Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Jun Chen and Balraj Singh	NDS 199,1 (2025)	30-Sep-2024

Q(β^-)=−5582.5 *4*; S(n)=8641.63965 *50*; S(p)=9569.95 *4*; Q(α)=−7115.6924 *14* 2021Wa16
S(2n)=23685.96 *23*, S(2p)=18214.76 *4* (2021Wa16).
Mass measurement: 2005Ra34, 2005Sh38, 2003Bl17.
Theoretical calculations:
2018Hu12: calculated levels, J, π using the chiral shell-model interactions.
2009Ts01: calculated neutron spectroscopic factors.
2008Pe13: calculated magnetic moment, β-decay half-life, gyromagnetic ratio.
2003Ra09,1990Su19,1971Wi01: calculated quadrupole moment.
1988Sz01: calculated levels using the supersymmetry assumption.
1971Ca04: calculated levels using an intermediate coupling vibrational model.
1971De06: calculated B(E2), quadrupole moment using various shell-model spaces.
1971Gl10: calculated transition strengths, magnetic and quadrupole moments, γ-ray mixing ratios using many-particle shell-model.
1971Wi19: calculated levels, transition strengths, moments.
1970Ba14: calculated levels, J, π, B(E2), B(M1), magnetic and quadrupole moments using vibration-particle coupling model.

^{33}S Levels

Isospin assignments are from (pol d,t).
$g\Gamma_n$ and Γ_γ under comments are from (n,γ),(n,n):resonances, unless otherwise noted.

Cross Reference (XREF) Flags

A	^{33}P β^- decay (25.38 d)	J	^{30}Si(α,nγ)	S	^{33}S(p,p′),(p,p′γ)
B	^{33}Cl ε decay (2.5059 s)	K	^{31}P(^{3}He,p)	T	^{34}S(p,d),(pol p,d)
C	^{2}H(^{32}S,pγ)	L	^{31}P(^{3}He,pγ)	U	^{34}S(pol d,t)
D	^{18}O(^{18}O,3nγ)	M	^{32}S(n,γ) E=res	V	^{34}S(^{3}He,α),(^{3}He,$\alpha\gamma$)
E	^{24}Mg(^{14}N,αpγ)	N	^{32}S(n,γ) E=thermal	W	^{34}S(^{32}S,^{33}S)
F	^{26}Mg(^{13}C,2n$\alpha\gamma$)	O	^{32}S(n,γ),(n,n):resonances	X	^{35}Cl(p,^{3}He)
G	^{27}Al(^{12}C,αpnγ)	P	^{32}S(d,p),(pol d,p)	Y	^{35}Cl(d,α)
H	^{29}Si(α,n),(α,α),(α,γ):res	Q	^{32}S(d,pγ)	Z	Coulomb excitation
I	^{29}Si(^{6}Li,d)	R	^{32}S(^{13}C,^{12}C)		

E(level)[†]	J$^\pi$[‡]	$T_{1/2}$ or Γ[#]	XREF	Comments
0.0	3/2$^+$	stable	ABCDEFGHIJKLMN PQRSTUVWXYZ	μ=+0.64325 *2* (2005An15,2019StZV) Q=−0.0694 *4* (2014St28,2018Py01,2021StZZ) T=1/2 J$^\pi$: spin from microwave absorption (1948To13, 1952Es07) and NMR (1953We51); L(pol d,t)=2 from 0$^+$ and L-1/2 transfer from analyzing powers. μ: evaluated value from 2019StZV based on measured value of 0.6432574 *107* using nuclear magnetic resonance (NMR) in 2005An15, with more accurately estimated shielding constant than old values as claimed by the authors. Others: +0.6438212 *14* (1973Lu06), +0.64348 *9* (1953We51), +0.634 *10* (1952Es07), +0.64292 *14* (1951Dh01), all using NMR. Q: as adopted in 2021StZZ and 2018Py01 evaluations, which is the revised value of −0.0678 *13* calculated by 1990Su19 using multi-configurational Hartree-Fock (MCHF) calculations and measured hyperfine structure data in

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)†	J^{π}‡	$T_{1/2\ 1/2}$ or Γ#	XREF	Comments
				1989Tr06. This revision was made by 2014St28, by using the coupled-cluster theory and accurate values of sulfur quadrupole couplings of Cs and SiS from the analysis of rotational spectra data in 2007Mu22 and 2005Mu32. Others: −0.084 *8* (collinear laser spectroscopy, 1986El09), −0.064 *10* (microwave spectroscopy, 1954Bi40), −0.056 (1962Ko22, value of 1954Bi40 reanalyzed), −0.06 (1953Bu92), −0.050 (1953De16), −0.05 $^{5-3}$ (1948To13). Theory: −0.0663 *2* (Hartree-Fock-density functional, 2000Ba85).
840.983 *15*	1/2^{+}	1.17 ps *7*	BCDEFGHIJKLMN PQRSTUVWXYZ	T=1/2 B(E2)↑=0.0019 *4* (1961An09) XREF: Z(830). J^{π}: L(d,t)=L(d,p)=L(p,d)=L(^{3}He,α)=0 from 0^{+}; also from γ(circ pol) in (n,γ) E=thermal. $T_{1/2}$: from τ=1.69 ps *10*, weighted average of 2.0 ps *3* (1973Wa10) and 1.69 ps *10* (1977He12) in (^{32}S,pγ), 1.66 ps *34* (1969Ra29), 1.81 ps *36* and 1.65 ps *33* (1969Br28, different stopping materials), and 1.70 ps *45* (1973Ca20) in (α,nγ), 1.73 ps *+110−45* (1969Va28) and 0.9 ps *+5−4* (1970Cu01) in (d,pγ), 1.69 ps *18* (1977Sc36) in Coulomb excitation, all by DSAM. B(E2)↑: from Coulomb excitation (1961An09).
1967.097 *32*	5/2^{+}	94 fs *14*	B DEFGHIJKLMN PQ STUV XYZ	T=1/2 XREF: U(1943)X(1950). J^{π}: L(pol d,t)=2 and L+1/2 transfer from analyzing powers. $T_{1/2}$: from τ=136 ps *20*, weighted average of 125 fs *37* (1969Br28), 182 fs *22* (1969Ra29), 90 fs *20* (1970Ka08), and 189 fs *50* (1973Ca20) in (α,nγ), 150 fs *45* (1969Va28) and 150 fs *30* (1970Cu01) in (d,pγ), and 80 fs *60* (1977Sc36) in Coulomb excitation.
2313.313 *24*	3/2^{+}	117 fs *17*	BC GHIJKLMN PQ STUV XY	T=1/2 XREF: X(2300). J^{π}: L(pol d,t)=2 and L-1/2 transfer from analyzing powers; spin=3/2 also from γγ(θ) in (n,γ) E=thermal. $T_{1/2}$: from τ=169 fs *25*, weighted average of 202 fs *26* (1977He12) in (^{32}S,pγ), 178 fs *53* (1969Br28), 183 fs *25* (1969Ra29), 145 fs *25* (1970Ka08), and 198 fs *50* (1973Ca20) in (α,nγ), and 140 fs *30* (1969Va28) and 140 fs *40* (1970Cu01) in (d,pγ).
2867.615 *27*	5/2^{+}	12 fs *4*	B H JKLMN PQ STUVW Y	T=1/2 J^{π}: L(pol d,t)=2 and L+1/2 transfer from analyzing powers; also from γ(θ,pol) in (α,nγ). $T_{1/2}$: from τ=17 fs *6*, weighted average of 33 fs *13* (1969Br28) and 34 fs *14* (1973Ca20) in (α,nγ), 13 fs *5* (1969Va28) in (d,pγ).
2934.45 *8*	7/2^{-}	28.3 ps *14*	DEFGH JK N PQ ST VW Y	XREF: V(2950). J^{π}: from γ(θ,pol) in (α,nγ); also L(d,p)=L(p,d)=L(^{3}He,α)=3 from 0^{+}. $T_{1/2}$: from τ=40.9 ps *20*, weighted average of 38 ps *11* (1969Br20), 36 ps *8* (1970Ka08), 40.5 ps *20* (1970Ra24, RDM), 44 ps *4* (1971Br23, RDM) in (α,nγ). Other: >5 ps from (d,pγ).
2969.09 *7*	7/2^{+}	59 fs *8*	EFGH JKL N PQ ST V XY	XREF: X(2950).

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)†	Jπ‡	$T_{1/2\ 1/2}$ or Γ#	XREF	Comments
				Jπ: from γ(θ,pol) in (α,nγ). Other: (3/2) from a fit to σ(θ) in (d,α) for a level at 2969 *8* by 1969Bo30 is in disagreement; L(^{3}He,p)=(3) from 1/2$^+$ suggests π=(−) for a group at 2974 *12*. $T_{1/2}$: from τ=85 fs *12*, weighted average of 90 fs *31* (1969Br28), 82 fs *12* (1969Ra29), 94 fs *24* (1973Ca20) in (α,nγ), 86 fs *25* (1969Va28) in (d,pγ).
3220.647 *22*	3/2$^-$	26 fs *5*	H JKLMN PQ ST V Y	Jπ: from γ(circular pol) in (n,γ) E=thermal and γ(θ) in (d,pγ); also L(d,p)=L(p,d)=L(^{3}He,α)=1 from 0$^+$. $T_{1/2}$: from τ=38 fs *7*, weighted average of 48 fs *18* (1973Ca20) in (α,nγ), 43 fs *7* (1989Ko53) in (n,γ) E=thermal, 28 fs *9* (1969Va28) and 40 fs *+20−10* (1970Cu01) in (d,pγ).
3365 *8*			Y	
3537.0 *10*			D G	Jπ: 602.5γ to 7/2$^-$ gives (3/2$^-$ to 11/2$^-$).
3779.6 *10*	(5/2$^+$)		D G	Jπ: tentatively proposed in (^{12}C,αpnγ) (2014Bi16) based on γγ(θ)(DCO), γγ(lin pol), and comparisons with shell-model calculations. Other: (9/2$^+$) proposed in (^{18}O,Xγ) (2009Ch43) based on qualitative γγ(lin pol) results. 2014Bi16 point out that for *J*π(3780)=(9/2$^+$) proposed by 2009Ch43, the experimental and calculated excitation energies show large differences while they match reasonably well for *J*π(3780)=(5/2$^+$).
3831.84 *20*	5/2$^+$	30 fs *8*	B H JKL N PQ TUV Y	T=1/2 Jπ: L(pol d,t)=2 and L+1/2 transfer from analyzing powers; spin=5/2 also from γ(θ) and γγ(θ) in (α,nγ). $T_{1/2}$: from τ=44 fs *12* (1973Ca20) in (α,nγ).
3934.74 *6*	3/2$^+$	24 fs *7*	B H JKLMN PQ T V Y	XREF: Y(3947). Jπ: spin=3/2 from γ(θ) in (α,nγ); L(p,d)=L(^{3}He,α)=2 from 0$^+$.
4048.49 *8*	9/2$^+$	211 fs *53*	EFG J LmN pQ T y	XREF: m(4050)p(4049)y(4060). Jπ: from γ(θ,pol) and γγ(θ) in (α,nγ). $T_{1/2}$: other: <0.26 ps from (^{12}C,αpnγ).
4055.44 *11*	1/2$^+$	12 fs *8*	B H JK mN pQ T y	XREF: H(4049)m(4050)p(4049)y(4060). Jπ: L(p,d)=0 from 0$^+$; γ(θ) in (α,nγ) also compatible with J=1/2,3/2.
4094.98 *17*	7/2$^+$	31 fs *8*	EFG JK PQ T Y	XREF: K(4109). Jπ: from γ(θ,pol) in (α,nγ).
4144.21 *6*	5/2$^+$	24 fs *7*	B JK N PQ T Y	XREF: K(4151)Y(4159). Jπ: spin=3/2,5/2 from γ(θ) in (α,nγ) and γγ(θ) in (d,pγ); 1209γ to 7/2$^-$ and 3303γ to 1/2$^+$ cannot be pure M2 (ΔJ=2) based on RUL; 3/2$^-$ is ruled out since it would require a large B(M2)(W.u.) for 4144γ exceeding RUL=3 based on δ(Q/D) values for J=3/2 from (α,nγ) and (d,pγ). Other: L(^{3}He,p)=(1) from 1/2$^+$ giving parity=(−) for a group at 4151 *12* is inconsistent.
4210.819 *29*	3/2$^-$	24 fs *8*	HIJKLMN PQ T Y	XREF: Y(4224). Jπ: spin=3/2 from γγ(θ) in (n,γ) E=thermal; L(d,p)=1 from 0$^+$. $T_{1/2}$: weighted average of 32 fs *9* (1973Ca20) from (α,nγ) and 17 fs *8* (1989Ko53) from (n,γ) E=thermal.
4375.21 *30*	1/2$^+$	24 fs *10*	B JKL PQ T	Jπ: L(p,d)=0 from 0$^+$. Other: 3/2,5/2 from γ(θ) (1975Bu15) in (α,nγ) is inconsistent.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)†	J$^{\pi}$‡	$T_{1/2}$ or Γ#	XREF	Comments
4423.71 *5*	1/2$^+$,3/2	19 fs *10*	B H JK N PQ T	XREF: K(4435). J$^{\pi}$: spin=1/2,3/2 from γ(θ) in (α,nγ); 1/2$^-$ is excluded based on δ solution for J$^{\pi}$=1/2$^-$ which would require M2,E3 or M3 strengths exceeding RUL.
4473.63 *29*			N	Additional information 1. E(level): from (n,γ) E=thermal.
4730.02 *9*	9/2$^-$	76 fs *20*	EFG JK N P T y	XREF: K(4742)y(4749). J$^{\pi}$: 5/2$^-$,9/2$^-$ from γ(θ,lin) in (α,nγ); 5/2$^-$ ruled out based on γ(θ) (1975Bu15) in (α,nγ) giving an δ(M2/E1)>+5.6 for 1761γ which would require a large B(M2)(W.u.) greatly exceeding RUL. $T_{1/2}$: from τ=110 fs *29*, weighted average of 82 fs *21* (1973Ca20) in (α,nγ), 130 fs *40* (2017Ay04) in (^{14}N,αpγ), and 190 fs *40* (2014Bi16) in (^{12}C,αpnγ).
4748 *1*	1/2$^+$,3/2$^+$,5/2$^+$	<7 fs	B JKL P T y	XREF: K(4761)y(4749). Additional information 2. E(level): from (α,nγ). J$^{\pi}$: allowed β-decay from 3/2$^+$ parent, log *ft*=5.4. L(d,p)=(0) for a composite structure suggests (1/2$^+$).
4794.9 *14*	(7/2$^+$)		D G	J$^{\pi}$: tentatively proposed in (^{12}C,αpnγ) based on γγ(θ)(DCO) and γγ(lin pol) of 1015.3γ M1(+E2) to 3780, (5/2$^+$) level. See also comments for J$^{\pi}$(3780). Other: (11/2$^-$) proposed in (^{18}O,Xγ) based on qualitative γγ(lin pol) result of 1015.3γ which suggests Mult(1015.3γ)=(E1).
4866.50 *19*	11/2$^-$	227 fs *35*	DEFG J P U	J$^{\pi}$: from γ(θ,pol) in (α,nγ). But L(pol d,t)=(2) from 0$^+$ for a group at 4868 *20* (with T=1/2) suggests (3/2$^+$,5/2$^+$), which may indicate a different level. $T_{1/2}$: from τ=328 fs *50*, weighted average of 400 ps *100* from (^{14}N,αpγ), 300 ps *50* from (^{12}C,αpnγ), and 360 ps *90* from (α,nγ).
4917.87 *4*	1/2$^-$	90 fs *30*	H Jk MN P v	XREF: k(4932)v(4934). J$^{\pi}$: from γ(circular pol) in (n,γ) (E=thermal); also L(d,p)=1 from 0$^+$.
4941 *2*	5/2$^-$,7/2$^-$	27 fs *11*	Jk P T	XREF: k(4932). Additional information 3. E(level): from (α,nγ). Others: 4941 *6* from (d,p); 4945 *3* from (p,d). J$^{\pi}$: L(d,p)=L(p,d)=3 from 0$^+$. Other: L(^{3}He,p)=(1) from 1/2$^+$ suggests (1/2$^-$,3/2$^-$,5/2$^-$) for a group at 4932 *12*.
4943.62 *23*	(1/2,3/2,5/2)		K N v	XREF: K(4955)v(4934). Additional information 4. E(level): from (n,γ) E=thermal. J$^{\pi}$: 4101.9γ to 1/2$^+$.
5178 *4*	(5/2$^-$,7/2$^-$)		P T V	E(level): weighted average of 5177 *6* from (d,p), 5179 *4* from (p,d), and 5176 *20* from (^{3}He,α). J$^{\pi}$: L(^{3}He,α)=(3) from 0$^+$; L(p,d)=(3,4) from 0$^+$.
5208.97 *23*	(1/2 to 7/2$^+$)	<14 fs	J N P	XREF: N(?).

