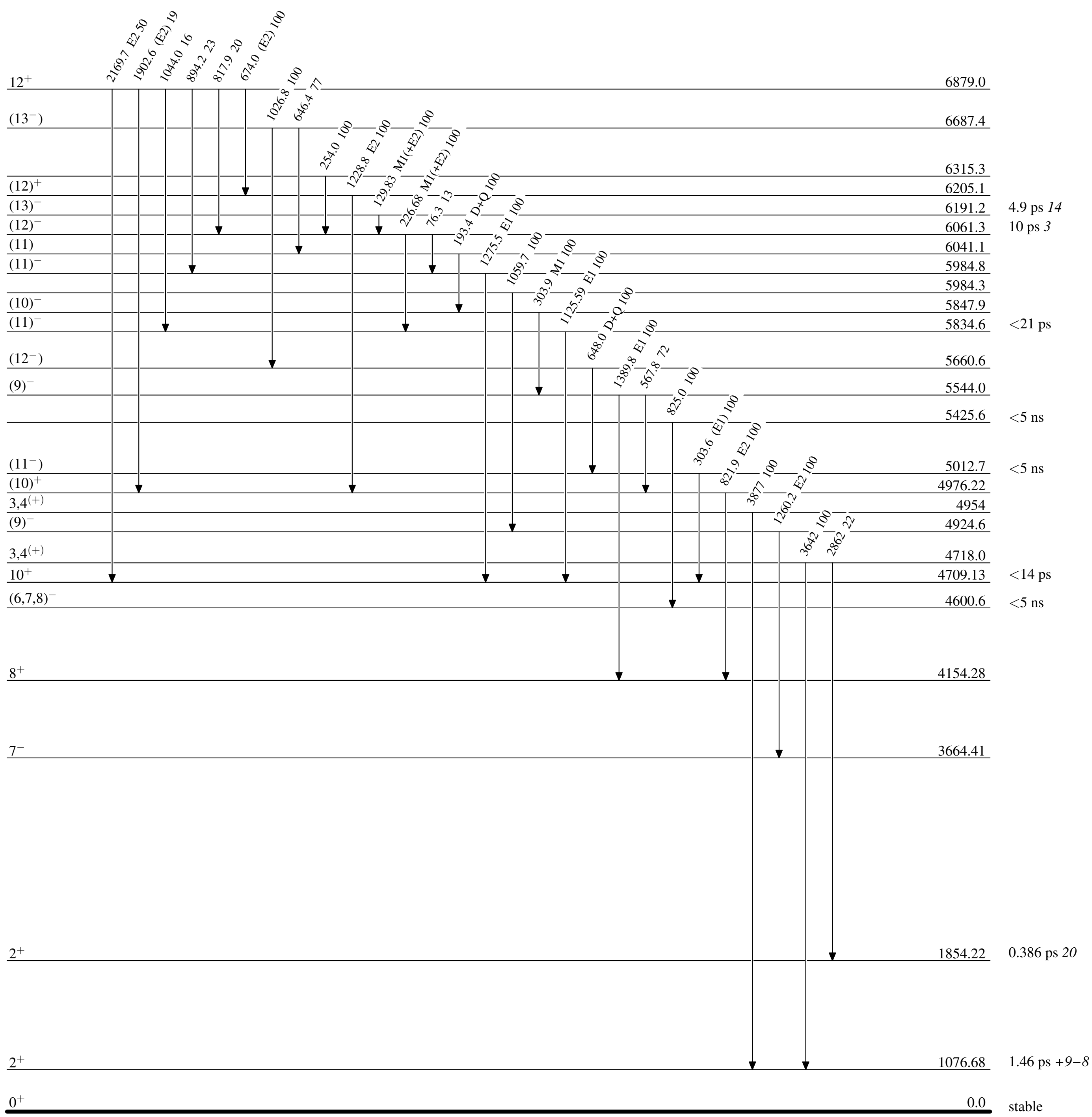
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



