Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. S. Basunia and A. M. Hurst	NDS 134, 1 (2016)	1-Feb-2016

Q(β^-)=−18110 *SY*; S(n)=19040 *10*; S(p)=5513.8 *5*; Q(α)=−9166.0 *3* 2012Wa38
ΔQ(β^-)=200 (syst) (2012Wa38).

^{26}Si Levels

Cross Reference (XREF) Flags

A	^{26}P ε decay	E	^{12}C(^{16}O,2nγ)	I	^{28}Si(p,p2nγ)
B	^{27}S β^+p decay	F	^{24}Mg(^{3}He,n)	J	^{28}Si(p,t)
C	^{1}H(^{25}Al,P)	G	^{24}Mg(^{3}He,nγ)	K	^{28}Si(α,^{6}He)
D	^{1}H(^{27}Si,^{26}Siγ)	H	Coulomb excitation	L	^{29}Si(^{3}He,^{6}He)

E(level)[†]	J$^\pi$[@]	T$_{1/2}$[f]	XREF	Comments
0.0	0$^+$	2.2453 s *7*	A DEFGH J L	%ε+%β^+=100 T=1 J$^\pi$: L=0 in ^{24}Mg(^{3}He,n). T$_{1/2}$: From 2010Ia01, the composite time decay of ^{26}Si (parent) and ^{26m}Al (daughter) was analyzed. The measurement described in 2010Ia01 disagrees with the other precision half-life measurement of 2008Ma39 (T$_{1/2}$=2.2283 s *27*). The authors of 2010Ia01 propose that the result of 2008Ma39 should be discarded since they did not correct for parent-daughter detection-efficiency differences. The β-decay mode 0$^+$(^{26}Si g.s.)→0$^+$(^{26m}Al 228.3-keV isomer) is a superallowed transition. Other values: 2.1 s *3* (1960Ro06), 2.1 s *1* (1963Fr10), 2.1 s *2* (1971Mo27), 2.202 s *23* (1972Ha58), 2.210 s *21* (1975Ha21), and 2.240 s *10* (1980Wi13).
1797.30 *10*	2$^+$[&]	440 fs *40*	AB DEFGH JKL	J$^\pi$: L=2 in ^{24}Mg(^{3}He,n). 1797.2γ E2 to 0$^+$. T$_{1/2}$: Average of 430 fs *42* (^{3}He,nγ) and 450 fs *40* (Coulomb Excitation). Uncertainty is the lowest input value. Other value: 970 fs *416* 1969Be31.
2787.05 *13*	2$^+$[&]	146 fs *35*	A DEFG JKL	J$^\pi$: L=2 in ^{24}Mg(^{3}He,n). 2787.5γ E2 to 0$^+$. T$_{1/2}$: Other value: 139 fs *111* (1969Be31).
3336.35 *22*	0$^+$[&]	1.52 ps *48*	DEFG JK	J$^\pi$: L=0 in ^{24}Mg(^{3}He,n). 1539.1γ E2 to 2$^+$. T$_{1/2}$: Other value: 1.87 ps *114* (1969Be31).
3757.56 *15*	(3$^+$)	<485 fs	A DEFG J	J$^\pi$: Proposed in 2007Se02 from $\gamma(\theta)$ measurements.
3842.2 *18*	(4$^+$)		A G	E(level): Weighted average of 3842.1 keV *20* (1969Be31) and 3842.2 keV *15* (2004Th09); adopted uncertainty from arithmetic mean. Level not observed in 2007Se02 and its existence considered doubtful based on mirror-nucleus (^{26}Mg) considerations and shell-model calculations. J$^\pi$: Proposed by 1969Be31 (^{3}He,nγ), based on n-γ correlations and observation of more than one depopulating γ-ray transitions. log *ft*=6.0 in ^{26}P ε decay from (3)$^+$ and also from theoretical predictions (2004Th09).
4139.06 *20*	2$^+$	35 fs *3*	A DEFG JKL	J$^\pi$: L=2 in (^{3}He,n). T$_{1/2}$: Other value: 76 fs *72* (1969Be31).
4187.77 *19*	(3$^+$)		A DEFG J L	XREF: L(4211). J$^\pi$: Proposed in 2004Pa42 (^{3}He,n), from comparison of measured differential cross sections with Hauser-Feshbach predictions. Also in 2007Se02 (^{16}O,2nγ).
4446.37 *18*	(4$^+$)[d]	<350 fs	DEFG JKL	J$^\pi$: 2648.7γ Q to 2$^+$ (both in 2007Se02 (^{16}O,2nγ) and 2015Do07