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$ or Γ#	XREF	Comments
				E(level): others: 5209 from (α,nγ), 5210 *6* from (d,p). Jπ: 5208.5γ to 3/2+, with Mult=M2 ruled out by RUL.
5273 *4*	(1/2 to 7/2)		k N P T v	XREF: k(5286)N(?)v(5285). Additional information 5. E(level): others: 5276 *6* from (d,p), 5273 *4* from (p,d). This level is considered tentative in (n,γ) E=thermal due to the tentative placement of 5269.8γ by 1985Ke08. Jπ: possible 5269.8γ to 3/2+.
5282 *2*	(1/2 to 7/2+)	21 fs *8*	Jk p t v	XREF: k(5286)p(5287)t(5288)v(5285). Additional information 6. E(level): from (α,nγ). Jπ: 5282γ to 3/2+, with Mult=M2 ruled out by RUL. Other: L(^{3}He,α)=(2) from 0+ for a group at 5285 *20*, likely a doublet of 5282+5286.
5286.24 *5*	(1/2,3/2,5/2+)		k N p t v	XREF: k(5286)p(5287)t(5288)v(5285). Jπ: 4445.02γ to 1/2+. See comments for Jπ(5282).
5342 *4*	3/2+,5/2+		P T	XREF: T(5343). E(level): weighted average of 5340 *6* from (d,p) and 5343 *4* in (p,d). Note that a 5351 *6* level is also reported in (d,p) but no similar level is reported in (p,d). It also could be possible that the 5343 *4* level in (p,d) is a doublet of 5340+5351 in (d,p). Jπ: L(p,d)=2 from 0+.
5348.53 *25*	(1/2,3/2,5/2−)		N P	Additional information 7. E(level): from (n,γ) E=thermal. Other: 5351 *6* from (d,p). Jπ: 430.3γ to 1/2−, 1413.9γ to 3/2+.
5391.9 *17*			D	Jπ: 597.0γ to (7/2+) suggests (3/2+ to 11/2+).
5401 *4*			K P T V	XREF: K(5414)V(5391). E(level): weighted average of 5414 *15* from (^{3}He,p), 5399 *6* from (d,p), 5401 *4* from (p,d), and 5391 *20* from (^{3}He,α).
5478.41 *24*	9/2−	≤28 fs	EF	Jπ: 2543.8γ M1+E2 to 7/2−, 611.7γ D to 11/2−. $T_{1/2}$: from DSAM in (^{14}N,αpγ) (2017Ay04).
5479.72 *13*	1/2+		H KL N P TUV X	T=3/2 XREF: X(5500). Jπ: L(pol d,t)=L(d,p)=L(p,d)=L(^{3}He,α)=0 from 0+.
5597 *6*	(1/2+)		k P v	XREF: k(5611)v(5620). E(level): from (d,p). Jπ: L(d,p)=(0) from 0+. See also comments at 5613 level.
5612.90 *4*	(1/2+)		k N P t v	XREF: k(5611)t(5617)v(5620). Jπ: L(d,p)=(0) from 0+. L(p,d)=0 for a group at 5617 *14* and L(^{3}He,α)=0 for a group at E=5620 *115*, both likely a triplet of 5597+5613+5622 in (d,p).
5622 *6*	(1/2+)		k P t v	XREF: k(5611)t(5617)v(5620). E(level): from (d,p). Jπ: L(d,p)=(0) from 0+. See also comments at 5613 level.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)†	Jπ‡	XREF	Comments
5710.871 *25*	1/2⁻	HI K MN PQ T v	XREF: I(5715)K(5725)T(5716)v(5720). Jπ: spin=1/2 from γγ(θ) in (n,γ) E=thermal; L(d,p)=L(^{6}Li,d)=1 from 0⁺. Other: L(^{3}He,p)=1 from 1/2⁺ for a group at E=5725 *12* gives (1/2,3/2,5/2)⁻.
5721.7 *7*	9/2$^{(+)}$	E T v	XREF: v(5720). Jπ: 3754.5γ Q, ΔJ=2 to 5/2⁺, 1673.1γ to 9/2⁺; L(p,d)=(4) from 0⁺ for a group at E=5726 *4*s.
5793.4 *8*		F	Jπ: 1063.4γ to 9/2⁻ gives (5/2⁻ to 13/2⁻).
5804 *24*	(5/2⁺)	U	T=1/2 Jπ: L(pol d,t)=(2) and L+1/2 transfer from analyzing powers.
5864 *6*		k N P	XREF: k(5882)N(?). E(level): from (d,p). Other: 5882 *15* from (^{3}He,p) could be a doublet of 5864+5888; 1985Ke08 in (n,γ) E=thermal tentatively place a 2775.65γ from 8642 level, making a tentative final level of 5866, but this γ is not confirmed in other studies.
5888.319 *31*	3/2⁻	k MN P	XREF: k(5882)M(5883). Jπ: spin=3/2 from γγ(θ) in (n,γ) E=thermal; L(d,p)=1 from 0⁺.
5915 *4*	1/2⁺	K P T	E(level): weighted average of 5911 *12* from (^{3}He,p), 5915 *6* from (d,p), and 5916 *4* from (p,d). Jπ: L(p,d)=0 from 0⁺.
5982 *6*	(1/2⁻,3/2⁻)	k P V	XREF: k(5994). E(level): from (d,p). Other: 5981 *15* from (^{3}He,α). Jπ: L(^{3}He,α)=(1) from 0⁺.
5988.9 *20*		D k	XREF: k(5994).
6067 *6*		k P	XREF: k(6083). E(level): from (d,p). Other: a weak group at 6083 *15* seen in (^{3}He,p).
6091		kL P	XREF: k(6083)P(6079?). Additional information 8. E(level): from (^{3}He,pγ). Others: 6079 *6*, tentative in (d,p).
6101 *6*		P	
6131 *6*		P	
6234 *6*		K P	XREF: K(6251).
6261 *6*		K P	XREF: K(6278).
6310 *6*		P	
6327 *6*	5/2⁺	P U	T=1/2 XREF: U(6330). E(level): weighted average of 6326 *6* from (d,p) and 6330 *12* from (d,t). Jπ: L(pol d,t)=2 an L+1/2 from analyzing powers.
6361 *4*	3/2⁺,5/2⁺	k P T V	XREF: k(6376). E(level): weighted average of 6360 *6* from (d,p) and 6362 *4* from (p,d). Other: 6361 *20* from (^{3}He,α). Jπ: L(p,d)=L(^{3}He,α)=2 from 0⁺.
6380	(1/2 to 7/2)$^{(+)}$	kL P	XREF: k(6376). Additional information 9. E(level): from (^{3}He,pγ). Other: 6372 *6* from (d,p) could be the same level; 6376 *12* from (^{3}He,p) could be a doublet of 6360+6372 in (d,p). Jπ: L(^{3}He,p)=(2) from 1/2⁺ suggests (1/2 to 7/2)$^{(+)}$ for a group at 6376 *12*; 6380γ to 3/2⁺.
6416 *6*	(1/2⁻,3/2⁻)	k P	XREF: k(6438). Jπ: L(d,p)=(1) from 0⁺.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2\ 1/2}$ or Γ[#]	XREF	Comments
6424.876 *29*	(3/2)$^-$		k N P	XREF: k(6438)P(6427). J^{π}: L(d,p)=1 from 0$^+$; 2280.54γ to 5/2$^+$.
6487 *6*	(1/2$^+$)		N P	XREF: N(?). Additional information 10. E(level): from (d,p). Other: 6486.6 from a tentative placement of 6485.93γ in (n,γ) E=thermal. J^{π}: L(d,p)=(0).
6513 *6*			K P	E(level): from (d,p). Other: 6512 *12* from (^{3}He,p).
6525.2 *10*	(11/2)$^-$	0.125 ps *35*	E	J^{π}: 1795.0γ M1+E2, ΔJ=1 to 9/2$^-$, assuming spin ascends as excitation energy rises in fusion-evaporation reaction (^{14}N,$\alpha p\gamma$).
6526 *6*			P	
6559 *6*			P	
6616 *6*	(1/2$^+$)		K P	XREF: K(6635). E(level): from (d,p). Other: 6635 *15* from (^{3}He,p). J^{π}: L(d,p)=(0) from 9$^+$.
6676.720 *25*	(1/2$^+$,3/2)		k N P	XREF: k(6689). J^{π}: strong primary 1964.8γ from 1/2$^+$ capture state in (n,γ) E=thermal; 3809.4γ to 5/2$^+$.
6690 *6*	5/2$^-$,7/2$^-$		k P	XREF: k(6689). J^{π}: L(d,p)=3 from 0$^+$.
6710 *6*			N P	XREF: N(?). Additional information 11. E(level): from (d,p). Other: 6708.29 from a tentative placement of 6707.56γ in (n,γ) E=thermal.
6720 *6*			P	
6788 *6*			K P	XREF: K(6802). E(level): from (d,p). Other: 6802 *15* from (^{3}He,p).
6892 *6*	(3/2$^+$)		N P uv x	T=(3/2) XREF: N(?)u(6852)v(6900)x(6950). E(level): from (d,p); not seen in (p,d). J^{π}: L(pol d,t)=2 and L-1/2 from analyzing powers for a group at 6852 *34* with T=3/2, which could be a doublet of 6892+6903 in (d,p).
6904 *4*	(3/2)$^+$		K P Tuv x	T=3/2 XREF: u(6852)v(6900)x(6950). E(level): weighted average of 6903 *6* from (d,p) and 6905 *4* from (p,d). J^{π}: L(p,d)=2 from 0$^+$; L(pol d,t)=2 and L-1/2 from analyzing powers for a group at 6852 *34*, which could be a doublet of 6892+6903 in (d,p). T: from (pol d,t) and (^{3}He,α).
6967 *4*	(1/2 to 7/2)$^+$		K N P T x	XREF: K(6977)N(?)x(6950). Additional information 12. E(level): weighted average of 6965 *6* from (d,p) and 6967 *4* from (p,d). Others: 6977 *12* from (^{3}He,p); 6958.87 from a tentative placement of 6958.08γ in (n,γ) E=thermal. J^{π}: L(^{3}He,p)=2 from 1/2$^+$.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$ or Γ#	XREF	Comments
6999 *6*			P x	XREF: x(6950). E(level): from (d,p).
6999.99 *23*	$11/2^+$	0.222 ps *42*	EF	Jπ: 1278.2γ M1+E2, ΔJ=1 to $9/2^+$; 2133.2γ D, ΔJ=1 to $11/2^-$. $T_{1/2}$: other: >0.7 ps from (^{13}C,2nγγ) is discrepant.
7017.21 *29*	$(1/2,3/2,5/2^+)$		K N P	XREF: K(7018). Additional information 13. E(level): from (n,γ) E=thermal. Other: 7017 *6* from (d,p). Jπ: a possible weak primary 1624.9γ from $1/2^+$ capture state in (n,γ) E=thermal.
7038 *5*			K P T	XREF: K(7052). E(level): weighted average of 7038 *5* from (p,d) and 7037 *6* from (d,p). Other: 7052 *15* from (^{3}He,p).
7133 *6*			k P	XREF: k(7153). Jπ: L(^{3}He,p)=(2) from $1/2^+$ gives (1/2 to $7/2)^{(+)}$ for a group at 7153 *15*, which could be a doublet of 7133+7164 in (d,p).
7164 *6*	$(1/2\text{ to }7/2)^{(+)}$		k P	XREF: k(7153). Jπ: see comments for 7133 level.
7181.1 *7*	$13/2^-$	62 fs *21*	EFG	Jπ: 2450.9γ E2, ΔJ=2 to $9/2^-$; 2313.7γ M1+E2 to $11/2^-$. Other: $11/2^+$ from (^{12}C,αpnγ) is in disagreement. $T_{1/2}$: other: <55 fs from (^{12}C,αpnγ).
7183 *6*			K P	E(level): from (d,p). Other: 7183 *15* from (^{3}He,p).
7187.709 *24*	$3/2^-$		K N P T	XREF: K(7206). E(level): others: 7190 *6* from (d,p), 7193 *5* from (p,d), 7206 *15* from (^{3}He,p). Jπ: spin=3/2 from γγ(θ) in (n,γ) E=thermal; L(d,p)=1 from 0^+.
7254 *6*			P	
7330 *6*			P uv x	XREF: u(7310)v(7348)x(7300). E(level): from (d,p). Jπ: see comments for 7339 level.
7339 *5*	$(5/2)^+$		k P Tu x	T=3/2 XREF: k(7348)P(7335?)u(7310)x(7300). E(level): from (p,d). Jπ: L(p,d)=2 from 0^+; L(pol d,t)=2 and L+1/2 from analyzing powers for a group at 7330 *30* with T=3/2, which could be a doublet of 7330+7339.
7353 *6*			k P v x	XREF: k(7348)v(7348)x(7300). E(level): from (d,p). Jπ: L(^{3}He,α)=(3) from 0^+ gives $(5/2^-,7/2^-)$ for a group at 7348 *20*, which could be a doublet of 7353+7359.
7359 *6*			k P v x	XREF: k(7348)v(7348)x(7300). E(level): from (d,p). Jπ: see comments for 7353 level.
7369 *6*			P	
7401 *6*			k P	XREF: k(7415).
7415.865 *23*	1/2,3/2		k N P	XREF: k(7415).

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	J^π[‡]	$T_{1/2}$ $_{1/2}$ or Γ[#]	XREF	Comments
				E(level): other: 7413 *6* from (d,p). J^π: 1/2,3/2 from $\gamma\gamma(\theta)$ with 1/2 preferred and also strong primary 1225.7γ from 1/2$^+$ capture state in (n,γ) (E=thermal).
7452 *6*	1/2$^-$,3/2$^-$		K P v	XREF: K(7435)v(7450). E(level): from (d,p). Other: 7435 *15* from (^{3}He,p). J^π: L(d,p)=1 from 0$^+$.
7460 *6*			k P v	XREF: k(7473)v(7450).
7475 *6*			k P	XREF: k(7473).
7488.08 *11*	(1/2,3/2,5/2$^+$)		K N P	XREF: K(7498). E(level): others: 7482 *6* from (d,p), 7498 *15* from (^{3}He,p). J^π: weak primary 1153.2γ from 1/2$^+$ capture state in (n,γ) E=thermal.
7506.300 *24*	(1/2,3/2,5/2$^+$)		K N P	E(level): others: 7503 *6* from (d,p), 7521 *15* from (^{3}He,p). J^π: primary 1135.3γ from 1/2$^+$ capture state in (n,γ) E=thermal.
7567 *12*			K P	XREF: P(7560?). E(level): probably doublet from (^{3}He,p). Other: 7560 *6*, tentative in (d,p).
7575.5 *6*	13/2$^-$	≤28 fs	E K P	XREF: P(7560?). J^π: 2097.0γ E2, ΔJ=2 to 9/2$^-$; 1050.3γ D, ΔJ=1 to 13/2$^-$.
7615 *6*	5/2$^-$,7/2$^-$		k P	XREF: k(7613). E(level): this level may be the same as 7615.7 in (n,γ) E=thermal by energy, however, J^π=5/2$^-$,7/2$^-$ implied from L(d,p)=3 and J^π=(1/2,3/5,5/2$^+$) implied from primary γ transition indicates two different levels. J^π: L(d,p)=3 from 0$^+$.
7615.717 *31*	(1/2,3/2,5/2$^+$)		k N	XREF: k(7613). J^π: weak primary 1025.7γ from 1/2$^+$ capture state in (n,γ) E=thermal.
7629 *6*			P	
7658 *6*			k P	XREF: k(7679).
7693 *6*			k P	XREF: k(7679).
7711 *6*			k P	XREF: k(7713).
7749 *6*			k P	XREF: k(7713).
7766 *6*			P	
7779 *6*			P	
7797 *6*			P	
7819.0 *8*	15/2$^-$	55 fs *21*	EFG	J^π: 2952.5γ E2, ΔJ=2 to 11/2$^-$; 637.9γ D, ΔJ=1 to 13/2$^-$. $T_{1/2}$: other: <14 fs from (^{12}C,αpnγ).
7828 *6*			k P	XREF: k(7830).
7840 *6*			k P	XREF: k(7830).
7862 *6*			K N P	XREF: N(?).
7892 *6*			k P	XREF: k(7909). J^π: L(^{3}He,p)=0 from 1/2$^+$ gives (1/2$^+$,3/2$^+$) for a group at 7909 *12* which is probably a doublet of 7892+7906 in (d,p).
7906 *6*	(1/2$^+$,3/2$^+$)		k P	XREF: k(7909). E(level): probably doublet; L(^{3}He,p)=0.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$ or Γ[#]	XREF	Comments
7920			L	Additional information 14. E(level): from (^{3}He,p).
7983 *6*			P	
7991 *6*			P	
8015 *6*			K P	XREF: K(8013).
8107 *12*			K X	E(level): from (^{3}He,p). Other: 8100 *60* from (p,^{3}He).
8234 *24*	5/2$^+$		U	T=1/2 Jπ: L(pol d,t)=2 and L+1/2 from analyzing powers.
8334			H K	Additional information 15. E(level): from (α,γ):res. Other: 8329 *12* from (^{3}He,p).
8368.073 *30*	(1/2,3/2)		N	Jπ: primary 273.5γ from 1/2$^+$ capture state in (n,γ) E=thermal.
8584 *10*	5/2$^-$,7/2$^-$		P	Jπ: L(d,p)=3 from 0$^+$.
8639.9 *7*	15/2$^+$	284 fs *28*	EF	Jπ: 1640.0γ E2, ΔJ=2 to 11/2$^+$; 1064.1γ D, ΔJ=1 to 13/2$^-$. $T_{1/2}$: other: <0.7 ps from (^{13}C,2nαγ).
(8641.632 *17*)	1/2$^+$		N	Jπ: s-wave capture in 0$^+$ g.s. of ^{32}S. S(n)=8641.6392 *5* (2021Wa16).
8644 *10*	3/2$^+$,5/2$^+$		P	Jπ: L(d,p)=2 from 0$^+$.
8671.090 *5*	3/2$^-$		M OP	Additional information 16. E(level): from (n,γ),(n,n):resonances. Other: 8670 *10* from (d,p), 8672 from (n,γ) E=res. Jπ: L(d,p)=1 from 0$^+$ gives 1/2$^-$,3/2$^-$; 1/2$^-$ is ruled out since 6703γ and 5803γ to 5/2$^+$ cannot be M2 based on RUL. Other: 1/2$^-$ from R-matrix analysis in (n,γ),(n,n):resonances is in disagreement. Γ=32.9 eV *5* from $Γ_n$=31.8 eV *5*, $Γ_g$=1.12 eV *6* in (n,γ),(n,n):resonances.
8683.424 *14*	3/2$^+$		M Op	XREF: p(8690). Additional information 17. E(level): from (n,γ):resonances. Other: 8685 from (n,γ) E=res. Jπ: 2973γ to 1/2$^-$ and 7842γ to 1/2$^+$ cannot be M2 based on RUL; L=2 from 0$^+$ gives 3/2$^+$,5/2$^+$ in (n,γ),(n,n):resonances. $Γ_n$=2.0 eV *4*/(2J+1)=0.50 eV *10*.
8686.997 *15*	3/2$^+$,5/2$^+$		Op	XREF: p(8690). Jπ: L=2 from 0$^+$ and also L(d,p)=2 for a group at 8690 *10*. $Γ_n$<2/(2J+1) eV.
8729 *10*	5/2$^-$,7/2$^-$		P	Jπ: L(d,p)=3 from 0$^+$.
8736.157 *11*	3/2$^-$[a]		O	Γ=117 eV *2* from $Γ_n$=468 *8*/(2J+1) eV, $Γ_γ$=0.33 eV *2*.
8741.21 *2*	1/2$^+$[a]		M OP	Additional information 18. E(level): (n,γ):resonances. Others: 8752 *3* from (d,p); 8745 from (n,γ) E=res deduced from measured E_R=103 keV with no uncertainty. Jπ: also L(d,p)=0 from 0$^+$. Γ=15.0 keV *1* from $Γ_n$=30.0 *2*/(2J+1) keV, $Γ_γ$=4.29 eV *32* in (n,γ):resonances. Γ=20 keV *3* from (d,p), based on re-analysis by 1976Bo18 of (n,γ):resonances data in 1950Ba88, and comparison with corresponding measured (d,p) cross sections by 1976Bo18.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	J^{π}[‡]	XREF	Comments
8750.39 *2*	$3/2^{-a}$	O	Γ=558 eV *5* from Γ_n=2232 *20*/(2J+1) eV, Γ_γ=0.42 eV *3*.
8782.34 *7*		O u	XREF: u(8794). J^π: L(pol d,t)=2 and L+1/2 from analyzing powers gives $5/2^+$ for a group at 8794 *22* with T=3/2, which could be a doublet of 8782.3+8809.1 levels. Γ_n<6/(2J+1) eV.
8796.94 *2*	$1/2^-,3/2^-$	O	J^π: L=1 from 0^+ in (n,γ),(n,n):resonances. Γ=10.5 eV *5* if J=1/2, 5.3 eV *3* if J=3/2 from Γ_n=18.8 *10*/(2J+1) eV, Γ_γ=2.28 *16*/(2J+1) eV.
8809.06 *7*		O u	XREF: u(8794). Γ_n<8/(2J+1) eV.
8838.86 *4*	$1/2^-$	M OP	Additional information 19. E(level): from (n,γ):resonances. Other: 8838 *10* from (d,p), 8845 from (n,γ) E=res. J^π: from R-matrix analysis in (n,γ),(n,n):resonances and analysis of resonance data in (n,γ) E=res. Other: L(d,p)=1 from analysis of neutron resonance data (1976Bo18). Γ=3.120 keV *12* from Γ_n=6.240 *24*/(2J+1) keV, Γ_γ=0.65 eV *7* in (n,γ),(n,n):resonances.
8873 *10*	$5/2^-,7/2^-$	P	J^π: L(d,p)=3 from 0^+.
8894.93 *4*	$5/2^{+a}$	O	Γ=4.6 eV *4* from Γ_n=23.6 *24*/(2J+1) eV, Γ_γ=0.68 eV *4*.
8905.69 *4*	$1/2^{-a}$	OP	XREF: P(8910). E(level): from (n,γ):resonances. Other: 8910 *2* from (d,p). J^π: also L(d,p)=1 from 0^+. Γ=1.63 keV *1* from Γ_n=3.256 keV *18*/(2J+1) keV, Γ_γ=4.53 eV *33*.
8921.47 *5*	$3/2^{-a}$	OP	XREF: P(8926). E(level): from (n,γ):resonances. Other: 8926 *2* from (d,p). J^π: also L(d,p)=1 from 0^+. Γ=1.144 eV *4* from Γ_n=4.568 *16*/(2J+1) keV, Γ_γ=2.03 eV *17*.
8939 *10*	$5/2^-,7/2^-$	P	J^π: L(d,p)=3 from 0^+.
8941.56 *5*	$5/2^{+a}$	O	Γ=8.7 eV *7* from Γ_n=45.6 *42*/(2J+1) eV, Γ_γ=1.07 eV *7*.
8944.43 *5*		O	E(level): from (n,γ):resonances. Other: 8939 *10* from (d,p). Γ<6.1 eV from Γ_n=8 *2*/(2J+1) eV, Γ_γ=4.26 *34*/(2J+1) eV, and J≥1/2.
8953.14 *5*		O	Γ_n=11.2 *24*/(2J+1) eV,
8975 *10*	$5/2^-,7/2^-$	P	J^π: L(d,p)=3 from 0^+.
8977.09 *6*	$3/2^{-a}$	O	Γ=22.7 eV *5* from Γ_n=86.8 *20*/(2J+1) eV, Γ_γ=1.00 eV *9*.
8984.40 *6*	$5/2^{+a}$	O	Γ=8.7 eV *3* from Γ_n=41.4 *18*/(2J+1) eV, Γ_γ=1.81 eV *11*.
9007.10 *6*	$1/2^{+a}$	H OP	XREF: H(9010)P(9010). Additional information 20. E(level): from (n,γ),(n,n):resonances. Other: 9010 *10* from (d,p), 9010 from (α,γ):res. J^π: also L(d,p)=0 from 0^+. $1/2^+$ also from (α,γ):res. Γ=7.971 keV *14* from Γ_n=15.938 *28*/(2J+1) keV, Γ_γ=2.43 eV *61*. Other: 13 keV *3* (1976Bo18) from re-analysis of (n,γ):resonances data in 1950Ba88, and comparison with corresponding measured (d,p) cross sections by 1976Bo18.
9008.92 *6*		O	Γ_n=37.6 *32*/(2J+1) eV.
9012.05 *5*		O	Γ_n<22/(2J+1) eV.
9030.75 *7*	$3/2^+,5/2^+$	OP	XREF: P(9035). E(level): from (n,γ):resonances. Other: 9035 *10* from (d,p). J^π: L(d,p)=2 from 0^+. Γ=7.8 eV *5* if J=3/2, 5.2 eV *3* if J=5/2 from Γ_n=27.2 *20*/(2J+1) eV, Γ_γ=3.86 *30*/(2J+1) eV.
9041.70 *7*	$3/2^{-a}$	O	Γ=75.0 eV *14* from Γ_n=296.0 *56*/(2J+1) eV, Γ_γ=1.00 eV *9*.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	J$^{\pi}$[‡]	$T_{1/2}$ or Γ[#]	XREF	Comments
9054.42 *5*			O	Γ_n<24/(2J+1) eV.
9087.59 *8*	3/2$^+$[a]		O	Γ=55.2 eV *13* from Γ_n=108 *26*/(2J+1) eV, Γ_γ=1.15 eV *11*.
9090.59 *8*	5/2$^+$[a]		O	Γ=84 eV *1* from Γ_n=504 *6*/(2J+1) eV, Γ_γ=0.49 eV *6*.
9115 *10*			P	
9139.66 *9*	3/2$^+$,5/2$^+$		OP	E(level): from (n,γ):resonances. Other: 9138 *10* from (d,p). J$^{\pi}$: L(d,p)=2 from 0$^+$. Γ_n<53.2 *38*/(2J+1) eV.
9158.72 *10*			O	Γ_n=57.4 *22*/(2J+1) eV.
9175 *10*			P	
9200.35 *11*			O	Γ_n=40.8 *44*/(2J+1) eV.
9210.24 *11*	3/2$^-$[a]		O	Γ=163 eV *6* from Γ_n=644 *24*/(2J+1) eV, Γ_γ=1.57 eV *16*.
9211.3 *10*	5/2$^+$[a]		H OP	Additional information 21. E(level): from (n,γ):resonances. Others: 9211 *2* from (d,p), 9200 from (α,γ):res. J$^{\pi}$: also L(d,p)=2 from 0$^+$. Γ=1.285 keV *61* from Γ_n=7.710 *36*/(2J+1) keV, Γ_γ=1.03 eV *10*.
9245 *10*	5/2$^-$,7/2$^-$		P	J$^{\pi}$: L(d,p)=3 from 0$^+$.
9268.07 *13*			O	Γ_n=37.0 *92*/(2J+1) eV.
9271.53 *13*	5/2$^+$[a]		O	Γ=504 eV *4* from Γ_n=3018 *22*/(2J+1) eV, Γ_γ=1.15 eV *19*.
9280 *10*	5/2$^-$,7/2$^-$		P	J$^{\pi}$: L(d,p)=3 from 0$^+$.
9287.78 *13*	3/2$^+$		O	J$^{\pi}$: from Breit-Wigner analysis in (n,γ) (resonance). Γ=32.0 eV *16* from Γ_n=124.8 *64*/(2J+1) eV, Γ_γ=0.78 eV *9*.
9296.89 *14*	3/2$^+$		O	J$^{\pi}$: from Breit-Wigner analysis in (n,γ) (resonance). Γ=416 eV *8* from Γ_n=1660 *32*/(2J+1) eV, Γ_γ=0.67 eV *20*.
9308.4 *1*			O	Γ_n<44/(2J+1) eV.
9316.43 *14*	1/2$^+$[a]	11.28 keV *9*	OP	E(level): from (n,γ):resonances. Others: 9318 *3* from (d,p). J$^{\pi}$: also L(d,p)=0 from 0$^+$. Γ: from Γ_n=22.558 *176*/(2J+1) keV, Γ_γ=2.23 eV *11*. Other: 10 keV *3* (1976Bo18) from re-analysis of (n,γ):resonances data in 1950Ba88, and comparison with corresponding measured (d,p) cross sections by 1976Bo18.
9345.4 *8*	1/2$^-$[a]		H O	Additional information 22. E(level): from (n,γ):resonances. Others: 9345 from (α,γ):res. Γ=3.78 keV *5* from Γ_n=7.558 *98*/(2J+1) keV, Γ_γ=1.00 eV *33*.
9350 *10*	5/2$^-$,7/2$^-$		P	E(level): it could be the same level as 9345.4 in (n,γ),(n,n):resonances based on energy agreement, but their J$^{\pi}$ assignments are in disagreement. J$^{\pi}$: L(d,p)=3 from 0$^+$.
9357.9 *7*			H O	Additional information 23. E(level): from (n,γ):resonances. Others: 9352 from