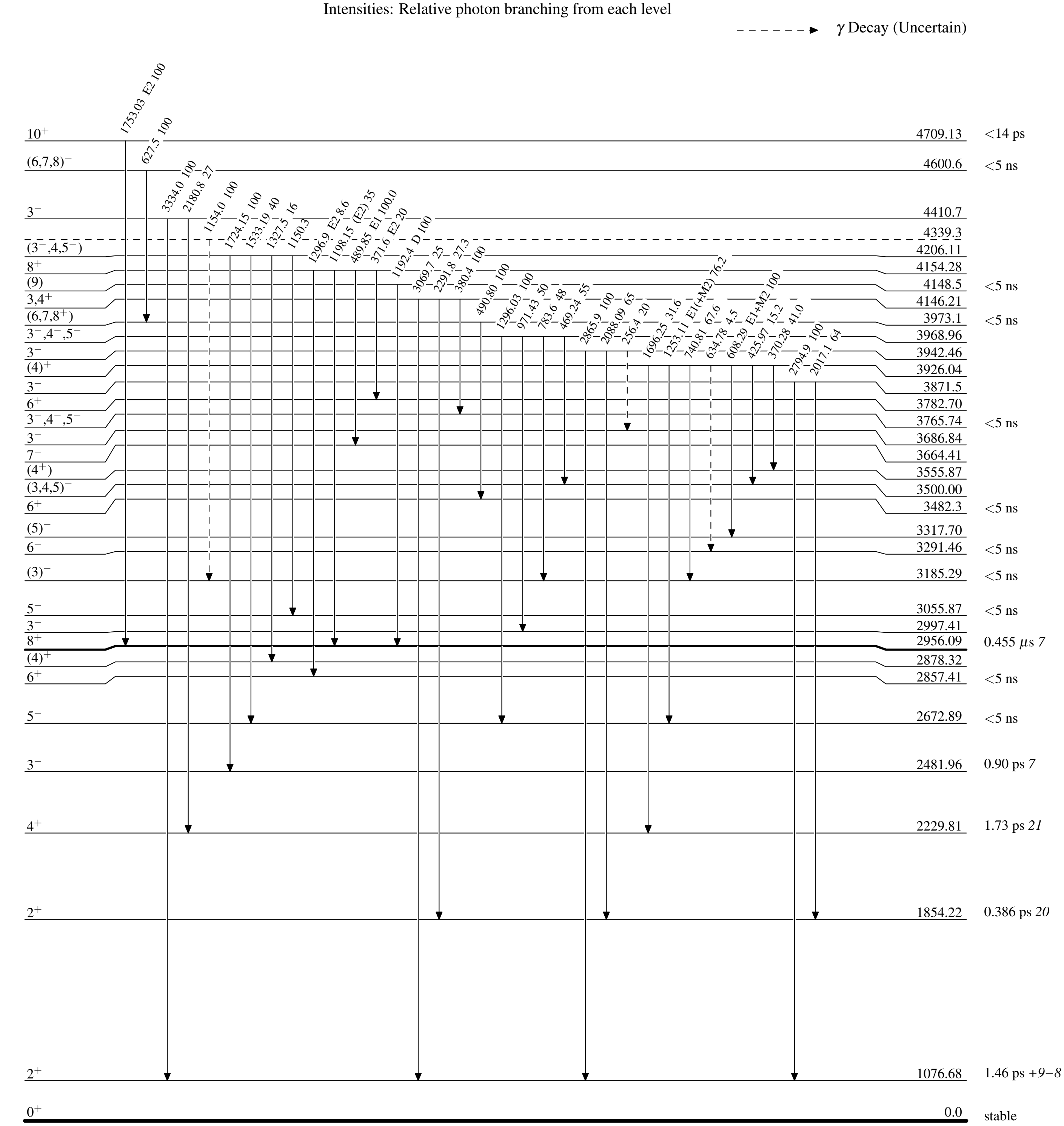
$^{86}_{38}Sr_{48}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