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{26}Si Levels (continued)

E(level)†	J$^{\pi}$@	$T_{1/2}$f	XREF	Comments
				(^{3}He,nγ)). Other assignment: 2^{+} in 2004Pa42 (^{3}He,n) from comparison of measured differential cross sections with Hauser-Feshbach predictions.
4796.9 *8*	(4^{+})		DE G J	J$^{\pi}$: 2999.4γ Q to 2^{+}.
4811.0 *10*	(2^{+})	<69 fs	DEFG JKL	J$^{\pi}$: Proposed in 2004Pa42 (^{3}He,n), from comparison of measured differential cross sections with Hauser-Feshbach predictions.
4831.2 *4*	(0^{+})		E G J	J$^{\pi}$: Proposed in 2010Ma43 (p,t), from measured angular distributions and DWBA analysis. Also L=0(+L>0) in (^{3}He,n) for doublet.
5147.5 *8*	2^{+}		DEFG JKL	J$^{\pi}$: L=2 in (p,t).
5229? *12*	(2^{+})		J	E(level): Level only observed in 1972Pa02 (p,t). 2010Ma43 (p,t) doubt its existence and claim observation in 1972Pa02 is likely from an overlap of the 5145.7- and 5289.0-keV levels obscured by the tail of the ^{10}C (g.s.) impurity peak at the same position. J$^{\pi}$: From shell-model calculations and mirror nuclei considerations (1996Il01).
5289.04 *18*	4^{+}		DEFG JKL	J$^{\pi}$: L=4 in (^{3}He,n).
5517.79 *23*	(4^{+})		DEFG JKL	J$^{\pi}$: L=(4) in (p,t). Also in 2004Pa42 (^{3}He,n) from comparison of measured differential cross sections with Hauser-Feshbach predictions. J^{π}=4^{+} in 2016Ch09 on basis of angular distributions in 2007Se02.
5676.2 *3*	1^{+}		DEFG J L	Γ_{γ}=1.2×10^{-4} keV (2009Pe04); other value \$$\Gamma_{p}$=1.3×10^{-12} keV\$ Γ_{γ}=1.1×10^{-4} keV (2006Ba65). J$^{\pi}$: From comparison of measured differential cross sections with Hauser-Feshbach predictions in 2004Pa42 (^{3}He,n). ΔJ=1 from angular distribution measurements of γ-ray transitions and feeding of 2^{+} state (2015Do07 – (^{3}He,nγ)).
5890.1 *3*	0^{+}		G K	J$^{\pi}$: Proposed in 2015Do07 (^{3}He,nγ), based on isotropic distribution of γ rays and absence of 0^{-} analogue states in ^{26}Al and ^{26}Mg. Also in 2014Ko41.
5929.4# *8*	3^{+}d		A F JK	XREF: F(5912)K(5918). E(level): Other values: 5912 keV *4* ((^{3}He,n)−2004Pa42), 5916 keV *2* (2006Ba65−(p,t)), and 5918 keV *8* ((α,^{6}He) 2008Kw01). 