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$ or Γ[#]	XREF	Comments
				(α,γ):res. Γ_n<48/(2J+1) eV.
9360.54 *16*	$3/2^-$[a]		OP	XREF: P(9363). E(level): from (n,γ):resonances. Γ=1.257 keV *16* from Γ_n=5.028 *64*/(2J+1) keV, Γ_γ=0.39 eV *11*.
9394.68[@] *17*	$5/2^-,7/2^-$[a]		O	Γ_n=342 *72*/(2J+1) eV.
9397.22[@] *17*	$3/2^-$[a]		O	Γ=1.48 keV *3* from Γ_n=5.908 *112*/(2J+1) keV, Γ_γ=0.34 eV *11*.
9402.03 *17*	$3/2^+$		OP	E(level): from (n,γ):resonances. Other: 9400 *3* from (d,p). J^{π}: from Breit-Wigner analysis in (n,γ) (resonance) and L(d,p)=2 from 0^+. Γ=149 eV *12* from Γ_n=5928 *48*/(2J+1) keV, Γ_γ=1.46 eV *16*.
9409.37 *17*	$3/2^+$[a]		O u	XREF: u(9426). J^{π}: other: L(pol d,t)=2 and L+1/2 from analyzing powers for a group at 9426 *25* with T=3/2, which could be a doublet. gΓ_n=96 *4*/(2J+1) eV.
9435.93 *18*	$5/2^+$[a]		OP u	XREF: u(9426). E(level): from (n,γ):resonances. Other: 9436 *3* from (d,p). Γ=588 eV *5* from Γ_n=3528 *30*/(2J+1) keV, Γ_γ=0.41 eV *11*.
9450.45 *15*	$5/2^-,7/2^-$[a]		O	Γ_n=486 *18*/(2J+1) eV.
9460 *10*	$1/2^-,3/2^-$		P	J^{π}: L(d,p)=1 from 0^+.
9481.62 *19*			O	Γ_n=101.4 *80*/(2J+1) eV.
9484.51 *19*			O	Γ_n=100.2 eV *80*/(2J+1) eV.
9499.82 *20*	$(7/2)^-$[a]		O	Γ=44 eV *2* from Γ_n=474 *12*/(2J+1) eV, Γ_γ=5.10 eV *4*, for J=(7/2).
9515.91 *20*			O	Γ_n=260 *40*/(2J+1) eV.
9524.3 *5*		4.9 keV *4*	O	Γ: from 2000Ab40 in (n,γ),(n,n):resonances.
9534.03[@] *21*	$5/2^+$[a]		O	Γ=715 eV *55* from Γ_n=4284 *150*/(2J+1) eV, Γ_γ=0.93 eV *10*.
9535.14[@] *21*	$3/2^-$[a]		OP	E(level): from (n,γ):resonances. Other: 9539 *5* from (d,p). Γ=3.011 keV *55* from Γ_n=12.040 *220*/(2J+1) keV, Γ_γ=1.29 eV *14*.
9560.53 *21*	$5/2^+$[a]		OP	E(level): from (n,γ):resonances. Other: 9564 *5* from (d,p). Γ=1.091 keV *12* from Γ_n=6540 *72*/(2J+1) eV, Γ_γ=0.73 eV *40*.
9598.05 *22*	$1/2^-$[a]		O	Γ=6.95 keV *19* from Γ_n=13.896 *368*/(2J+1) keV, Γ_γ=3.34 eV *11*.
9607 *5*	$1/2^+$		P	J^{π}: L(d,p)=0 from 0^+. Γ=10 keV *4* (1976Bo18) from re-analysis of (n,γ):resonances data in 1950Ba88, and comparison with corresponding measured (d,p) cross sections by 1976Bo18. However, 9598.05 neutron resonance in 2018MuZY is assigned $J^{\pi}=1/2^-$.
9619.59 *23*	$(3/2)^-$[a]		O	Γ=804 eV *29* from Γ_n=3216 *116*/(2J+1) eV, Γ_γ=0.34 eV *34*.

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$ or Γ[#]	XREF	Comments
9655.26[@] *24*	5/2⁻,7/2⁻[a]		O	Γ_n=418 *52*/(2J+1) eV.
9657.10[@] *24*	1/2⁺[a]		O	Γ=1.56 keV *8* from Γ_n=3112 *166*/(2J+1) eV, Γ_γ=0.56 eV *56*.
9659.23[@] *25*	1/2⁻[a]		O	Γ=2.99 keV *12* from Γ_n=5982 *228*/(2J+1) eV, Γ_γ=0.56 eV *56*.
9665.54[@] *25*	5/2⁺[a]		O	Γ=1.558 eV *33* from Γ_n=9336 *198*/(2J+1) eV, Γ_γ=1.78 eV *30*.
9666 *5*	1/2⁻,3/2⁻		P	Jπ: L(d,p)=1 from 0⁺. Γ=11 keV *4* (1976Bo18) from re-analysis of (n,γ):resonances data in 1950Ba88, and comparison with corresponding measured (d,p) cross sections by 1976Bo18. However, 9665.54 neutron resonance in 2018MuZY is assigned Jπ=5/2⁺.
9671.2[@] *3*			O	Γ_n<74/(2J+1) eV.
9674.94 *25*	1/2⁺[a]		O	Γ=279 eV *21* from Γ_n=552 *42*/(2J+1) eV, Γ_γ=3.38 eV *13*.
9676.98 *25*			O	Γ_n=62 *40*/(2J+1) eV.
9693.65 *26*	5/2⁻,7/2⁻[a]		O	Γ_n=604 *54*/(2J+1) eV.
9696.37 *26*			O	Γ_n=132 eV *56*/(2J+1) eV.
9700.63 *26*	3/2⁻[a]	2.20 keV *43*	H O	XREF: H(9701). E(level): from (n,γ):resonances. Others: 9701 *5* from (α,n):res. Jπ: spin=3/2 also from (α,γ):res. Γ: from Γ_α=0.05 keV *1*, Γ_n=2.15 keV *43* in (α,n):res, Γ_γ=0.55 eV *28* in (n,γ),(n,n):resonances. But Γ_n=1752 *56*/(2J+1) eV=0.438 keV *14* in (n,γ),(n,n):resonances is in disagreement.
9715.46 *26*			O	Γ_n=64 *28*/(2J+1) eV.
9722.93 *27*	3/2⁻[a]		O	Γ_n=3240 *120*/(2J+1) eV=810 eV *30*.
9747.45 *27*	1/2⁻[a]		O	Γ_n=3088 *132*/(2J+1) eV=1.54 keV *7*.
9757.34 *28*	3/2⁺,5/2⁺[a]		h O	XREF: h(9774). Γ_n=318 *44*/(2J+1) eV.
9767.52 *28*	1/2⁺[a]		O	Γ_n=2466 *224*/(2J+1) eV=1.23 keV *11*.
9771.79 *28*	3/2⁺[a]		H O	XREF: H(9774). E(level): from (n,γ):resonances. Others: 9774 from (α,n):res. Γ_n=1716 *150*/(2J+1) eV=429 eV *38*.
9780.2 *3*	5/2⁻,7/2⁻[a]		O	Γ_n=741 *52*/(2J+1) eV.
9808.8 *3*	3/2⁻[a]	1.00 keV *20*	H O	XREF: H(9810). E(level): from (n,γ):resonances. Others: 9810 *5* from (α,n):res. Γ: from Γ_α=0.020 keV *4*, Γ_n=0.98 keV *20* in (α,n):res. But Γ_n=1368 *46*/(2J+1) eV=0.342 keV *12* from (n,γ),(n,n):resonances is in disagreement.
9813.4 *10*	(17/2⁺)	0.118 ps *28*	EF	Jπ: 1173.2γ and 1995.1γ D, ΔJ=1 to 15/2⁺ and 15/2⁻, respectively; 17/2⁺ proposed in (^{14}N,αpγ).
9823.36 *30*	3/2⁺[a]		O	Γ_n=5112 *100*/(2J+1) eV=1.278 keV *25*.
9845.66[@] *31*			O	Γ_n=21.8 *5*/(2J+1) keV.
9848.47[@] *31*	(3/2)⁻[a]		h O	XREF: h(9852).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$ $_{1/2}$ or Γ[#]	XREF	Comments
				Γ_n=4.81 *38*/(2J+1) keV.
9858.94 *32*	(5/2)$^-$[a]		h O	XREF: h(9852). Γ_n=2.75 *11*/(2J+1) keV.
9878.42 *32*	3/2$^-$[a]		H O	Γ_n=12.67 *34*/(2J+1) keV=3.17 keV *9*.
9892.19 *33*	1/2$^+$[a]		O	Γ_n=21.96 *131*/(2J+1) keV=11.0 keV *7*.
9909.06 *34*	3/2$^+$[a]		O	Γ_n=788 *100*/(2J+1) eV=197 eV *25*.
9925.83 *34*	5/2$^+$[a]	1.00 keV *20*	H O	E(level): from (n,γ),(n,n):resonances. Other: 9930 *6* from (α,n):res. J^{π}: spin=5/2 also from (α,γ):res. Γ: from Γ_{α}=0.010 keV *2*, Γ_n=0.99 keV *20* in (α,n):res. But Γ_n=2244 *168*/(2J+1) eV=0.37 keV *3* from (n,γ),(n,n):resonances is in disagreement.
9940.9 *4*	5/2$^+$[a]	6.1 keV *4*	h O	XREF: h(9947). Γ: from 2000Ab40 in (n,γ),(n,n):resonances. Γ_n=9534 *180*/(2J+1) eV=1.589 keV *30*.
9952.5 *4*			h O	XREF: h(9947). Γ_n=345 *94*/(2J+1) eV.
9960.7 *4*	7/2$^-$[a]		H O	XREF: H(9963). Γ_n=10136 *232*/(2J+1) eV=1.267 keV *29*.
9977.98 *36*	5/2$^+$[a]		O	Γ_n=682 *210*/(2J+1) eV=114 eV *35*.
9984.3 *4*	3/2$^-$[a]		O	Γ_n=11020 *156*/(2J+1) eV=2.755 keV *39*.
9997.1[@] *4*	1/2$^-$[a]	4.7 keV *9*	H O	XREF: H(10001). E(level): from (n,γ):resonances. Other: 10001 *7* from (α,n):res. J^{π}: spin=1/2 also from (α,n):res. Γ: from Γ_{α}=0.080 keV *16*, Γ_n=4.69 keV *9* in (α,n):res. But Γ_n=1362 *110*/(2J+1) eV=0.68 keV *6* from (n,γ),(n,n):resonances is in disagreement.
9999.9[@] *4*	5/2$^+$[a]		O	Γ_n=2232 *102*/(2J+1) eV=372 eV *17*.
10017.6 *4*	1/2$^+$[a]		O	Γ_n=1746 *266*/(2J+1) eV=873 eV *133*.
10024.1 *4*	3/2$^-$[a]	6.6 keV *13*	H O	E(level): from (n,γ):resonances. Other: 10025 *7* from (α,n):res. J^{π}: spin=3/2 also from (α,n):res. Γ: from Γ_{α}=0.120 keV *24*, Γ_n=6.5 keV *13* in (α,n):res. But Γ_n=12240 *248*/(2J+1) eV=3.06 keV *6* from (n,γ),(n,n):resonances is in disagreement.
10053	1/2$^{(+)}$		H	Additional information 24. E(level): from (α,γ):res. J^{π}: spin=1/2 from γ(θ) in (α,γ):res; 8084γ to 5/2$^+$.
10053.2 *4*	5/2$^-$,7/2$^-$[a]		H O	E(level): from (n,γ):resonances. Other: 10058 from (α,n):res. Γ_n=1.513 *66*/(2J+1) keV.
10070.7 *4*			O	
10076.4 *4*			h O	XREF: h(10081). J^{π}: see comments for 10083.45 level.
10083.5 *4*			h O	XREF: h(10081). J^{π}: (5/2) from the analysis of the resonance data in (α,n):res for a group at 10081 *7*, which could be a doublet of 10076.4 and 10083.5 in (n,γ):res.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	Jπ[‡]	$T_{1/2}$ or Γ[#]	XREF	Comments
				Γ_α=0.020 keV *4*, Γ_n=0.98 keV *20* for 10081 *7* from (α,n):res.
10120.9 *4*	$3/2^+$[a]		O	Γ_n=16.292 *360*/(2J+1) keV=4.07 keV *9*.
10129.2[@] *5*			h O	XREF: h(10134). Jπ: 5/2 from analysis of (α,n):res data for a group at 10134 *8*, which could be a doublet of 10129.2+10132.4 in (n,γ):res. Γ_n=1.055 *146*/(2J+1) keV in (n,γ),(n,n):res. Γ_α=0.080 keV *10*, Γ_n=4.9 keV *10* in (α,γ):res.
10132.4[@] *5*	[&]		h O	XREF: h(10134). Jπ: see comments for 10129.2 level. Γ_n=7452 *246*/(2J+1) eV.
10145			H	
10157.7[@] *5*	$5/2^-,7/2^-$[a]		O	Γ_n=1.205 *194*/(2J+1) eV.
10164.7[@] *5*	$(5/2)^+$[a]		H O	XREF: H(10167). E(level): from (n,γ),(n,n):resonances. Other: 10167 from (α,n):res. Γ_n=5.80 *26*/(2J+1) keV.
10180.4 *5*	3/2[&]	6.4 keV *12*	H O	XREF: H(10184). E(level): from (n,γ):res. Other: 10184 *9* from (α,n):res. Γ: from Γ_α=0.15 keV *3*, Γ_n=6.2 keV *12* in (α,n):res. Other: Γ_n=18.47 *151*/(2J+1) keV=4.6 keV *4* from (n,γ),(n,n):resonances.
10198.1 *5*	$1/2^+$[a]		O	Γ_n=602 *247* eV.
10217.1 *5*	$5/2^+$[a]		H O	XREF: H(10223). E(level),Jπ: from (n,γ):res. Other: 10223 with J=3/2 from (α,n):res. Γ_n=44.18 *166*/(2J+1) keV=7.36 keV *28*.
10250.3 *5*	$1/2^+$[a]		H O	XREF: H(10255). Γ_n=2785 *268*/(2J+1) eV=2.79 keV *27*.
10312 *10*	7/2[&]	1.00 keV *20*	H	Γ: from Γ_α=0.010 keV *2*, Γ_n=0.99 keV *20*.
10331			H	
10336			H	
10345	3/2[&]		H	
10357			H U	Jπ: L(pol d,t)=2 and L+1/2 from analyzing powers gives $5/2^+$ for a group at 10356 *30* with T=3/2, which could be a multiplet based on energy agreement.
10381			H	
10391			H	
10407	3/2[&]		H	
10419 *10*	$3/2^{(-)}$[&]	6.2 keV *9*	H	Γ: from Γ_α=2.18 keV *44*, Γ_n=4.1 keV *8*.
10424	$(1/2^-,5/2^-)$[&]		H	
10444	$3/2^{(+)}$		H	Additional information 25. E(level): from (α,γ):res. Jπ: spin=3/2 from γ(θ); 7472γ to $7/2^+$.
10460 *11*	3/2[&]		H	
10475			H	
10494 *12*	$(3/2,5/2^-)$		H	Additional information 26. E(level): from (α,γ):res.