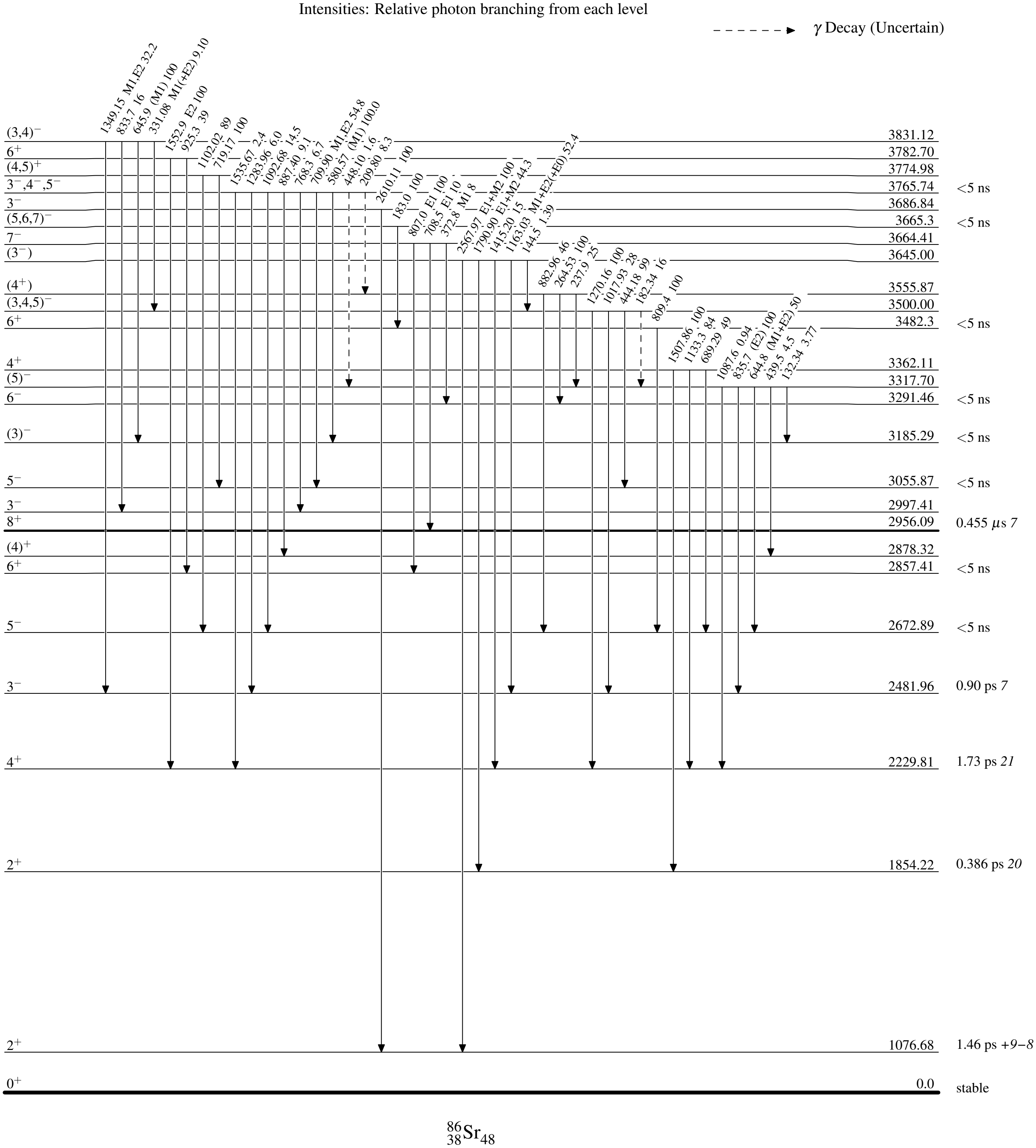


$^{86}_{38}Sr_{48}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