2016Ch09 recommend an excitation energy of 5927.6 keV *10* from weighted average of particle reactions from references mentioned therein. J$^{\pi}$: From angular distribution measurements of tritons in smaller angles and comparison with the mirror ^{26}Mg nucleus (2006Ba65 (p,t)). Also 3^{+} in 2004Pa42 (^{3}He,n) and in ^{26}P ε decay (2004Th09). Other measurements have generally converged on 3^{+} assignment (2016Ch09). Γ_{p}=2.9×10^{-3} keV *10*\$ Γ_{γ}=9.2×10^{-5} keV (2009Pe04); other values: Γ_{p}=2.3×10^{-3} keV, Γ_{γ}=3.3×10^{-5} keV (2006Ba65); Γ_{γ}/Γ_{p}=0.014 *4*(stat) *+5−4* (literature) based on the beta-delayed proton-decay branching ratio=17.96% *90* through this level (2004Th09), and total absolute γ-decay intensity Iγ=0.25% *7*(stat) *+8−7*(literature) from this level deduced from 1742γ branching=71% *+13−19* from the ^{26}Mg mirror level (2009Wr01). Further using Γ_{p}=2.9 eV *10* from 2009Pe04, the deduced Γ_{γ}=40 meV *11*(stat) *+19−18* (literature) and the resonance strength $\omega\gamma$=23 meV *6*(stat) *+11−10* (literature).
5945.9‡ *40*	(0^{+})de		F J L	E(level): Weighted average of 5946 keV *4* (2004Pa42), 5946 keV *4* (2006Ba65), 5945 keV *8* (2002Ca24), and 5946 keV *4* (2009Pe04). Uncertainty from most precise measurement. 2016Ch09 (a review) adopted a value of 5949.7 keV *53* from literature data mentioned therein. J$^{\pi}$: From comparison of measured differential cross sections at two different energies with Hauser-Feshbach predictions in 2004Pa42 (^{3}He,n). Shell-model calculations (1996Il01) predict 0^{+} or 4^{+} for this state. Mirror-nucleus considerations with ^{26}Mg allow for a 4^{+} assignment (2016Ch09). However, Hauser-Feshbach calculations in 2004Pa42 rule out a J=4 assignment. Γ_{γ}=5.7×10^{-6} keV (2009Pe04); other value \$$\Gamma_{p}$=1.9×10^{-5} keV\$ Γ_{γ}=8.8×10^{-6} keV (2006Ba65). Γ_{p}/(Γ_{p}+Γ_{γ})=0.91 *10* (2010Ch44).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{26}Si Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[f]	XREF	Comments
6101			K	
6295.3 *24*	2$^+$		A C F JK	XREF: F(6312). E(level): Weighted average from 6295.7 keV *24* (2010Ma43), 6292 keV *8* (2005ShZY), and 6295 keV *6* (2004Th09). Uncertainty from most precise measurement. J^{π}: L=2 in (^{3}He,n). $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=0.88 *20* determined from 6300+6380-keV doublet peak in 2010Ch44.
6382.7 *29*	(2$^+$)		A C F JK	E(level): Weighted average from 6379.5 keV *29* (2010Ma43), 6388 keV *4* (2004Pa42), and 6384 keV *5* (2004Th09). Uncertainty from most precise measurement. J^{π}: L=(2) in (p,t). $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=0.88 *20* determined from 6300+6380-keV doublet peak in 2010Ch44.
6461.1 *28*	0$^+$		C F J	E(level): Weighted average of 6456.2 *28* (2010Ma43 – (p,t)), 6471 *4* (2004Pa42) and 6470 *30* (1982Bo14) both from (^{3}He,n). J^{π}: L=0 in (^{3}He,n) 1982Bo14. Measured differential cross sections and Hauser-Feshbach calculations support $J^{\pi}=0^+$ (2004Pa42).