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$ or Γ[#]	XREF	Comments
				J^{π}: 3/2 from the analysis of the resonance data in (α,n):res; 5/2 from from γ(θ) in (α,γ):res;
10507	3/2[&]		H	
10521	(1/2,5/2)$^{+}$[&]		H	
10539			H	
10582	(1/2^{-},5/2^{+})[&]		H	
10593			H	
10603			H	
10617	7/2^{-}[&]		H	
10637 *12*	3/2$^{(+)}$[&]		H	
10656			H	
10668			H	
10676	(3/2)[&]		H	
10682 *13*	(3/2)[&]	7.6 keV *15*	H	Γ: from Γ_{α}=0.28 keV *6*, Γ_{n}=7.3 keV *15*.
10692	(1/2^{+},5/2^{-})[&]		H	
10702			H	
10710	5/2$^{(+)}$[&]		H	Additional information 27. E(level): from (α,γ):res. J^{π}: 5/2 from γ(θ) in (α,γ):res; (1/2^{-},5/2^{+}) from analysis of (α,n):res data.
10726			H	
10749	1/2[&]		H	
10765	5/2$^{(-)}$		H	Additional information 28. E(level): from (α,γ):res. J^{π}: spin from γ(θ) in (α,g):res; 5042γ to 1/2^{-}.
10781	3/2		H	Additional information 29. E(level),J^{π}: from (α,nγ), with spin from γ(θ).
10804			H	
10825			H	
10835			H	
10846	(1/2^{-},5/2^{+})[&]		H	
10867			H	
10882	5/2[&]		H	
10894	3/2[&]		H	
10910		21.1 keV *12*	O	
10916	(1/2^{-},5/2^{+})[&]		H	
10941 *13*	3/2[&]	9.3 keV *18*	H	Γ: from Γ_{α}=0.30 keV *6*, Γ_{n}=9.0 keV *18*.
10956	(3/2^{+},5/2^{-})[&]		H	
10963			H	
10982	7/2^{-}[&]		H	
10989 *16*	(3/2)[&]		H	
11008 *14*	3/2$^{(+)}$[&]		H	
11017	(1/2^{-},5/2^{+})[&]		H	
11029			H	
11049			H	
11076 *15*	(5/2^{+},9/2^{+})[&]		H	
11087	(3/2^{+},9/2^{+})[&]		H	
11103			H	
11118	(1/2^{+},3/2^{-})[&]		H	
11147	(7/2^{-},9/2^{+})[&]		H	

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Adopted Levels, Gammas (continued)

^{33}S Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$ or Γ#	XREF	Comments
11153	(7/2⁻,9/2⁺)		H	
11162	(1/2⁻,9/2⁺)&		H	
11176 *18*	3/2&		H	
11188	3/2⁻&		H	
11216	&		H	
11228	(1/2⁻,3/2⁺)&		H	
11253	&		H	
11267	1/2&		H	
11285	(1/2⁺,7/2⁻)&		H	
11298			H	
11311	(5/2⁺,9/2⁺)&		H	
11373	(3/2⁻,5/2⁺)&		H	
11382	(1/2⁺,7/2⁻)&		H	
11404	(1/2⁻,5/2⁺)&		H	
11439	5/2&		H	
11483	(3/2⁻,5/2⁺)&		H	
11597	(1/2⁻,7/2⁺)&		H	
11623	(1/2⁺,5/2⁺)&		H	
11667	(5/2⁺,7/2⁻)&		H	
11700.8 *19*	(19/2)⁺	0.035 ps *14*	E	Jπ: 3060.8γ E2, ΔJ=2 to 15/2⁺; ascending J assumed as excitation energy rises in (^{14}N,αpγ).
11716	5/2⁺&		H	
11750			O	
11759	(1/2⁻,3/2⁺)&	9.9 keV *7*	H	
11803	(3/2⁻,5/2⁺)&		H	
11830	(3/2⁺,5/2⁺)&		H	
11869	(1/2⁺,9/2⁺)&		H	
11944	(1/2⁻,5/2⁺)&		H	
12760		25.5 keV *15*	O	
14410		25.7 keV *20*	O	
17360		58 keV *13*	O	

† From a least-squares fit to γ-ray energies with uncertainties for levels connected with those γ transitions and from transfer reactions where no Eγ data are available, unless otherwise noted.

‡ Additional information 30.

\# $T_{1/2}$ from DSAM in (α,nγ) up to 5282 level and in (^{14}N,αpγ) above 5282 level, unless otherwise noted. For neutron resonances in ^{32}S(n,γ),(n,n):resonances dataset, the evaluators have deduced level widths from Γ_n and Γ_γ partial widths listed by 2018MuZY, and listed these widths in comments, as in several cases, Γ_n widths from ^{32}S(n,γ),(n,n):resonances and corresponding ones from ^{29}Si(α,n),(α,α),(α,γ):res are in disagreement.

@ Resonance in (n,γ),(n,n):resonances not completely resolved from its neighbor (2018MuZY).

& From analysis of the resonance data in (α,n),(α,α),(α,γ):res.

a From R-matrix analysis in (n,γ),(n,n):resonances.

$\gamma(^{33}S)$

Additional information 31.

E_i(level)	J^{π}_i	E_{γ}[‡]	I_{γ}[‡]	E_f	J^{π}_f	Mult.[#]	δ[#]	α[c]	Comments
840.983	1/2$^+$	840.968 *17*	100	0.0	3/2$^+$	M1+E2	0.19 *3*		B(M1)(W.u.)=0.0306 *19*; B(E2)(W.u.)=6.4 *+22−18* E_{γ}: weighted average of 840.7 *9* from ^{33}Cl ε decay, 841.1 *10* from (^{18}O,3nγ), 841.0 *2* from (^{14}N,αpγ), 840.6 *6* from (^{13}C,2nαγ), 840.1 *3* from (α,nγ), 840.974 *14* from (n,γ) E=thermal, 840.91 *5* from (^{3}He,α), and 830 *10* from Coulomb excitation. Mult.,δ: γ(lin pol) in (^{12}C,αpnγ) indicate magnetic nature; δ(E2/M1) is deduced by the evaluators from measured B(E2)↑=0.0019 *4* in Coulomb excitation and adopted $T_{1/2}$=1.17 ps *7*.
1967.097	5/2$^+$	1125.8 *3*	1.07 *17*	840.983	1/2$^+$	E2		3.81×10^{-5} *5*	B(E2)(W.u.)=5.6 *+14−11* E_{γ}: weighted average of 1126.2 *2* from (^{14}N,αpγ), 1126.3 *7* from (^{13}C,2nαγ), and 1125.4 *2* from (α,nγ). Other: 1126.5 *10* from (^{18}O,3nγ). I_{γ}: unweighted average of 1.32 *33* from ^{33}Cl ε decay, 0.630 *20* from (^{18}O,3nγ), 1.20 *20* from (^{14}N,αpγ), 1.50 *10* from (^{13}C,2nαγ), and 0.70 *20* from (^{12}C,αpnγ). Other: 7.5 *11* from (α,nγ) is largely different from values of all other studies and considered by the evaluators as an outlier. Mult.: Q, ΔJ=2 from γγ(ADO) in (^{14}C,αpγ); M2 ruled out by RUL.
		1966.93 *21*	100.0 *2*	0.0	3/2$^+$	M1+E2	−0.58 *4*	2.60×10^{-4} *4*	B(M1)(W.u.)=0.0228 *+42−31*; B(E2)(W.u.)=8.1 *+17−13* E_{γ}: unweighted average of 1966.4 *5* from ^{33}Cl ε decay, 1967.6 *10* from (^{18}O,3nγ), 1967.2 *3* from (^{14}N,αpγ), 1966.9 *4* from (^{13}C,2nαγ), 1966.3 *1* from (α,nγ), and 1967.17 *6* from (n,γ) E=thermal. I_{γ}: from (^{13}C,2nαγ). Others: 100.0 *16* from ^{33}Cl ε decay, 100.0 *30* from (^{18}O,3nγ), 100 *6* from (^{14}N,αpγ), 100.0 *20* from (^{12}C,αpnγ), and 100.0 *11* from (α,nγ). δ: weighted average of −0.36 *+17−12* (1970Cu05), −0.56 *18* (1972To04), −0.67 *13* (1972Hi06), and −0.55 *3* (1977St02) in (α,nγ), −0.79 *26* (1966Od01), −0.75 *38* (1977So07), and −0.74 *7* (1975VaYG) in (d,pγ). Other: −1.41 *4* from (^{14}N,αpγ) is discrepant.
2313.313	3/2$^+$	346.19 *14*	1.82 *33*	1967.097	5/2$^+$	[M1]			B(M1)(W.u.)=0.056 *+14−12* E_{γ},I_{γ}: from (E,γ) E=thermal. Others: Iγ<5.8 in (α,nγ), <4.6 in (d,pγ).

From ENSDF

Adopted Levels, Gammas (continued)

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.#	δ#	αc	Comments
2313.313	3/2+	1472.0 *4*	100.0 *29*	840.983	1/2+	M1+E2	−0.32 *4*	7.51×10^{-5} *12*	B(M1)(W.u.)=0.0363 *+63−48*; B(E2)(W.u.)=7.0 *+21−17* E_γ: unweighted average of 1471.6 *1* from (α,nγ) and 1472.411 *13* from (n,γ) E=thermal. Other: 1471.7 in (^{32}S,pγ). I_γ: from (α,nγ). Others: 100 *6* from ^{33}Cl ε decay, 100 *8* from (^{12}C,αpnγ), 100 *9* from (n,γ) E=thermal, and 100.0 *31* from (d,pγ).
		2313.0 *4*	45.7 *30*	0.0	3/2+	M1+E2	−28 *+16−80*	4.76×10^{-4} *7*	B(M1)(W.u.)=6×10^{-6} *+31−5*; B(E2)(W.u.)=3.59 *+62−51* E_γ: unweighted average of 2312.6 *1* from (α,nγ) and 2313.34 *7* from (n,γ) E=thermal. I_γ: unweighted average of 39.9 *24* from ^{33}Cl ε decay, 44.9 *29* from (α,nγ), 44 *5* from (n,γ) E=thermal, and 53.9 *31* from (d,pγ). δ: while $\gamma(\theta)$ of 1472γ in other work cannot yield a unique δ, parallel fitting of $\gamma(\theta)$ and γ(lin pol) of 1472γ and 2313γ in 1975Bu15 in (α,nγ) yields a unique δ=−0.34 *3* for 1472γ (excluding the higher values reported in other work) and δ=−28 *+16−80* for 2313γ, with the latter adopted by the evaluators for 2313γ. Others: −0.38 *25*, or >+11, or <−3 (1977So07) in (d,pγ).
2867.615	5/2+	2026.565	1.54 *19*	840.983	1/2+	[E2]		3.38×10^{-4} *5*	B(E2)(W.u.)=3.3 *+17−9* I_γ: from ^{33}Cl ε decay. Others: <3 from (d,pγ), <6 from (α,nγ).
		2866.89 *31*	100.0 *18*	0.0	3/2+	M1+E2	+0.116 *9*	6.16×10^{-4} *9*	B(M1)(W.u.)=0.076 *+38−20*; B(E2)(W.u.)=0.51 *+27−15* E_γ: unweighted average of 2866.8 *5* from ^{33}Cl ε decay, 2866.4 *1* from (α,nγ), and 2867.47 *4* from (n,γ) E=thermal. δ: other: +0.16 *+5−25* from (d,pγ).
2934.45	7/2−	967.45 *10*	100.0 *7*	1967.097	5/2+	E1(+M2)	−0.013 *17*		B(E1)(W.u.)=1.40×10^{-5} *11*; B(M2)(W.u.)<0.067 E_γ: weighted average of 967.5 *3* from (^{14}N,αpγ), 967.5 *4* from (^{13}C,2n$\alpha\gamma$), 967.4 *1* from (α,nγ), and 967.91 *32* from (n,γ) E=thermal. Other: 968.4 *10* from (^{18}O,3nγ). I_γ: from (^{13}C,2n$\alpha\gamma$) and (^{12}C,αpnγ). Others: 100 *4* from (^{18}O,3nγ), 100.0 *35* from (^{14}N,αpγ), 100.0 *7* from (^{12}C,αpnγ), 100 *5* from (α,nγ), and 100 *4* from (d,pγ).

From ENSDF

$^{33}_{16}S_{17}$-20

Adopted Levels, Gammas (continued)

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
									δ: unweighted average of −0.03 *7* (1973Ca20), −0.002 *12* (1975Bu15), −0.01 +*3*−*16* (1972Hi06), and −0.12 *4* (1977St02) in (α,nγ), and −0.08 *9* (1966Od01) in (d,pγ). Other: +0.02 *4* from (^{12}C,αpnγ).
2934.45	7/2$^-$	2933.8 *2*	84 *5*	0.0	3/2$^+$	M2+E3	−0.16 *3*	4.44×10^{-4} *6*	B(M2)(W.u.)=0.219 *13*; B(E3)(W.u.)=4.0 +*16*−*14* E_γ: weighted average of 2935.6 *10* from (^{18}O,3nγ), 2934.7 *4* from (^{14}N,αpγ), 2934.4 *8* from (^{13}C,2n$\alpha\gamma$), and 2933.7 *1* from (α,nγ). I_γ: unweighted average of 96.3 *33* from (^{18}O,3nγ), 76.3 *30* from (^{14}N,αpγ), 90.1 *11* from (^{13}C,2n$\alpha\gamma$), 72 *5* from (α,nγ), and 85 *4* from (d,pγ). Other: 50.0 *16* from (^{12}C,αpnγ) is largely discrepant with others and considered as an outlier by the evaluators. δ: weighted average of −0.07 *7* (1972To04), −0.15 *4* (1972Hi06), −0.18 *12* (1973Ca20), and −0.15 *2* (1975Bu15) in (α,nγ), −0.48 *9* (1966Od01), −0.09 *27* (1966Be15), −0.19 *14* (1977So07) −0.24 *9* (1975VaYG) in (d,pγ).
2969.09	7/2$^+$	1002.3 *2*	9.9 *18*	1967.097	5/2$^+$	M1(+E2)	−0.005 *16*		B(M1)(W.u.)=0.033 +*13*−*10*; B(E2)(W.u.)<0.082 E_γ: others: 1002.3 *8* from (^{14}N,αpγ) and 1002.0 *8* from (^{13}C,2n$\alpha\gamma$). I_γ: unweighted average of 6.8 *7* from (^{14}N,αpγ), 13.1 *18* from (^{13}C,2n$\alpha\gamma$), and 9.9 *22* from (α,nγ).
		2968.6 *1*	100.0 *22*	0.0	3/2$^+$	E2		7.77×10^{-4} *11*	B(E2)(W.u.)=6.02 +*95*−*72* E_γ: others: 2969.2 *14* from (^{14}N,αpγ) and 2968.9 *12* from (^{13}C,2n$\alpha\gamma$). I_γ: from (α,nγ) and (^{13}C,2n$\alpha\gamma$). Others: 100 *8* from (^{14}N,αpγ). Mult.: Q, ΔJ=2 from $\gamma\gamma(\theta)$(DCO) in (^{12}C,αpnγ) and $\gamma\gamma$(ADO) in (^{14}N,αpγ); E2(+M3) with δ=−0.009 *10* from (α,nγ) but M3 component is less likely based on RUL.
3220.647	3/2$^-$	353.034[@] *19*	0.65[@] *7*	2867.615	5/2$^+$	[E1]			B(E1)(W.u.)=0.00233 +*61*−*44* I_γ: others: <3.2 from (α,nγ), <4.9 from (d,pγ).
		907.315[@] *20*	0.65[@] *6*	2313.313	3/2$^+$	[E1]			B(E1)(W.u.)=1.37×10^{-4} +*35*−*25* I_γ: others: <4.8 from (α,nγ), <4.9 from (d,pγ).
		1253.59[@] *4*	0.44[@] *5*	1967.097	5/2$^+$	[E1]		1.07×10^{-4} *2*	B(E1)(W.u.)=3.52×10^{-5} +*92*−*69* I_γ: others: Iγ<3.2 from (α,nγ), <1.6 from (d,pγ).
		2379.30[@] *30*	100.0[@] *17*	840.983	1/2$^+$	E1(+M2)	+0.02 +*3*−*7*	8.99×10^{-4} *13*	B(E1)(W.u.)=0.00117 +*30*−*21*; B(M2)(W.u.)<3.0

γ(^{33}S) (continued)