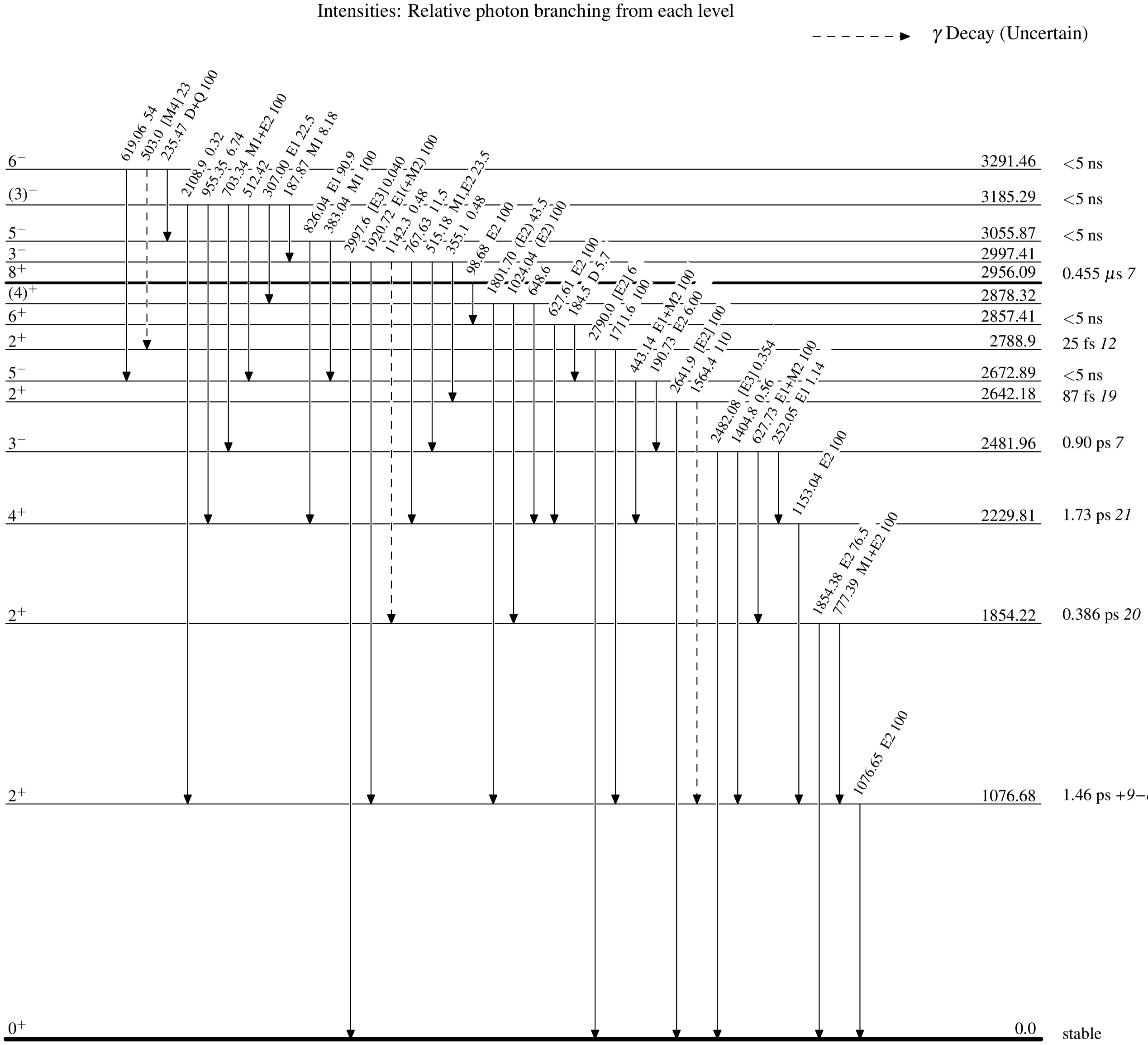


Adopted Levels, Gammas

Legend

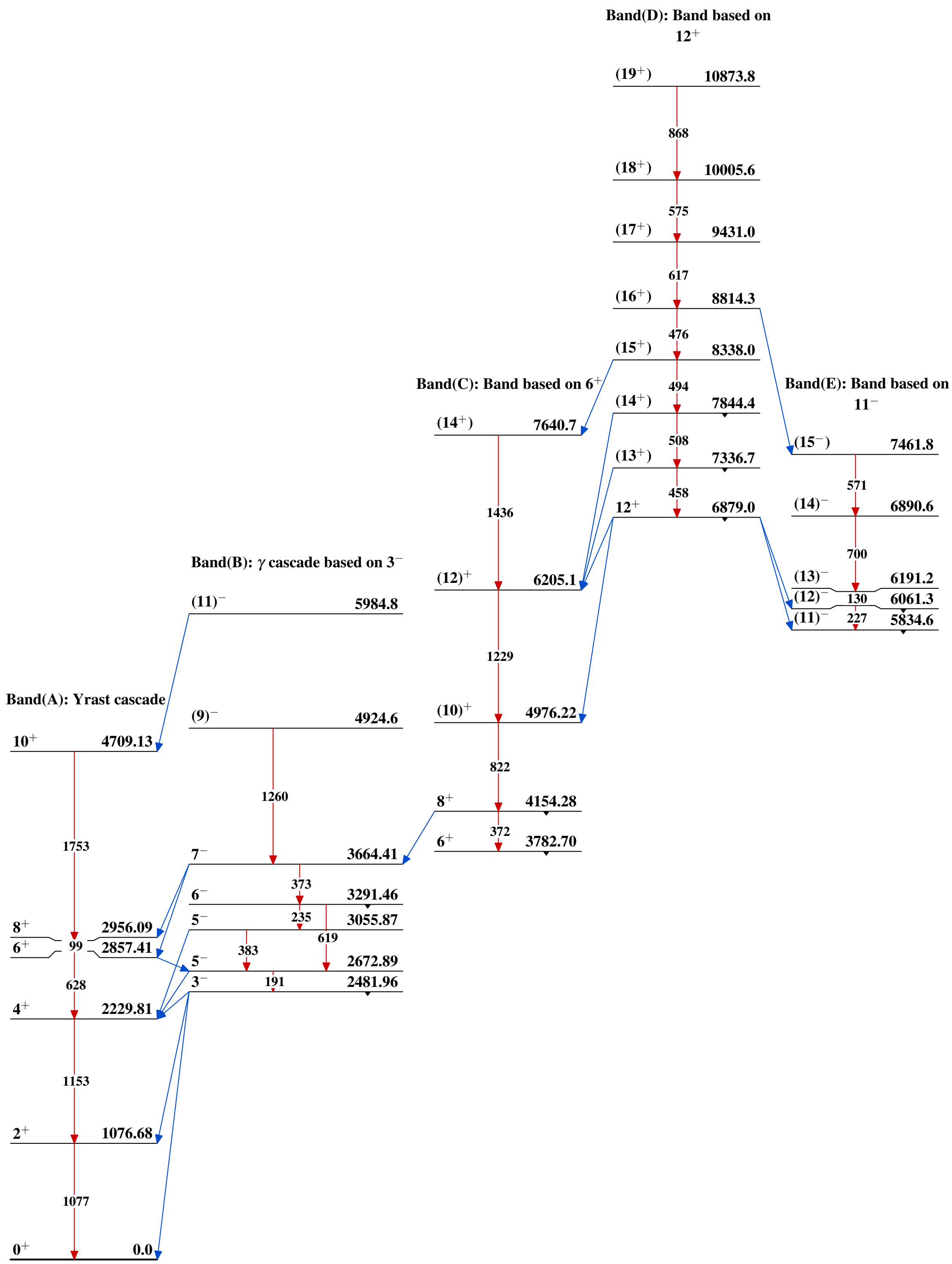
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{86}_{38}Sr_{48}$

Adopted Levels, Gammas



$^{86}_{38}Sr_{48}$