6765 *5*			A	
6787 *4*	3$^-$		C F JK	E(level): Weighted average of 6785 *5* (2010Ma43), 6787 *4* (2002Ba25), 6786 *29* (1972Pa02) from (p,t) and 6788 *4* (2004Pa42), 6780 *30* (1982Bo14) from (^{3}He,n). J^{π}: L=3 in (^{3}He,n). $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=1.21 *24* (2010Ch44).
6810 *8*			K	
6880 *30*	(0$^+$)[d]		C F	E(level): From (^{3}He,n). J^{π}: L=(0) in (^{3}He,n) (1982Bo14). [5$^+$] mirror nucleus assignment in 2010Ma43 (p,t).
7018 *6*	(3$^+$)[a]		C JK	E(level): From 2008Kw01 – (α,^{6}He). J^{π}: From mirror assignment in 2010Ma43 (p,t). $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=1.04 *25* (2010Ch44).
7154 *4*	2$^+$	2.7 keV *1*	C F JK	E(level): Weighted average from 7152 keV *4* (2004Pa42), 7151 keV *5* (2010Ma43), 7161 keV *6* (2008Kw01), 7162 keV *24* (2012Ch04), 7147 keV *27* (2014Ju02), 7160 keV *10* (2002Ba25), 7150 keV *30* (1982Bo14), and 7150 keV *15* (1972Pa02). Uncertainty from most precise measurement. J^{π}: L=2 in (^{3}He,n). $T_{1/2}$: Other value from R-matrix fit in 2012Ch04: 7 keV *4*. $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=1.04 *25* (2010Ch44).
7198 *6*	(5$^+$)[a]		JK	E(level): Weighted average from 7199 keV *6* (2005ShZY) and (tentative) 7197 keV *8* (2010Ma43). Uncertainty from most precise measurement. J^{π}: From mirror assignment in 2010Ma43 (p,t).
7418.4 *23*	(4$^+$)[d]	1.1 keV *1*	C F JK	E(level): Weighted average from 7425 keV *4* (2004Pa42), 7415.2 keV *23* (2010Ma43), 7429 keV *7* (2008Kw01), 7402 keV *45* (2012Ch04), and 7401 keV *28* (2014Ju02). Uncertainty from most precise measurement. J^{π}: From R-matrix analysis and proton-resonance cross sections in 2014Ju02 (^{25}Al,P), also in 2010Ma43 (p,t) from DWBA and mirror nucleus assignment. (0$^+$) from L=(0) in 1982Bo14 (^{3}He,n); (2$^+$) from angular-distribution measurements 2002Ba25 (L=2), 2$^+$ from R-matrix analysis and measured differential cross sections (2012Ch04). $T_{1/2}$: Other value: 6 keV *4* (2012Ch04) – from R-matrix fitting. $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=1.31 *27* determined from 7425+7498-keV doublet peak in 2010Ch44.
7496.4 *40*	2$^+$	15.9 keV *3*	A C F JK	E(level): Weighted average from 7493 keV *4* (2004Pa42), 7498 keV *4* (2006Ba65), 7480 keV *20* (2008Kw01), 7501 keV *5* (2004Th09), 7484 keV *24* (2012Ch04), and 7484 keV *28* (2014Ju02). Uncertainty – lowest