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.#	δ#	αc	Comments
									E_γ: unweighted average of 2379.0 *1* from (α,nγ) and 2379.59 *7* from (n,γ) E=thermal. I_γ: others: 100.0 *32* from (α,nγ) and 100.0 *33* from (d,pγ). δ: +0.02 *+36−9* from (α,nγ); RUL=3 for B(M2)(W.u.) requires δ<0.05. Others: −0.053 *13* (1975VaYG), −2.5<δ<+0.2 (1977So07) in (d,pγ); 0.43 *+31−43* in (n,γ) E=th (2024En02).
3220.647	3/2$^-$	3220.20 *30*	58.5 *13*	0.0	3/2$^+$	(E1(+M2))	−0.00 *9*	1.35×10^{-3} *2*	B(E1)(W.u.)=2.76×10^{-4} *+62−47*; B(M2)(W.u.)<2.0 E_γ: unweighted average of 3219.9 *1* from (α,nγ) and 3220.49 *4* from (n,γ) E=thermal. I_γ: weighted average of 58.7 *32* from (α,nγ), 57.7 *12* from (n,γ) E=thermal, and 63.9 *33* from (d,pγ). δ: others: +0.015 *13* (1975VaYG), −0.2<δ<+7 (1977So07) in (d,pγ); 0.19 *+18−15* in (n,γ) E=th (2024En02); RUL=3 for B(M2)(W.u.) requires δ<0.13.
3537.0		602.5 *10*	100	2934.45	7/2$^-$				E_γ,I_γ: from (^{18}O,3nγ).
3779.6	(5/2$^+$)	845.1 *10*	100	2934.45	7/2$^-$	(E1(+M2))	+0.1 *5*		E_γ,I_γ,Mult.,δ: from (^{12}C,αpnγ), with Mult and δ deduced from $\gamma\gamma(\theta)$(DCO) and $\gamma\gamma$(lin pol).
3831.84	5/2$^+$	862.74	11.1 *14*	2969.09	7/2$^+$	M1+E2	+0.26 *15*		B(M1)(W.u.)=0.078 *+30−20*; B(E2)(W.u.)=29 *+43−23* Placement from (d,pγ). I_γ: other: <16 in (d,pγ). Mult.,δ: D+Q from n$\gamma(\theta)$ in (α,nγ); E1+M2 ruled out by RUL.
		1518.49	28.4 *28*	2313.313	3/2$^+$	M1+E2	−0.29 *9*	8.72×10^{-5} *19*	B(M1)(W.u.)=0.036 *+13−9*; B(E2)(W.u.)=5.4 *+44−29* I_γ: weighted average of 27.8 *28* from (α,nγ) and 32 *7* from (d,pγ). Mult.: D+Q from $\gamma(\theta)$ in (α,nγ) and (d,pγ); E1+M2 ruled out by RUL. δ: average of −0.23 *10* from (α,nγ) and −0.33 *9* from (d,pγ).
		1864.69	13 *5*	1967.097	5/2$^+$	[M1,E2]		2.32×10^{-4} *30*	Placement from (d,pγ). I_γ: other: <5.6 in (α,nγ). B(M1)(W.u.)=0.0096 *+50−39* if M1, B(E2)(W.u.)=11.3 *+59−46* if E2.
		3831.6 *2*	100.0 *28*	0.0	3/2$^+$	M1+E2	+0.37 *2*	9.93×10^{-4} *14*	B(M1)(W.u.)=0.0075 *+28−16*; B(E2)(W.u.)=0.29 *+11−7* E_γ,I_γ: from (α,nγ). Others: Eγ=3831.9 *9* from (n,γ) E=thermal; Iγ=100 *9* from (d,pγ). Mult.: D+Q from $\gamma(\theta)$ in (α,nγ); E1+M2 ruled out by RUL. δ: weighted average of +0.41 *6* from (α,nγ) and +0.37 *2* from (d,pγ).

Adopted Levels, Gammas (continued)

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
3934.74	3/2+	1067.11	9.8 *17*	2867.615	5/2+	[M1+E2]			I_γ: from (d,pγ). Other: <13 from (α,nγ). Mult.: pure E2 is unlikely based on RUL. B(M1)(W.u.)=0.045 +*20*−*13* if M1. B(E2)(W.u.)=161 +*71*−*44* exceeds RUL=100 if E2.
		1621.38	8 *5*	2313.313	3/2+	[M1,E2]		1.36×10^{-4} *19*	I_γ: from (d,pγ). Other: <20 foam (α,nγ). B(M1)(W.u.)=0.0105 +*82*−*54* if M1, B(E2)(W.u.)=16 +*13*−*9* if E2.
		1967.58	19.7 *33*	1967.097	5/2+	[M1,E2]		2.76×10^{-4} *34*	I_γ: from (d,pγ) only. B(M1)(W.u.)=0.0144 +*63*−*39* if M1, B(E2)(W.u.)=15.2 +*66*−*41* if E2.
		3093.7 *2*	27.0 *33*	840.983	1/2+	(M1+E2)	>−1.7	8.14×10^{-4} *20*	B(M1)(W.u.)=0.0030 +*57*−*21*; B(E2)(W.u.)<2.8 I_γ: weighted average of 32 *8* from (α,nγ) and 26.2 *33* from (d,pγ). Mult.: D+Q from $\gamma(\theta)$ in (α,nγ); $\Delta\pi$=no from level scheme. δ: $-1.7<\delta<-0.0$ (1975Bu15) from (α,nγ).
		3935.0 *5*	100 *5*	0.0	3/2+	M1+E2	−0.23 *7*	1.02×10^{-3} *2*	B(M1)(W.u.)=0.0087 +*35*−*21*; B(E2)(W.u.)=0.12 +*10*−*7* E_γ: from (α,nγ). Other: 3934.7 *12* from (n,γ) E=thermal. I_γ: from (d,pγ). Other: 100 *8* from (α,nγ).
4048.49	9/2+	1079.2 *1*	20 *5*	2969.09	7/2+	M1+E2	−0.33 *4*		B(M1)(W.u.)=0.0118 +*46*−*34*; B(E2)(W.u.)=4.5 +*22*−*15* E_γ: from (α,nγ). Others: 1079.2 *7* from (^{14}N,αpγ) and 1079.5 *8* from (^{13}C,2n$\alpha\gamma$). I_γ: unweighted average of 24 *6* from (^{14}N,αpγ), 32.8 *25* from (^{13}C,2n$\alpha\gamma$), 11.5 *8* from (^{12}C,αpnγ), and 11.5 *12* from (α,nγ).
		1113.7 *10*	7.0 *24*	2934.45	7/2−	(E1)		3.30×10^{-5} *5*	B(E1)(W.u.)=1.24×10^{-4} +*61*−*46* E_γ: weighted average of 1113.8 *14* from (^{14}N,αpγ) and 1113.6 *10* from (^{13}C,2n$\alpha\gamma$). I_γ: unweighted average of 4.4 *15* from (^{14}N,αpγ), 6.1 *19* from (^{13}C,2n$\alpha\gamma$), 13.9 *17* from (^{12}C,αpnγ), and 3.5 *12* from (α,nγ). Mult.: D, ΔJ=1 from $\gamma\gamma$(ADO) in (^{14}N,αpγ); $\Delta\pi$=yes from level scheme.
		2081.5 *1*	100.0 *12*	1967.097	5/2+	E2		3.64×10^{-4} *5*	B(E2)(W.u.)=8.6 +*29*−*17* E_γ: from (α,nγ). Others: 2081.5 *6* from (^{14}N,αpγ) and 2081.5 *6* from (^{13}C,2n$\alpha\gamma$). I_γ: from (α,nγ). Others: 100 *11* from (^{14}N,αpγ), 100.0 *31* from (^{13}C,2n$\alpha\gamma$), and 100.0 *25* from (^{12}C,αpnγ). Mult.: Q, ΔJ=2 from $\gamma\gamma$(ADO) in (^{14}N,αpγ); E2, ΔJ=2 from $\gamma\gamma(\theta)$(DCO) and $\gamma\gamma$(lin pol) in (^{12}C,αpnγ); δ(M3/E2)=−0.02 *3* from $\gamma(\theta$,pol) in (α,nγ).

From ENSDF

Adopted Levels, Gammas (continued)

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
4048.49	9/2+	4047.9[f]		0.0	3/2+				E_γ: from (n,γ) E=thermal, where this is the only transition reported from a 4048 level in one of the (n,γ) studies (1985Gu20). Other: 4049 in (^{3}He,pγ). It is considered an unlikely transition from the 4048.49, 9/2+ level, as it would be too weak to be observed for Mult=E4. It is possible that the 4048γ depopulates a separate level at this energy.
4055.44	1/2+	3214.29[f]	<118	840.983	1/2+	[M1]		7.51×10^{-4} *11*	B(M1)(W.u.)<0.096 E_γ,I_γ: reported only in ^{33}Cl ε decay; not seen in other studies.
		4055.21[@] *15*	100[@] *14*	0.0	3/2+	[M1,E2]		0.00112 *7*	I_γ: others: Iγ=100 *27* from ^{33}Cl ε decay, 100 from (α,nγ). B(M1)(W.u.)=0.017 *+21−8* if M1, B(E2)(W.u.)=4.3 *+53−19* if E2.
4094.98	7/2+	1227.34	8.0 *23*	2867.615	5/2+	[M1,E2]		3.8×10^{-5} *6*	B(M1)(W.u.)=0.027 *+13−9* if M1, B(E2)(W.u.)=73 *+34−24* if E2.
		2127.7 *2*	100.0 *12*	1967.097	5/2+	M1+E2	+0.20 *2*	3.11×10^{-4} *4*	B(M1)(W.u.)=0.062 *+22−13*; B(E2)(W.u.)=2.25 *+94−59* E_γ: from (α,nγ). Others: 2127.7 *14* from (^{14}N,αpγ) and 2128.2 *11* from (^{13}C,2n$\alpha\gamma$). δ: weighted average of +0.19 *2* (1973Bu05), +0.19 *7* (1975Bu15), and +0.30 *5* (1977St02) in (α,nγ), +0.18 *5* (1975VaYG) in (d,pγ), +0.3 *1* in (^{12}C,αpnγ).
		4096.0 *5*	5.7 *12*	0.0	3/2+	[E2]		1.21×10^{-3} *2*	B(E2)(W.u.)=0.126 *+52−35*
4144.21	5/2+	923.48[@] *24*	8.9[@] *19*	3220.647	3/2−	[E1]			B(E1)(W.u.)=0.0020 *+11−6* I_γ: other: <8 from (α,nγ).
		1209.23[@] *27*	10.0[@] *16*	2934.45	7/2−	[E1]		7.78×10^{-5} *11*	B(E1)(W.u.)=0.00101 *+51−29* I_γ: other: <9 from (α,nγ). Mult.: M2 ruled out by RUL; E2 is also less likely based on RUL since it would require a large B(E2)(W.u.) close to RUL=100 and with its upper-bound value exceeding RUL.
		2177.04	9 *4*	1967.097	5/2+	[M1,E2]		3.7×10^{-4} *4*	E_γ: other: 2179.2 from (n,γ) E=thermal. B(M1)(W.u.)=0.0052 *+35−24* if M1, B(E2)(W.u.)=4.5 *+30−21* if E2.
		3303.05	25[@] *12*	840.983	1/2+	[E2]		9.16×10^{-4} *13*	B(E2)(W.u.)=1.6 *+10−7* E_γ: other: 3303.3 from (n,γ) E=thermal. I_γ: other: Iγ<8 from (α,nγ).
		4144.07 *21*	100[@] *19*	0.0	3/2+	(M1+E2)		0.00115 *7*	E_γ: weighted average of 4143.7 *3* from (α,nγ) and

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Adopted Levels, Gammas (continued)

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ‡	I_γ‡	E_f	J^π_f	Mult.#	δ#	αc	Comments
									4144.19 *17* from (n,γ) E=thermal. I_γ: other: 100 from (α,nγ). Mult.,δ: D+Q with δ=−2.6 *8* or −0.31 *+36−26* (1972Hi06), −2.47 *13* or −0.05 *5* (1975Bu15) in (α,nγ), −3.7 *3* or −0.27 *9* (1975VaYG) in (d,pγ), for J=5/2; the higher |δ| values would require Mult=M1+E2 based on RUL; $\Delta\pi$=no from level scheme. Also note that δ(Q+D) values for J=3/2 from (α,nγ) and (d,pγ) would require Mult=M1+E2 with E1+M2 ruled out by RUL and this rules out J^π(4144)=3/2$^-$. B(M1)(W.u.)=0.0084 *+36−21* if M1, B(E2)(W.u.)=2.01 *+85−50* if E2.
4210.819	3/2$^-$	990.16	1.9@ *10*	3220.647	3/2$^-$	[M1,E2]			E_γ: 990.4 from (n,γ) E=thermal. I_γ: other: <10 from (α,nγ). B(M1)(W.u.)=0.016 *+13−8* if M1, B(E2)(W.u.)=67 *+55−34* if E2.
		1897.48@ *4*	8.1 *8*	2313.313	3/2$^+$	[E1]		5.76×10^{-4} *8*	B(E1)(W.u.)=2.9×10^{-4} *+15−8* I_γ: weighted average of 8.2 *8* from (n,γ) E=thermal and 7.5 *22* from (d,pγ).
		3369.67 *4*	100.0 *22*	840.983	1/2$^+$	(E1(+M2))	−0.05 *18*	0.00142 *4*	B(E1)(W.u.)=6.4×10^{-4} *+35−20* B(M2)(W.u.)<20 upper limit exceeds RUL=3. E_γ: weighted average of 3369.5 *2* from (α,nγ) and 3369.68 *4* from (n,γ) E=thermal. I_γ: from (d,pγ). Other: 100 *4* from (n,γ) E=thermal; 100 from (α,nγ). Mult.: D(+Q) from $\gamma(\theta)$ in (α,nγ); $\Delta\pi$=yes from level scheme. δ: other: −3<δ(Q/D)<+0.2 from (d,pγ) for J=3/2. b(M2)(W.u.)=3 from RUL would require |δ|<0.12.
		4210.531	1.5@ *8*	0.0	3/2$^+$	[E1]		1.76×10^{-3} *3*	B(E1)(W.u.)=4.9×10^{-6} *+41−25* E_γ: 4210.9 from (n,γ) E=thermal. I_γ: others: <6 from (α,nγ), <7.5 from (d,pγ).
4375.21	1/2$^+$	2408.02		1967.097	5/2$^+$	[E2]		5.21×10^{-4} *7*	E_γ: reported in ^{33}Cl ε decay only.
		4374.9 *3*	100	0.0	3/2$^+$	[M1,E2]		0.00123 *8*	Mult.: D+Q from $\gamma(\theta)$ in (α,nγ) for J=3/2,5/2; no restriction for J=1/2. B(M1)(W.u.)=0.0109 *+79−33* if M1, B(E2)(W.u.)=2.3 *+17−7* if E2.
4423.71	1/2$^+$,3/2	2110.3@ *4*	15 *6*	2313.313	3/2$^+$				I_γ: weighted average of 34 *12* from (n,γ) E=thermal and 13 *4* from (d,pγ).

Adopted Levels, Gammas (continued)

γ(^{33}S) (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
4423.71	1/2+,3/2	2456.12[@] 24	85 11	1967.097	5/2+				I_γ: weighted average of 79 11 from (α,nγ), 90 14 from (n,γ) E=thermal, and 90 15 from (d,pγ). Mult.,δ: δ solution for from γ(θ) in (d,pγ) is excluded.
		3583.1 6	100 11	840.983	1/2+	D+Q			E_γ: unweighted average of 3583.6 2 from (α,nγ) and 3582.52 13 from (n,γ) E=thermal. I_γ: others: 100 14 from (n,γ) E=thermal, and 100 15 from (d,pγ). δ: −3.3 6 for J=3/2, −0.00 for J=1/2, +0.23 5 for J=3/2 (1975Bu15) in (α,nγ).
		4423.39		0.0	3/2+				E_γ,I_γ: this transition was obscured by a contaminant γ ray in (α,nγ) in (d,pγ), this transition is reported as the strongest transition from the decay level, with I(4430γ)/I(3583γ)=100 10/40 6.
4473.63		2506.43	100[@] 11	1967.097	5/2+				E_γ: 2507.4 from (n,γ) E=thermal.
		4473.31	28[@] 16	0.0	3/2+				E_γ: 4472.8 from (n,γ) E=thermal.
4730.02	9/2−	1760.8 1	100.0 12	2969.09	7/2+	E1(+M2)	−0.03 3	4.76×10^{-4} 7	B(E1)(W.u.)=0.00105 +56−31 B(M2)(W.u.)<8.5 upper limit exceeds RUL=3. E_γ: others: 1760.8 9 from (^{14}N,αpγ) and 1760.9 11 from (^{13}C,2nαγ). I_γ: others: 100 13 from (^{14}N,αpγ), 100 4 from (^{13}C,2nαγ), 100.0 24 from (^{12}C,αpnγ), and 100 50 from (n,γ) E=thermal. Mult.: from γ(θ,lin) in (α,nγ) and γγ(θ)(DCO) and γγ(lin pol) in (^{12}C,αpnγ). δ: from (α,nγ). Other: +0.05 2 from (^{12}C,αpnγ); RUL=3 for B(M2)(W.u.) requires |δ|<0.037.
		1795.6 1	21.4 12	2934.45	7/2−	M1+E2	+1.2 5	2.08×10^{-4} 14	B(M1)(W.u.)=0.0029 +24−12; B(E2)(W.u.)=5.3 +24−26 E_γ: from (α,nγ). Others: 1795.4 13 from (^{14}N,αpγ) and 1795 2 from (^{13}C,2nαγ). I_γ: weighted average of 19.2 27 from (^{14}N,αpγ), 20.3 29 from (^{13}C,2nαγ), and 22.0 12 from (α,nγ).
		4729.66[f]	30[@] 16	0.0	3/2+	[E3]		1.11×10^{-3} 2	E_γ: 4728.9 from (n,γ) E=thermal. This γ is reported in (n,γ) E=thermal, but it is considered questionable by the evaluators since Mult=[E3] from level scheme would require a large B(E3)(W.u.) exceeding RUL. B(E3)(W.u.)=9.2×10^{2} +52−42 exceeds RUL=100.

γ(^{33}S) (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
4748	1/2$^+$,3/2$^+$,5/2$^+$	3907	11.1 *33*	840.983	1/2$^+$	[M1,E2]		0.00107 *7*	I_γ: other: <80 from ^{33}Cl ε decay. B(M1)(W.u.)>0.0037 if M1, B(E2)(W.u.)>0.99 if E2.
		4748	100.0 *33*	0.0	3/2$^+$	[M1,E2]		0.00134 *8*	I_γ: other: 100 *27* from ^{33}Cl ε decay. B(M1)(W.u.)>0.026 if M1, B(E2)(W.u.)>4.6 if E2.
4794.9	(7/2$^+$)	1015.3 *10*	100	3779.6	(5/2$^+$)	M1(+E2)	+0.1 *2*		E_γ: from (^{18}O,Xγ). Mult.,δ: from (^{12}C,αpnγ), with Mult and δ from $\gamma\gamma(\theta)$(DCO) and $\gamma\gamma$(lin pol). Other: qualitative $\gamma\gamma$(lin pol) result of 1015.3γ in (^{18}O,Xγ) suggests Mult(1015.3γ)=(E1).
4866.50	11/2$^-$	1931.9 *2*	100	2934.45	7/2$^-$	E2		2.93$\times10^{-4}$ *4*	B(E2)(W.u.)=14.7 *+27−19* E_γ: others: 1931.2 *10* from (^{18}O,3nγ), 1931.9 *6* from (^{14}N,αpγ), and 1932.1 *10* from (^{13}C,2n$\alpha\gamma$). Mult.: from $\gamma\gamma(\theta)$(DCO) and $\gamma\gamma$(lin pol) in (^{14}N,αpγ) and (^{12}C,αpnγ). Other: δ(M3/E2)=−0.010 *10* from $\gamma(\theta$,pol) in (α,nγ); RUL=10 for B(M3)(W.u.) requires $\lvert\delta\rvert$<0.0007.
4917.87	1/2$^-$	707.07[@] *16*	0.91[@] *17*	4210.819	3/2$^-$	[M1,E2]			B(M1)(W.u.)=0.0056 *+31−17* if M1, B(E2)(W.u.)=46 *+26−14* if E2.
		862.55[@] *19*	0.91[@] *17*	4055.44	1/2$^+$	[E1]			B(E1)(W.u.)=9.3$\times10^{-5}$ *+50−28*
		983.20[@] *7*	2.26[@] *33*	3934.74	3/2$^+$	[E1]			B(E1)(W.u.)=1.55$\times10^{-4}$ *+83−45*
		1697.21[@] *8*	100[@] *7*	3220.647	3/2$^-$	[M1,E2]		1.64$\times10^{-4}$ *23*	B(M1)(W.u.)=0.045 *+22−11* if M1, B(E2)(W.u.)=64 *+31−16* if E2.
		4076.2[@] *7*	2.9[@] *8*	840.983	1/2$^+$	[E1]		1.71$\times10^{-3}$ *2*	B(E1)(W.u.)=2.8$\times10^{-6}$ *+17−10*
		4917.39[@] *7*	4.8[@] *8*	0.0	3/2$^+$	[E1]		2.00$\times10^{-3}$ *3*	B(E1)(W.u.)=2.6$\times10^{-6}$ *+14−8*
4941	5/2$^-$,7/2$^-$	2007	100	2934.45	7/2$^-$	[M1+E2]		2.94$\times10^{-4}$ *35*	B(M1)(W.u.)=0.101 *+65−30* if M1. B(E2)(W.u.)=102 *+67−31* exceeds RUL=100 if E2.
4943.62	(1/2,3/2,5/2)	1008.86	1.5[@] *8*	3934.74	3/2$^+$				E_γ: 1008.9 from (n,γ) E=thermal.
		4102.36	12[@] *6*	840.983	1/2$^+$				E_γ: 4101.9 from (n,γ) E=thermal.
		4943.22	100[@] *10*	0.0	3/2$^+$				E_γ: 4943.2 from (n,γ) E=thermal.
5208.97	(1/2 to 7/2$^+$)	5208.53 *23*	100	0.0	3/2$^+$				Placement from (α,nγ) and (n,γ) E=thermal, tentatively in the latter. E_γ: from (n,γ) E=thermal.
5273	(1/2 to 7/2)	5269.84[f] *32*	100	0.0	3/2$^+$				E_γ: tentative placement by 1985Ke08 in (n,γ) E=thermal.

$\gamma(^{33}S)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[‡]	I_{γ}[‡]	E_f	J^{π}_f	Mult.[#]	δ[#]	α[c]	Comments
5282	(1/2 to 7/2$^+$)	5282	100	0.0	3/2$^+$				
5286.24	(1/2,3/2,5/2$^+$)	2972.66 *11*	92 *16*	2313.313	3/2$^+$				
		4445.02 *13*	100 *16*	840.983	1/2$^+$				
5348.53	(1/2,3/2,5/2$^-$)	430.66	32 *17*	4917.87	1/2$^-$				E_{γ}: 430.3 from (n,γ) E=thermal.
		1413.76	100 *50*	3934.74	3/2$^+$				E_{γ}: 1413.9 from (n,γ) E=thermal.
		5348.07	97 *49*	0.0	3/2$^+$				E_{γ}: 5348.1 from (n,γ) E=thermal.
5391.9		597.0[d] *10*		4794.9	(7/2$^+$)				E_{γ}: from (^{18}O,Xγ).
5478.41	9/2$^-$	611.7[&] *4*	9.4[&] *31*	4866.50	11/2$^-$	(M1)[b]			B(M1)(W.u.)≥0.084
		748.3[&] *5*	19[&] *6*	4730.02	9/2$^-$	(M1)[b]			B(M1)(W.u.)≥0.097
		1383.4 *7*	32 *7*	4094.98	7/2$^+$	(E1)[b]		1.93×10^{-4} *3*	B(E1)(W.u.)≥8.9×10^{-4} E_{γ}: weighted average of 1383.3 *7* from (^{14}N,αpγ) and 1383.7 *10* from (^{13}C,2n$\alpha\gamma$). I_{γ}: weighted average of 47 *13* from (^{14}N,αpγ) and 29 *6* from (^{13}C,2n$\alpha\gamma$).
		2509.5 *7*	100 *8*	2969.09	7/2$^+$	(E1)[b]		9.75×10^{-4} *14*	B(E1)(W.u.)≥5.5×10^{-4} E_{γ}: weighted average of 2509.2 *7* from (^{14}N,αpγ) and 2510.5 *12* from (^{13}C,2n$\alpha\gamma$). I_{γ}: from (^{13}C,2n$\alpha\gamma$). Other: 100 *22* from (^{14}N,αpγ).
		2543.8 *6*	72 *7*	2934.45	7/2$^-$	M1+E2	+0.7 *3*	5.16×10^{-4} *21*	B(M1)(W.u.)≥0.0062; B(E2)(W.u.)≥1.1 E_{γ}: weighted average of 2543.7 *6* from (^{14}N,αpγ) and 2545 *2* from (^{13}C,2n$\alpha\gamma$). I_{γ}: weighted average of 94 *22* from (^{14}N,αpγ) and 70 *7* from (^{13}C,2n$\alpha\gamma$).
5479.72	1/2$^+$	1268.88[a]		4210.819	3/2$^-$				
		2545.17	21	2934.45	7/2$^-$	[E3]			I_{γ}: from (^{3}He,$\alpha\gamma$) only.
		3512.42[a]		1967.097	5/2$^+$				
		4632.7[†] *10*	100	840.983	1/2$^+$				E_{γ}: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=4638.39. E_{γ},I_{γ}: from (^{3}He,pγ). Other: Iγ=100 also from (^{3}He,$\alpha\gamma$). Surprisingly, as the strongest γ from 5480 level, this γ was not observed while the 5477γ was observed in (n,γ) E=thermal by 1985Ke08 and 1985Ra15, and the unobserved 4633γ is estimated to have a much larger intensity than 5477γ as inferred by 1985Ra15 from intensity balance and branching from other work.
		5477.2 *17*	20	0.0	3/2$^+$				E_{γ}: weighted average of 5475.0 *16* from (^{3}He,pγ)

$\gamma(^{33}S)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[‡]	I_{γ}[‡]	E_f	J^{π}_f	Mult.[#]	δ[#]	α[c]	Comments
									and 5478.5 *12* from (n,γ) E=thermal. I_{γ}: average of 18 from (^{3}He,pγ) and 21 from (^{3}He,$\alpha\gamma$). This is the only γ from 5480 level observed in (n,γ) E=thermal.
5612.90	(1/2$^+$)	1677.96[e] *10*	<74[e]	3934.74	3/2$^+$				
		4771.14[†] *7*	100 *16*	840.983	1/2$^+$				E_{γ}: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=4771.55.
		5611.88 *27*	19.7 *32*	0.0	3/2$^+$				
5710.871	1/2$^-$	97.90 *4*	0.144 *16*	5612.90	(1/2$^+$)				
		1500.15 *13*	0.32 *7*	4210.819	3/2$^-$				
		2490.15 *7*	19.8 *11*	3220.647	3/2$^-$				
		3397.40 *11*	10.4 *11*	2313.313	3/2$^+$				
		4869.49 *8*	100.0 *32*	840.983	1/2$^+$				
		5710.36 *4*	1.42 *21*	0.0	3/2$^+$				
5721.7	9/2$^{(+)}$	1673.1[&] *13*	43[&] *14*	4048.49	9/2$^+$				
		2752.5[&] *14*	71[&] *24*	2969.09	7/2$^+$				
		3754.5[&] *25*	100[&] *38*	1967.097	5/2$^+$	Q			
5793.4		1063.4 *8*	100	4730.02	9/2$^-$				E_{γ},I_{γ}: from (^{13}C,2n$\gamma\gamma$).
5888.319	3/2$^-$	970.0 *6*	0.4 *2*	4917.87	1/2$^-$				
		1677.96[e†] *10*	<3.1[e]	4210.819	3/2$^-$				E_{γ}: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=1677.46.
		1744.06 *7*	6.4 *8*	4144.21	5/2$^+$				
		2667.59 *4*	24.8 *30*	3220.647	3/2$^-$				
		3020.38 *6*	6.7 *10*	2867.615	5/2$^+$				
		3920.85 *7*	4.5 *6*	1967.097	5/2$^+$				
		5047.04 *11*	100 *6*	840.983	1/2$^+$				
		5887.98 *11*	25.5 *27*	0.0	3/2$^+$				
5988.9		597.0[d] *10*		5391.9					E_{γ}: from (^{18}O,Xγ).
6091		6090		0.0	3/2$^+$				E_{γ}: γ reported in (^{3}He,pγ), with Eγ from level-energy difference.
6380	(1/2 to 7/2)$^{(+)}$	6379		0.0	3/2$^+$				E_{γ}: γ reported in (^{3}He,pγ), with Eγ from level-energy difference.
6424.876	(3/2)$^-$	2214.00 *8*	34 *4*	4210.819	3/2$^-$				
		2280.54 *15*	8.1 *15*	4144.21	5/2$^+$				
		3455.59	5.8 *29*	2969.09	7/2$^+$				
		4457.72 *21*	2.5 *4*	1967.097	5/2$^+$				
		5583.54 *15*	100 *7*	840.983	1/2$^+$				
		6424.34 *7*	8.6 *13*	0.0	3/2$^+$				
6487	(1/2$^+$)	6485.93[f] *15*	100	0.0	3/2$^+$				E_{γ}: tentative placement by 1985Ke08 in (n,γ) E=thermal.

Adopted Levels, Gammas (continued)

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
6525.2	$(11/2)^-$	1795.0 *20*	100	4730.02	$9/2^-$	M1+E2	−0.5 *2*	1.87×10^{-4} *7*	B(M1)(W.u.)=0.024 *+10−7*; B(E2)(W.u.)=7.7 *+64−45*
6676.720	$(1/2^+,3/2)$	2465.84 *14*	24 *5*	4210.819	$3/2^-$				
		2532.07 *28*	16.5 *26*	4144.21	$5/2^+$				
		3455.84 *6*	61 *10*	3220.647	$3/2^-$				
		3809.49[†] *14*	20.0 *29*	2867.615	$5/2^+$				E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=3808.869.
		4362.98 *6*	100 *13*	2313.313	$3/2^+$				
		4708.66[†] *9*	31 *5*	1967.097	$5/2^+$				E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=4709.26.
		5835.40 *22*	50 *7*	840.983	$1/2^+$				
		6676.04 *4*	87 *13*	0.0	$3/2^+$				
6710		6707.56[f] *21*	100	0.0	$3/2^+$				E_γ: tentative placement by 1985Ke08 in (n,γ) E=thermal.
6967	$(1/2\text{ to }7/2)^+$	6958.08[f] *7*	100	0.0	$3/2^+$				E_γ: tentative placement by 1985Ke08 in (n,γ) E=thermal.
6999.99	$11/2^+$	1278.2[&] *9*	12[&] *4*	5721.7	$9/2^{(+)}$	M1+E2	−0.5 *2*	4.06×10^{-5} *18*	B(M1)(W.u.)=0.00135 *+60−51*; B(E2)(W.u.)=0.84 *+66−55*
		1521.1 *6*	80 *6*	5478.41	$9/2^-$	(E1)[b]		2.92×10^{-4} *4*	B(E1)(W.u.)=1.99×10^{-4} *+51−34* E_γ: weighted average of 1521.5 *6* from (^{14}N,$\alpha p\gamma$) and 1520.3 *8* from (^{13}C,2n$\alpha\gamma$). I_γ: weighted average of 73 *12* from (^{14}N,$\alpha p\gamma$) and 82 *6* from (^{13}C,2n$\alpha\gamma$).
		2133.2 *6*	57 *16*	4866.50	$11/2^-$	(E1)[b]		7.41×10^{-4} *10*	B(E1)(W.u.)=5.2×10^{-5} *+17−14* E_γ: other: 2133.2 *11* from (^{13}C,2n$\alpha\gamma$). I_γ: unweighted average of 41 *8* from (^{14}N,$\alpha p\gamma$) and 72 *7* from (^{13}C,2n$\alpha\gamma$).
		2269.8 *5*	83 *6*	4730.02	$9/2^-$	(E1)[b]		8.31×10^{-4} *12*	B(E1)(W.u.)=6.2×10^{-5} *+16−11* E_γ: other: 2269.9 *10* from (^{13}C,2n$\alpha\gamma$). I_γ: weighted average of 77 *12* from (^{14}N,$\alpha p\gamma$) and 84 *6* from (^{13}C,2n$\alpha\gamma$).
		2905.1[&] *3*	5.5[&] *14*	4094.98	$7/2^+$	[E2]		7.49×10^{-4} *10*	B(E2)(W.u.)=0.032 *+12−10*
		2951.3[&] *8*	100 *6*	4048.49	$9/2^+$	(M1)[b]		6.48×10^{-4} *9*	B(M1)(W.u.)=0.00114 *+29−19* E_γ: other: 2951.3 *12* from (^{13}C,2n$\alpha\gamma$). I_γ: from (^{13}C,2n$\alpha\gamma$). Other: 100 *17* from (^{14}N,$\alpha p\gamma$).
7017.21	$(1/2,3/2,5/2^+)$	7016.41	100	0.0	$3/2^+$				E_γ: 7016.0 from (n,γ) E=thermal.
7181.1	$13/2^-$	2313.7 *20*	100[&] *12*	4866.50	$11/2^-$	M1+E2	+0.4 *1*	3.98×10^{-4} *8*	B(M1)(W.u.)=0.0190 *+94−52*; B(E2)(W.u.)=2.3

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	α[c]	Comments
								+17−11 E_γ: weighted average of 2314.3 *20* from (^{14}N,αpγ) and 2313 *2* from (^{13}C,2nαγ). I_γ: other: 100 *14* from (^{12}C,αpnγ). Mult.: other: D(+Q) from (^{12}C,αpnγ) is in disagreement.
7181.1	13/2$^-$	2450.9[&] *25*	30 *6*	4730.02	9/2$^-$	E2	5.42×10^{-4} *8*	B(E2)(W.u.)=3.8 *+21−12* I_γ: weighted average of 33 *5* from (^{14}N,αpγ) and 19 *10* from (^{12}C,αpnγ). Mult.: other: D+Q from (^{12}C,αpnγ) is in disagreement.
7187.709	3/2$^-$	6346.12 *20*	5.2 *9*	840.983	1/2$^+$			
		7186.98 *6*	100 *11*	0.0	3/2$^+$			
7415.865	1/2,3/2	6574.56 *37*	29 *5*	840.983	1/2$^+$			
		7415.13 *19*	100 *10*	0.0	3/2$^+$			
7488.08	(1/2,3/2,5/2$^+$)	7487.05 *15*	100	0.0	3/2$^+$			
7506.300	(1/2,3/2,5/2$^+$)	489.09	8 *4*	7017.21	(1/2,3/2,5/2$^+$)			E_γ: 488.2 from (n,γ) E=thermal.
		4285.354	9 *5*	3220.647	3/2$^-$			E_γ: 4283.9 from (n,γ) E=thermal.
		6664.60 *22*	100 *12*	840.983	1/2$^+$			
		7505.90[†] *11*	65 *10*	0.0	3/2$^+$			E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=7505.384.
7575.5	13/2$^-$	394.4[&] *5*	10.6[&] *21*	7181.1	13/2$^-$	(M1)[b]		B(M1)(W.u.)≥0.44
		1050.3[&] *9*	13[&] *4*	6525.2	(11/2)$^-$	(M1)[b]		B(M1)(W.u.)≥0.025
		2097.0[&] *15*	36[&] *11*	5478.41	9/2$^-$	E2	3.72×10^{-4} *5*	B(E2)(W.u.)≥8.7
		2708.7[&] *15*	36[&] *11*	4866.50	11/2$^-$	(M1)[b]	5.50×10^{-4} *8*	B(M1)(W.u.)≥0.0043
		2845.3[&] *17*	100[&] *26*	4730.02	9/2$^-$	E2	7.22×10^{-4} *10*	B(E2)(W.u.)≥6.4
7615.717	(1/2,3/2,5/2$^+$)	4749.09[†] *22*	58 *9*	2867.615	5/2$^+$			E_γ: uncertainty multiplied by a factor of 2 in the fitting; level-energy difference=4747.735.
		5301.71 *46*	32 *5*	2313.313	3/2$^+$			
		5648.07 *7*	97 *14*	1967.097	5/2$^+$			
		7614.62 *8*	100 *16*	0.0	3/2$^+$			
7819.0	15/2$^-$	637.9[&] *10*	2.2[&] *6*	7181.1	13/2$^-$	(M1)[b]		B(M1)(W.u.)=0.033 *+26−13*
		2952.5 *12*	100 *18*	4866.50	11/2$^-$	E2	7.69×10^{-4} *11*	B(E2)(W.u.)=7.1 *+44−20* E_γ: weighted average of 2952.2 *12* from (^{14}N,αpγ) and 2954 *3* from (^{13}C,2nαγ). Mult.: also from γγ(θ)(DCO) and γγ(lin pol) in (^{12}C,αpnγ).
7920		7078.202		840.983	1/2$^+$			γ reported in (^{3}He,pγ).
8334		8333[a]		0.0	3/2$^+$			
8368.073	(1/2,3/2)	7528.2 *9*	67 *20*	840.983	1/2$^+$			

From ENSDF

$^{33}_{16}S_{17}$-31

$\gamma(^{33}S)$ (continued)

E_i(level)	J_i^π	E_γ[‡]	I_γ[‡]	E_f	J_f^π	Mult.[#]	α[c]	Comments
8368.073	(1/2,3/2)	8366.8 *6*	100 *20*	0.0	3/2$^+$			
8639.9	15/2$^+$	1064.1[&] *11*	36[&] *8*	7575.5	13/2$^-$	(E1)[b]		B(E1)(W.u.)=4.76×10^{-4} *+96−94*
		1458.5[&] *10*	2.5[&] *9*	7181.1	13/2$^-$	[E1]	2.45×10^{-4} *4*	B(E1)(W.u.)=1.28×10^{-5} *+51−47*
		1640.0 *9*	100 *6*	6999.99	11/2$^+$	E2	1.63×10^{-4} *3*	B(E2)(W.u.)=18.4 *+24−20* E_γ: weighted average of 1639.6 *9* from (^{14}N,αpγ) and 1641.4 *16* from (^{13}C,2nαγ). I_γ: from (^{13}C,2nαγ). Other: 100 *16* from (^{14}N,αpγ).
		2847 *3*	6.9 *28*	5793.4				E_γ,I_γ: from (^{13}C,2nαγ) only.
(8641.632)	1/2$^+$	273.559 *24*	0.112 *13*	8368.073	(1/2,3/2)			
		1025.874 *31*	0.267 *27*	7615.717	(1/2,3/2,5/2$^+$)			
		1135.314 *17*	0.72 *8*	7506.300	(1/2,3/2,5/2$^+$)			
		1153.40 *16*	0.065 *20*	7488.08	(1/2,3/2,5/2$^+$)			
		1225.744 *15*	1.00 *12*	7415.865	1/2,3/2			
		1453.900 *19*	0.88 *8*	7187.709	3/2$^-$			
		1624.38	0.025 *13*	7017.21	(1/2,3/2,5/2$^+$)			E_γ: 1624.9 from (n,γ) E=thermal.
		1964.819 *36*	2.07 *22*	6676.720	(1/2$^+$,3/2)			
		2216.714 *30*	3.32 *22*	6424.876	(3/2)$^-$			
		2753.11 *8*	9.30 *33*	5888.319	3/2$^-$			
		2930.59 *4*	28.2 *7*	5710.871	1/2$^-$			
		3029.1 *5*	0.30 *7*	5612.90	(1/2$^+$)			
		3161.71 *13*	0.19 *6*	5479.72	1/2$^+$			
		3355.19 *6*	0.35 *8*	5286.24	(1/2,3/2,5/2$^+$)			
		3723.61 *7*	4.68 *27*	4917.87	1/2$^-$			
		4217.62 *5*	0.37 *5*	4423.71	1/2$^+$,3/2			
		4430.61 *15*	8.33 *33*	4210.819	3/2$^-$			
		4585.72 *27*	0.045 *7*	4055.44	1/2$^+$			
		5420.52 *3*	100.0 *13*	3220.647	3/2$^-$			
		5773.53 *6*	0.133 *17*	2867.615	5/2$^+$			
		6327.74 *5*	0.207 *27*	2313.313	3/2$^+$			
		6673.62 *8*	0.78 *10*	1967.097	5/2$^+$			
		7799.59 *5*	4.85 *28*	840.983	1/2$^+$			
		8640.40 *3*	3.13 *18*	0.0	3/2$^+$			
8671.090	3/2$^-$	2960.077	10.4 *31*	5710.871	1/2$^-$			
		3752.99		4917.87	1/2$^-$			
		4459.948	12.5 *31*	4210.819	3/2$^-$			
		5449.960	56 *6*	3220.647	3/2$^-$			
		5802.927	8 *4*	2867.615	5/2$^+$			
		6357.120	8.3 *21*	2313.313	3/2$^+$			
		6703.262	8.3 *21*	1967.097	5/2$^+$			
		7829.110	100 *6*	840.983	1/2$^+$			
		8669.867	10.4 *31*	0.0	3/2$^+$			