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{26}Si Levels (continued)

E(level)[†]	J^{π}[@]	$T_{1/2}$[f]	XREF	Comments
				input value. J^{π}: L=2 in (^{3}He,n). $T_{1/2}$: Other value: 46 keV *11* (2012Ch04) − from R-matrix fitting. $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=1.31 *27* determined from 7425+7498-keV doublet peak in 2010Ch44.
7522 *12*	(5^-)[a]		J	
7606 *6*			A	
7674.2 *40*	(2^+)[a]	30.1 keV *5*	C JK	E(level): Weighted average from 7661 keV *12* (2006Ba65), 7676 keV *4* (2008Kw01), and 7654 keV *29* (2014Ju02). Uncertainty − lowest input value.
7701.1 *30*	(3^-)[a]	41[g] keV *6*	C F JK	E(level): Weighted average from 7694 keV *4* (2004Pa42), 7701 keV *12* (2006Ba65), 7705 keV *3* (2005ShZY), and 7704 keV *13* (2012Ch04). Uncertainty − lowest input value. J^{π}: 3^- in (^{3}He,n) − 2004Pa42 and mirror assignment [3^-] in (2010Ma43) (p,t). But 3^+ from R-matrix fit in 2012Ch04 (^{25}Al,P). $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=1.18 *23* (2010Ch44).
7886.2 *40*	(1^-)[a]	22.8 keV *13*	C F JK	E(level): Weighted average from 7899 keV *4* (2004Pa42), 7886 keV *4* (2008Kw01), 7874 keV *4* (2010Ch44), and 7866 keV *29* (2014Ju02). Uncertainty − lowest input value. $\Gamma_p/(\Gamma_p+\Gamma_\gamma)$=1.11 *22* (2010Ch44).
7921 *3*			K	
7962 *5*			A	
8008 *14*	(3^+)	4.5 keV *3*	C	E(level): Weighted average from 7977 keV *30* (2014Ju02) and 8015 keV *14* (2012Ch04). Uncertainty − lowest input value. J^{π}: Extracted from R-Matrix fit to experimental cross sections in 2012Ch04. Other assignment: $(2^+,3^+)$ from R-matrix fit in 2014Ju02. $T_{1/2}$: Other value: 15 keV *5* (2012Ch04) − from R-matrix fitting.
8144 *21*	$(1^-,2^+)$[b]		A C F	E(level): Weighted average from 8156 keV *21* (2004Th09) and 8120 keV *30* (1982Bo14). Uncertainty − lowest input value. Tentative level at 8166 keV *7* (2010Ch44 − (p,t)) not used in average.
8222 *5*	(1^-)[a]		J	J^{π}: mirror assignment as described in 2010Ma43.
8254 *5*			A	
8269 *4*	(2^+)[a]		J	
8282 *6*			K	
8356 *12*	(3^+)	27 keV *8*	C	J^{π}: From R-matrix fit to proton resonances in ^{1}H(^{25}Al,P) 2012Ch04.
8431 *6*			K	
8558 *17*	(2^+)[a]		A F JK	E(level): Weighted average from 8557 keV *4* (2010Ma43), 8563 keV *17* (2004Th09), and 8570 keV *30* keV (1982Bo14). Uncertainty from arithmetic mean of associated uncertainties. J^{π}: mirror assignment as described in 2010Ma43. Other value $(1^-,2^+)$ in 1982Bo14.
8689 *21*	$(1^-,2^+)$[b]		F J	E(level): Weighted average from 8700 keV *30* (1982Bo14) and 8687 keV *12* (2010Ma43). Uncertainty from arithmetic mean of associated uncertainties. Level was recorded as tentative observation in 2010Ma43. J^{π}: Other: [4^+] from mirror assignment described in 2010Ma43.
8806 *5*			K	
8952 *7*			K	
8989 *7*	(4^+)[a]		J	
9067 *5*			K	
9124? *8*			J	
9170 *30*	$(1^-,2^+)$[b]		F	
9247 *8*			K	
9316 *5*	(4^+)[c]		J	E(level): Mirror state in ^{26}Mg at 9579 keV *3* (1986Al06,2011Ma46).
9373.3 *7*			A K	E(level): Weighted average from 9374 keV *7* (2005ShZY) and 9370

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{26}Si Levels (continued)

E(level)[†]	J^{π}[@]	XREF	Comments
			keV *15* (2004Th09). Uncertainty from most precise experimental result.
9433 *4*		A	
9606.1 *9*	(2^+)[c]	JK	E(level): Weighted average from 9605 keV *10* (2011Ma46) and 9607 keV *9* (2005ShZY). Uncertainty from most precise experimental result. Mirror state in ^{26}Mg at 9856.52 keV *6* (1986Al06,2011Ma46).
9725 *7*		A	
9762 *4*	(5^-)[c]	J	E(level): Mirror state in ^{26}Mg at 10040 keV *2* (1986Al06,2011Ma46).
9802 *7*		K	
9910.2 *20*	(0^+)[c]	JK	E(level): Mean and adopted uncertainty from arithmetic average of 9903.4 keV *20* (2011Ma46) and 9917 keV *2* (2005ShZY). Mirror state in ^{26}Mg at 10159 keV *3* (1986Al06,2011Ma46).
10070 *8*		K	
10296.9 *60*		A K	E(level): Weighted average of 10294 keV *7* (2005ShZY) and 10299 keV *6* (2004Th09). Uncertainty − lowest input value.
10405 *5*		A J	XREF: J(10436).
10688 *9*		A J	XREF: J(10660).
10827 *8*		A J	XREF: J(11010).
13015 *4*	(3^+)	A	T=2 E(level): Highest T=2 level proposed at 13080 keV *15* in 1983Ca06. J^{π}: From ^{26}P ε decay (2004Th09).