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
8683.424	3/2$^+$	2972.409	13.3 *33*	5710.871	1/2$^-$				
		4472.280	15.0 *33*	4210.819	3/2$^-$				
		5462.292	100 *7*	3220.647	3/2$^-$				
		6369.451	15.0 *33*	2313.313	3/2$^+$				
		7841.441	10.0 *33*	840.983	1/2$^+$				
		8682.198	13.3 *33*	0.0	3/2$^+$				
8741.21	1/2$^+$	3030.19	33 *17*	5710.871	1/2$^-$				
		4530.1	<67	4210.819	3/2$^-$				E_γ,I_γ: unresolved structures in γ spectrum (1967Be36).
		5520.07	100 *13*	3220.647	3/2$^-$				
		7899.21	63 *10*	840.983	1/2$^+$				
		8739.97	70 *7*	0.0	3/2$^+$				
8838.86	1/2$^-$	4783.05		4055.44	1/2$^+$				
		4903.73		3934.74	3/2$^+$				
		5617.70		3220.647	3/2$^-$				
		6524.86		2313.313	3/2$^+$				
		7996.84		840.983	1/2$^+$				
		8837.59		0.0	3/2$^+$				
9007.10	1/2$^+$	673.09[a]		8334					
9211.3	5/2$^+$	5990.1[a]		3220.647	3/2$^-$				
9345.4	1/2$^-$	9344.0[a]		0.0	3/2$^+$				
9357.9		1024[a]		8334					
		9356.5[a]		0.0	3/2$^+$				
9813.4	(17/2$^+$)	1173.4 *8*	100[&] *28*	8639.9	15/2$^+$	(M1)[b]		2.89×10^{-5} *4*	B(M1)(W.u.)=0.086 *+29−20* E_γ: weighted average of 1174.5 *17* from (^{14}N,αpγ) and 1173.2 *8* from (^{13}C,2n$\alpha\gamma$).
		1995.1[&] *19*	35[&] *13*	7819.0	15/2$^-$	(E1)[b]		6.46×10^{-4} *9*	B(E1)(W.u.)=1.8×10^{-4} *+10−7*
10053	1/2$^{(+)}$	695[a]		9357.9					
		708[a]		9345.4	1/2$^-$				
		1045.88[a]		9007.10	1/2$^+$				
		1719[a]		8334					
		4572.94[a]		5479.72	1/2$^+$				
		5996.98[a]		4055.44	1/2$^+$				
		8084.840[a]		1967.097	5/2$^+$				
		10051[a]		0.0	3/2$^+$				
10444	3/2$^{(+)}$	1436.87[a]		9007.10	1/2$^+$				
		4732.765[a]		5710.871	1/2$^-$				
		6019.70[a]		4423.71	1/2$^+$,3/2				
		7474.00[a]		2969.09	7/2$^+$				
		8475.735[a]		1967.097	5/2$^+$	D+Q	0.255		Mult.,δ: from $\gamma(\theta)$ in (α,γ):res.

$\gamma(^{33}S)$ (continued)

E_i(level)	J^π_i	E_γ[‡]	I_γ[‡]	E_f	J^π_f	Mult.[#]	δ[#]	α[c]	Comments
10444	$3/2^{(+)}$	10442[a]		0.0	$3/2^+$				
10494	$(3/2,5/2^-)$	1283[a]		9211.3	$5/2^+$				
		6283[a]		4210.819	$3/2^-$	D+Q	0.211		Mult.,δ: from $\gamma(\theta)$ in (α,γ):res.
		7273[a]		3220.647	$3/2^-$	D+Q	0.126		Mult.,δ: from $\gamma(\theta)$ in (α,γ):res.
		7625[a]		2867.615	$5/2^+$				
		8180[a]		2313.313	$3/2^+$				
		8526[a]		1967.097	$5/2^+$				
		10492[a]		0.0	$3/2^+$	D			Mult.: from $\gamma(\theta)$ in (α,γ):res.
10710	$5/2^{(+)}$	4998.723[a]		5710.871	$1/2^-$				
		6285.65[a]		4423.71	$1/2^+,3/2$				
		6498.494[a]		4210.819	$3/2^-$				
		7774.57[a]		2934.45	$7/2^-$				
		8395.541[a]		2313.313	$3/2^+$				
		8741.660[a]		1967.097	$5/2^+$				
		10708[a]		0.0	$3/2^+$				
10765	$5/2^{(-)}$	5053.714		5710.871	$1/2^-$				
		5846.57		4917.87	$1/2^-$				
		6553.482		4210.819	$3/2^-$	D+Q	0.206		Mult.,δ: from $\gamma(\theta)$ in (α,γ):res.
		6829.50		3934.74	$3/2^+$				
		7829.55		2934.45	$7/2^-$				
		8450.525		2313.313	$3/2^+$	D			Mult.: from $\gamma(\theta)$ in (α,γ):res.
10781	3/2	6948.38[a]		3831.84	$5/2^+$				
		7912.367[a]		2867.615	$5/2^+$	D+Q	0.114		Mult.,δ: from $\gamma(\theta)$ in (α,γ):res.
		8812.640[a]		1967.097	$5/2^+$				
		9938.410[a]		840.983	$1/2^+$	D+Q	0.195		Mult.,δ: from $\gamma(\theta)$ in (α,γ):res.
11700.8	$(19/2)^+$	3060.8[&] *18*	100	8639.9	$15/2^+$	E2		8.16×10^{-4} *11*	B(E2)(W.u.)=9.6 *+61−28*

† Poor fit; uncertainty multiplied by a factor in the fitting.

‡ From $(\alpha,n\gamma)$ up to 5283 level, from (n,γ) E=thermal above 5283 and up to 8642 level, and from (n,γ) E=res above 8642 level, unless otherwise noted. $E\gamma$ values without uncertainties are from level-energy differences where E(level) values have been deduced based on other sources as described, unless otherwise noted.

\# From $\gamma(\theta)$, $\gamma\gamma(\theta)$ and γ(lin pol) data in $(\alpha,n\gamma)$ up to 5282 levels and from $\gamma\gamma(\theta)$(ADO) in $(^{14}N,\alpha p\gamma)$ above 5282 level, with electric/magnetic nature from γ(lin pol) and/or determined based on RUL and measured $T_{1/2}$ where available, unless otherwise noted.

@ From (n,γ) E=thermal.

& From $(^{14}N,\alpha p\gamma)$.

a γ reported in (α,γ):res.

b D, $\Delta J=1$ from $\gamma\gamma$(ADO) in $(^{14}N,\alpha p\gamma)$; $\Delta\pi$=no from level scheme.

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

$\gamma(^{33}S)$ (continued)

multipolarities, and mixing ratios, unless otherwise specified.

[d] Multiply placed.

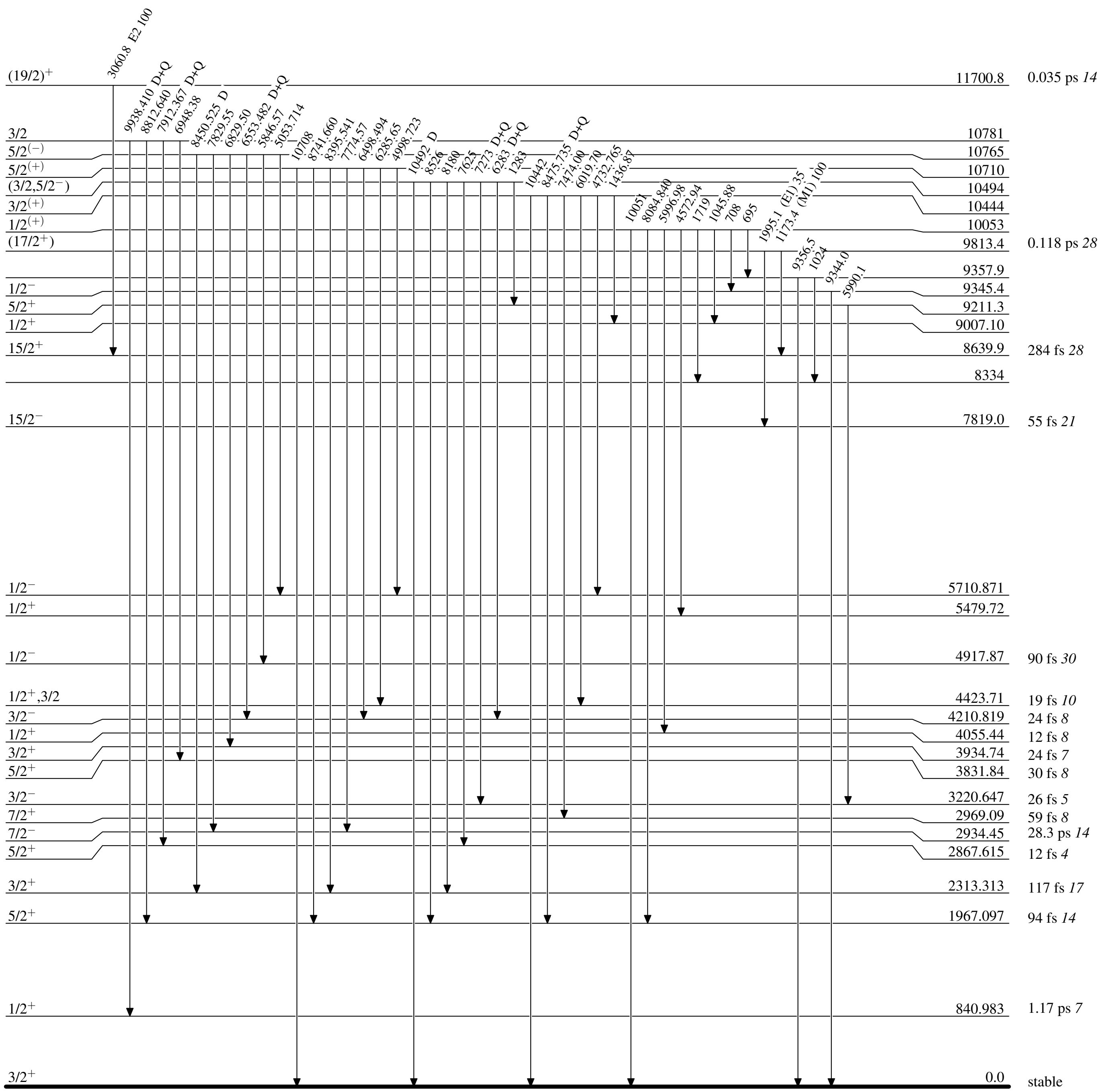
[e] Multiply placed with undivided intensity.

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

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

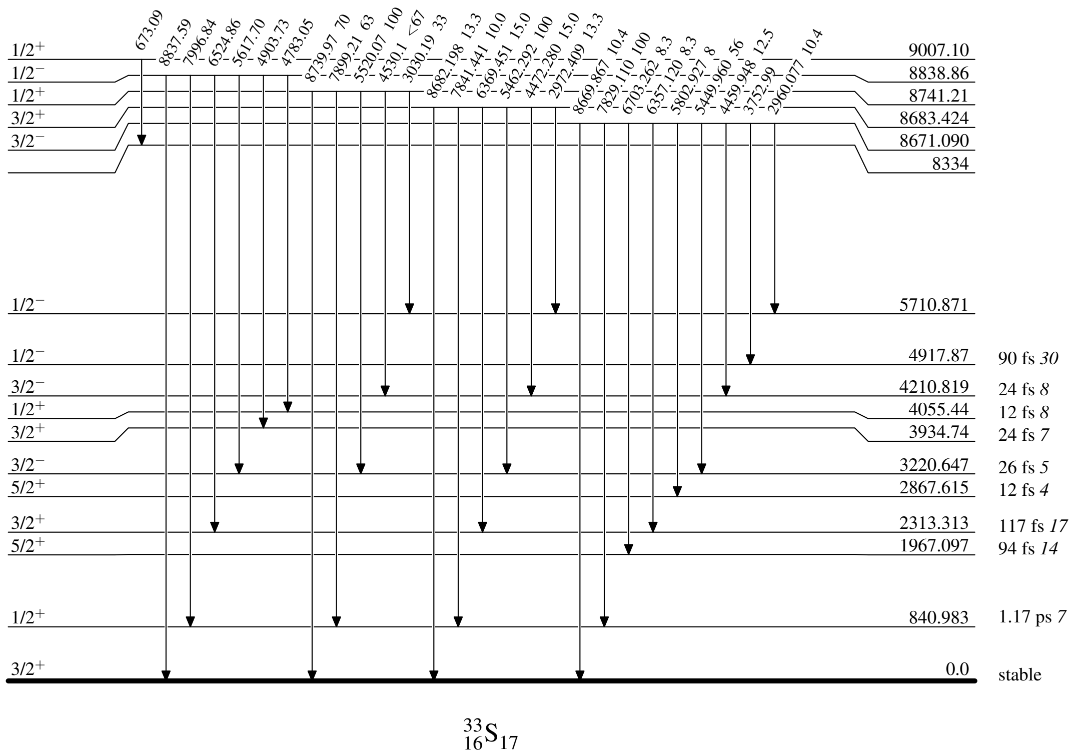


$^{33}_{16}S_{17}$

Adopted Levels, Gammas

Level Scheme (continued)

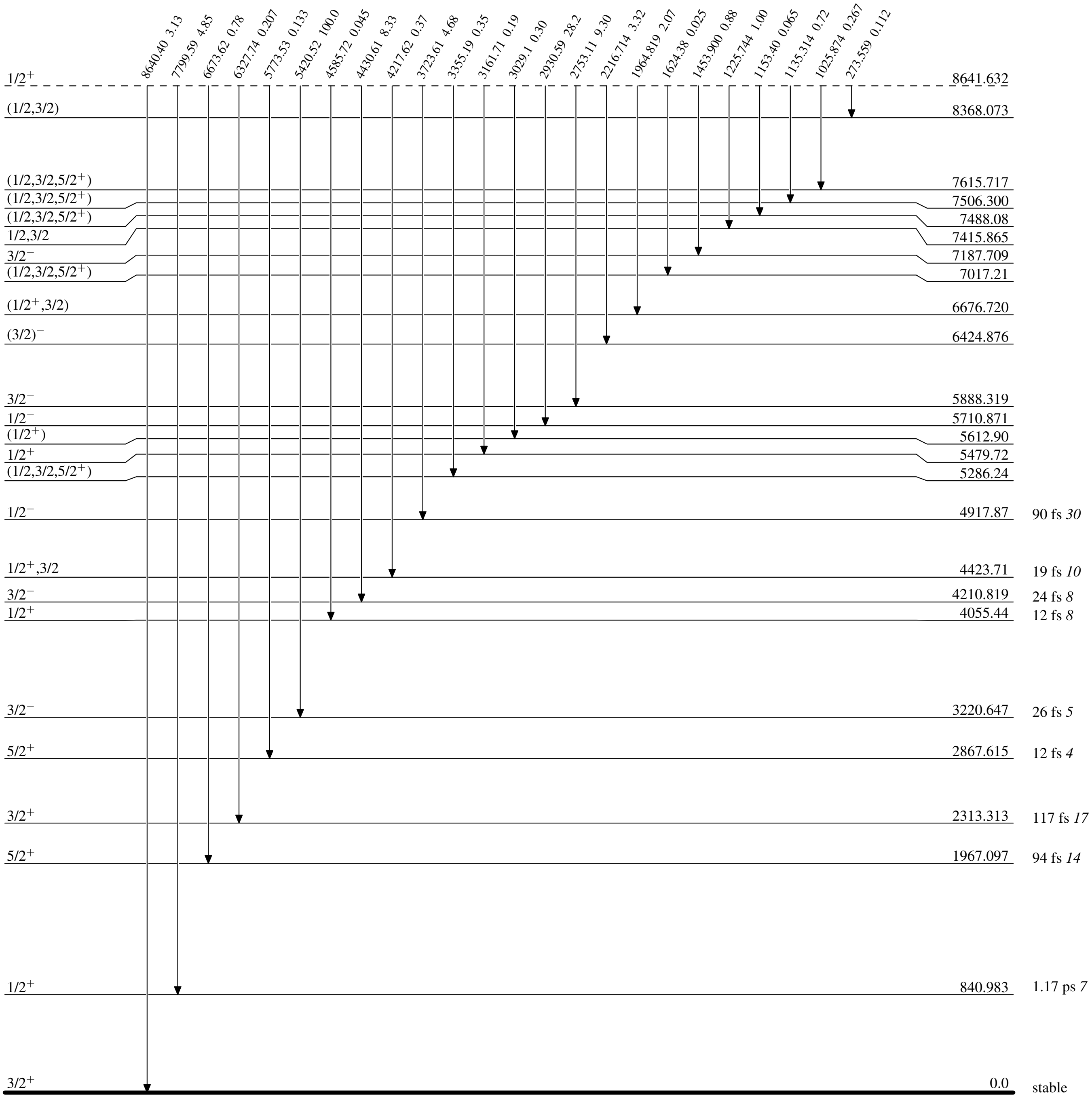
Intensities: Relative photon branching from each level



Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

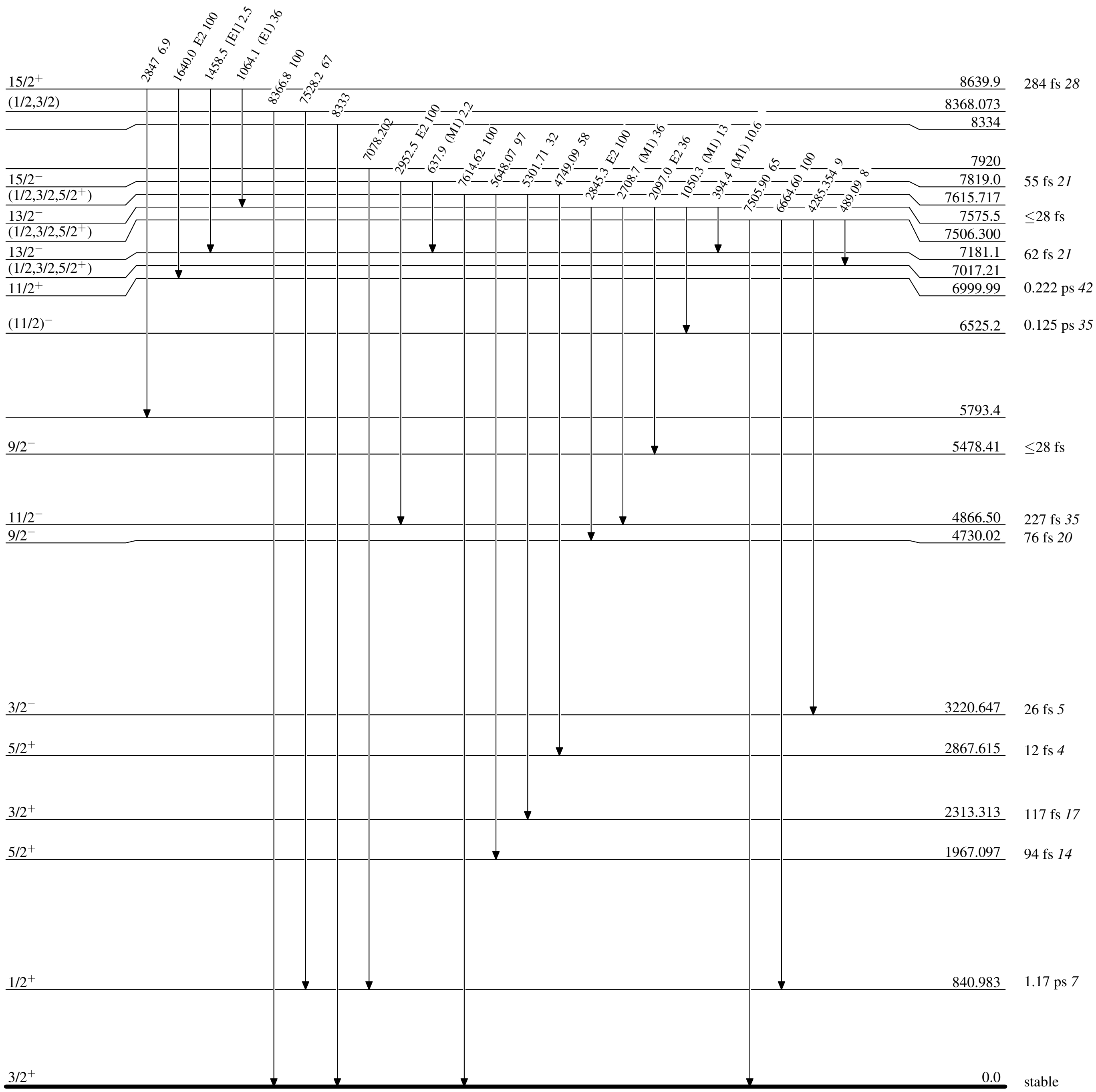


$^{33}_{16}S_{17}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



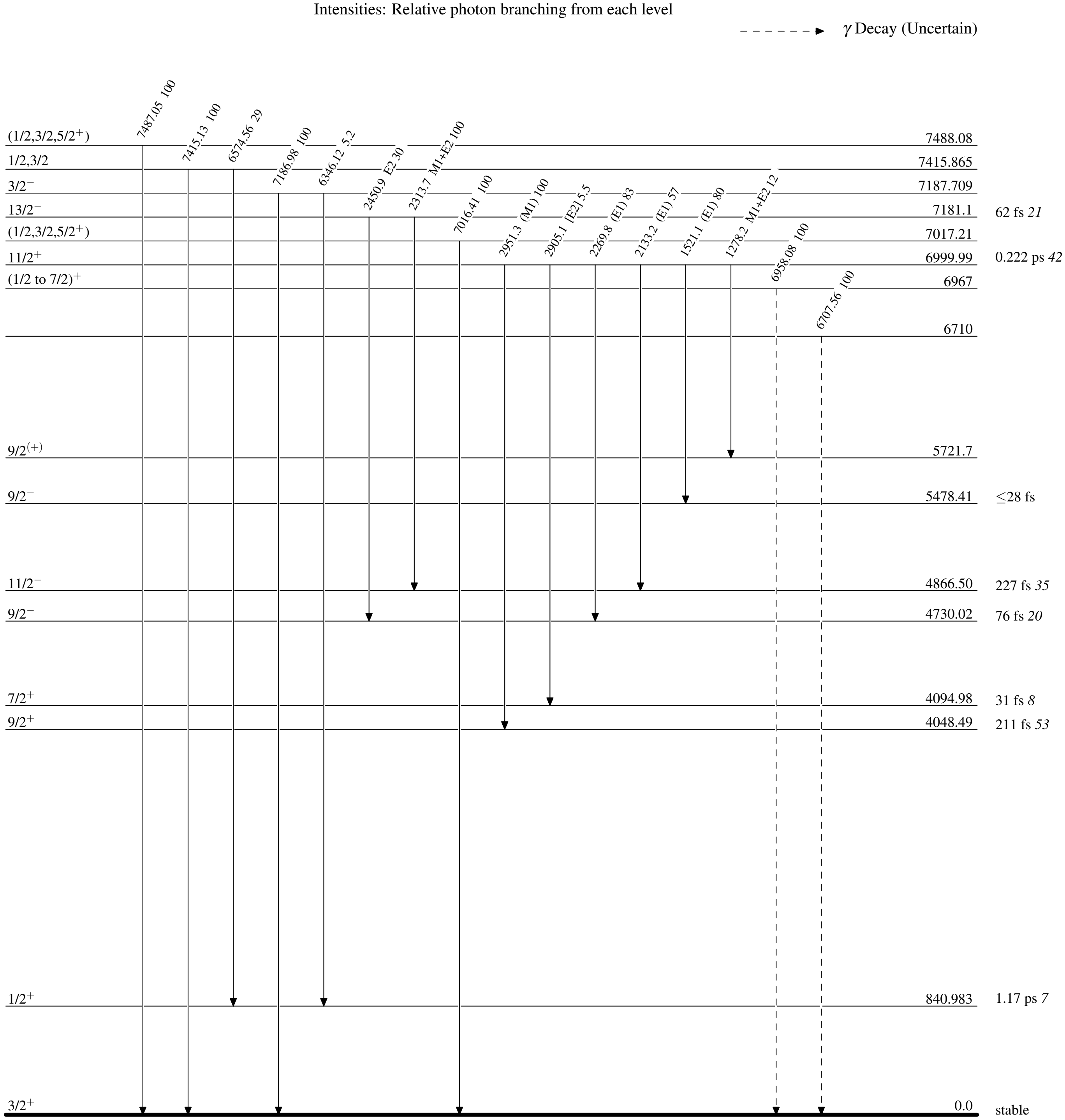
$^{33}_{16}S_{17}$

Adopted Levels, Gammas

Legend

Level Scheme (continued)

Intensities: Relative photon branching from each level

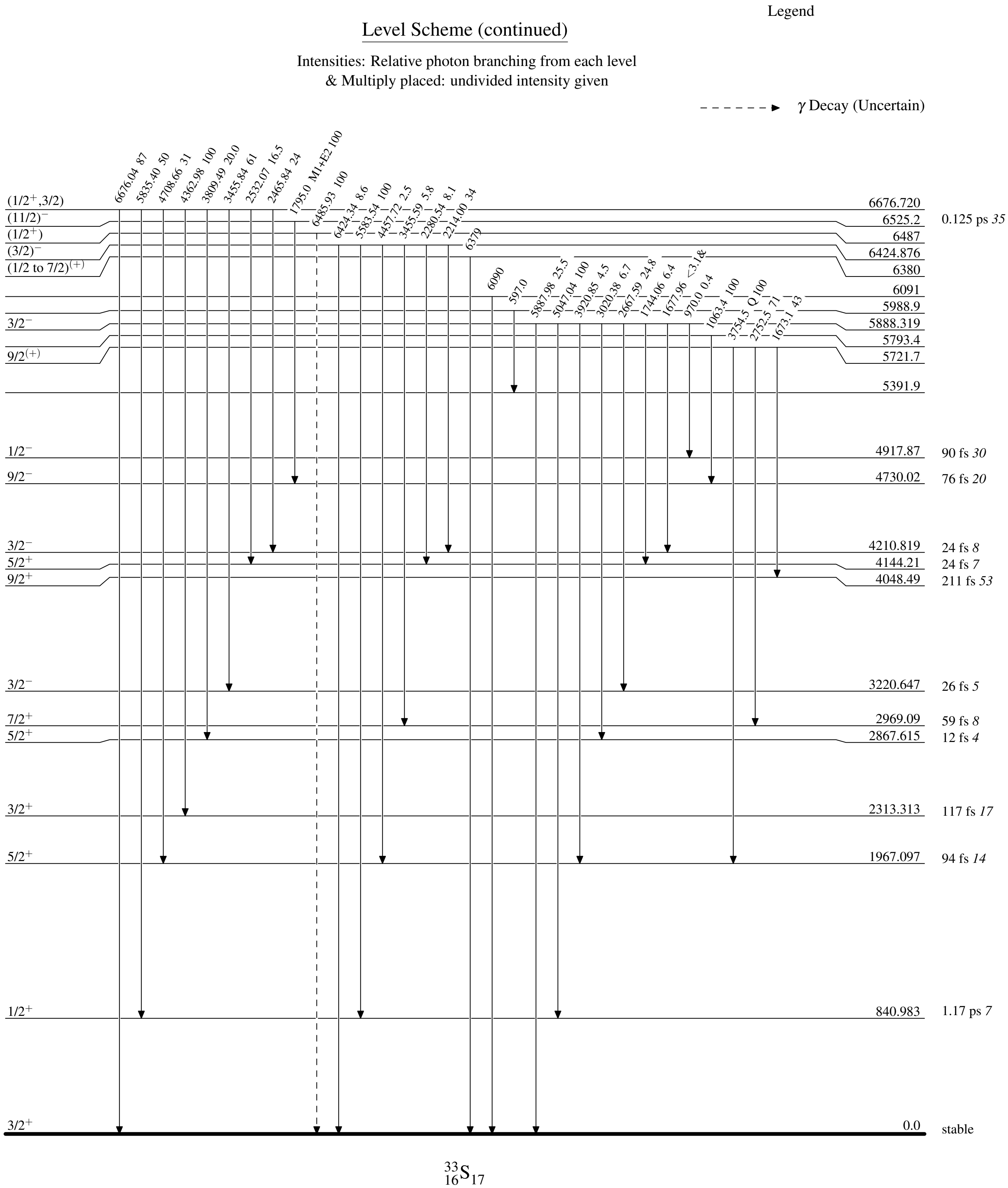


$^{33}_{16}S_{17}$

Adopted Levels, Gammas

Level Scheme (continued)

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

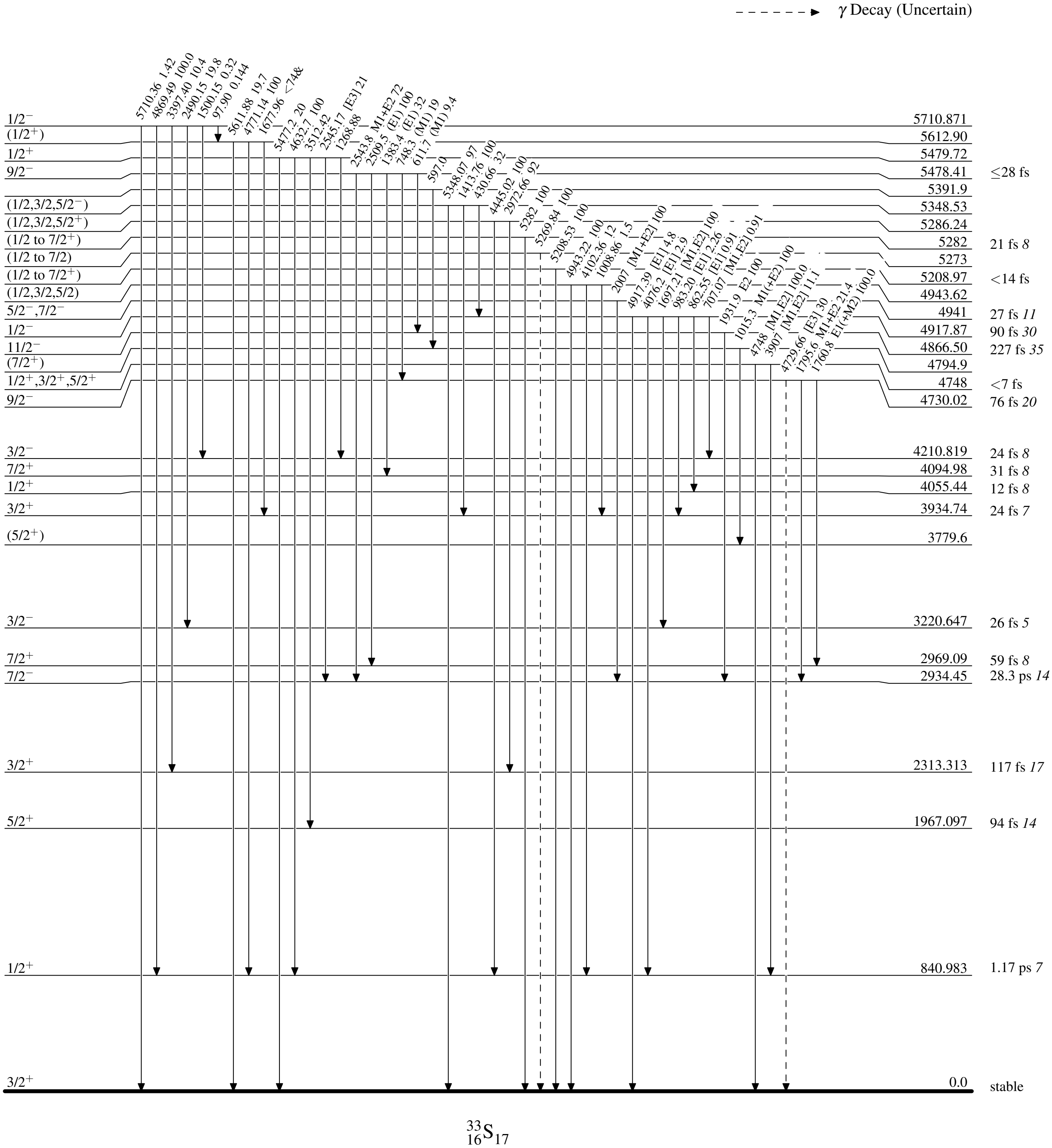


Adopted Levels, Gammas

Level Scheme (continued)

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

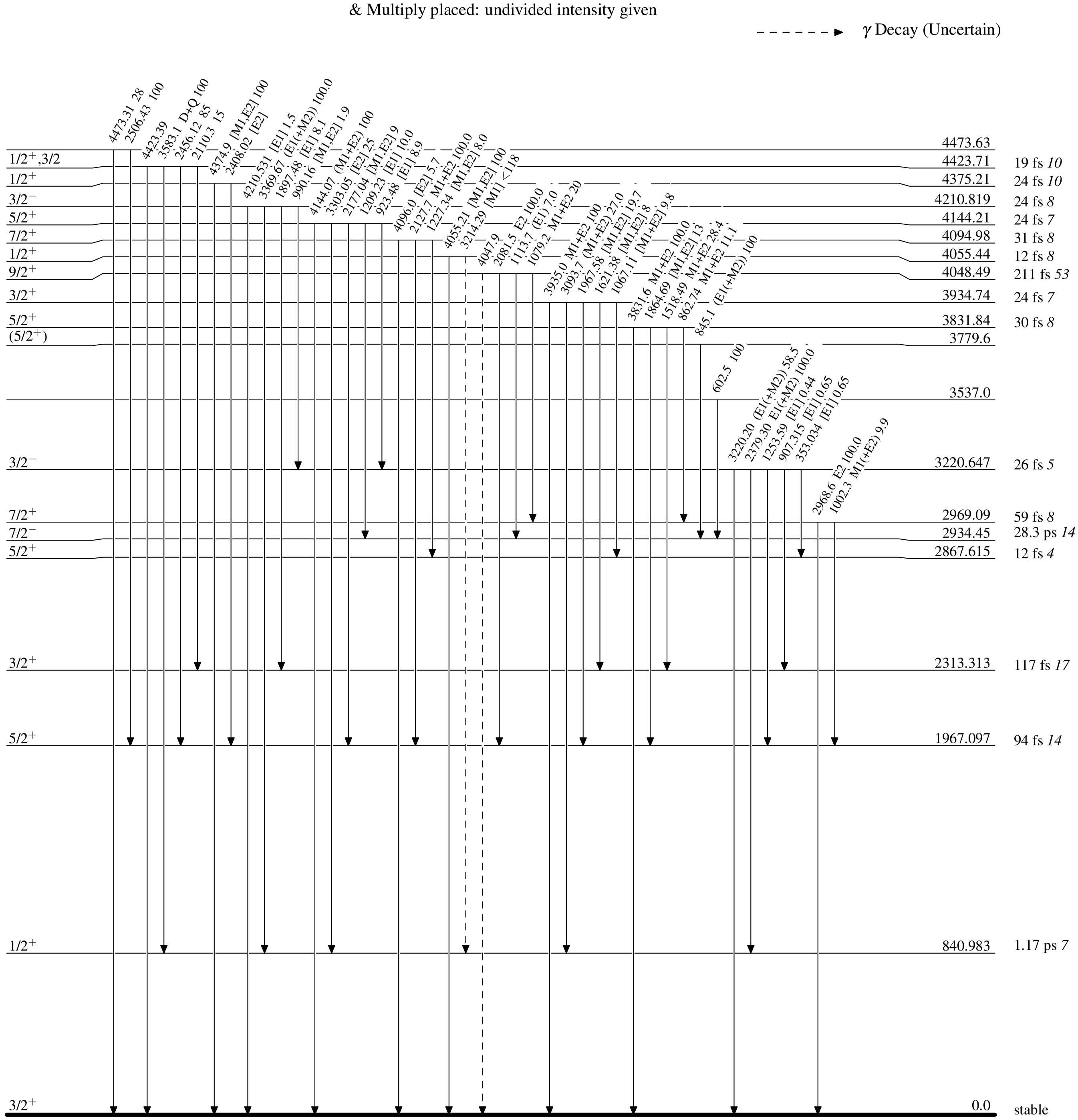
Legend



Adopted Levels, Gammas

Level Scheme (continued)

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

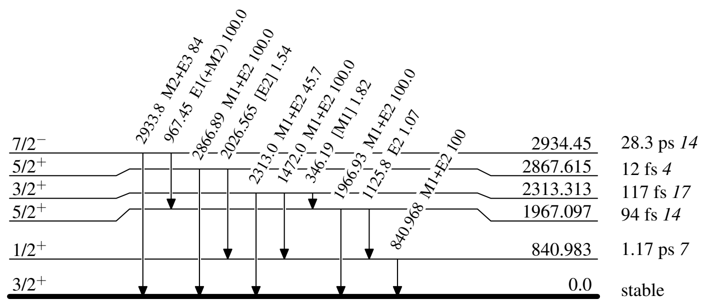


$^{33}_{16}S_{17}$

Adopted Levels, Gammas

Level Scheme (continued)

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



$^{33}_{16}S_{17}$