[†] Up to 5929.4 − from a least-squares fit to γ-ray energies, except for 3842.2-, 5229-, and 5913.8-keV levels. 1763.5γ from 5517.79-keV level poorly fit to the level scheme and omitted during the fitting procedure and also uncertainty tripled for 988.9γ from 2787 keV level.

[‡] The existence of this level as a separate resonance is called into question in 2015Do07 due to lack of evidence in their (^{3}He,nγ) measurement and also argue that 5946 keV level might the same level as that at 5929.4 keV. This inference is refuted in 2016Ch09 on the basis of (^{3}He,nγ) (2004Pa42) and (p,t) (2010Ma43) measurements that have populated both this resonance and the 5929.4-keV resonance simultaneously.

[#] A value of 5926.9 keV *6* may be obtained from the weighted average of 5927 keV *4* (2010Ch44), 5921 keV 12 (2010Ma43), 5912 keV *4* (2004Pa42), 5916 keV *2* (2002Ba25), 5928.7 keV *7* (2013Be41), 5929 keV *5* (2004Th09), and 5918 keV *8* (2008Kw01). Other values not used in averaging: 5914 keV *2* (200Ba25) and 5914 keV *4* (2009Pe04) for reasons outlined in Sect. IV of 2016Ch09, and 5910 keV *30* (1982Bo14) owing to its large uncertainty overlapping with neighboring resonances. Both the adopted and weighted values are statistically consistent with the suggested value of 5927.6 keV *10* reported in the reanalysis of 2016Ch09.

[@] Taken from 2004Pa42 except where noted. Assignments established by comparison of measured differential cross sections with Hauser-Feshbach calculations.

[&] Deduced from comparison between measured angular distributions and DWBA calculations in 1982Bo14.

[a] Deduced from mirror assignments with ^{26}Mg presented in Fig. 7 in 2010Ma43.

[b] Based on comparison of measured angular distributions with DWBA calculations in 1982Bo14.

[c] Based on mirror assignments with ^{26}Mg described in 1986Al06 and 2011Ma46.

[d] Conflicting spin-parity assignments. See comments.

[e] 2002Ca24 argue for a 3^+ assignment in (^{3}He,^{6}He) on the basis that other 0^+ states are only weakly populated in their measurement. However, 2002Ca24 note “a small high energy shoulder on the peak, making it slightly wider at the base, suggests that another state lies there.” Evaluators note: It appears that the reported peak at 5945 keV *8* in 2002Ca24 is a doublet of 5929+5946 and the 3^+ assignment probably related to the 5929 keV state. 2016Ch09 suggest a similar view for this spin-parity assignment. However, from recent measurements, 2015Do07 (^{3}He,nγ) propose the first 0^+ state above proton separation energy at 5890 keV and note that there is no theoretical prediction or experimental evidence for T=1 states in analogue nuclei ^{26}Al and ^{26}Mg for two closely spaced 0^+ states in this region and the existence of this level as a separate resonance is called into question. However, 2016Ch09 argued that both this level and the 5890.1-keV level may have 0^+ assignments due to particle

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{26}Si Levels (continued)

excitations into a different shell and suggest for additional experimental and theoretical work.

[f] From (^{3}He,nγ), deduced using the Doppler-shift attenuation method except where noted; widths deduced from R-matrix fits to differential cross-sections for ^{1}H(^{25}Al,P) measured in 2014Ju02 except where noted.

[g] Width deduced from R-matrix fits to differential cross-sections for ^{1}H(^{25}Al,P) measured in 2012Ch04.

γ(^{26}Si)

E_i(level)	J^π_i	E_γ[†]	I_γ[&]	E_f	J^π_f	Mult.[c]	δ[f]	Comments
1797.30	2+	1797.2 *1*	100	0.0	0+	E2		B(E2)(W.u.)=15.3 *15* Mult.: Deduced from measured A_2/A_4 anisotropy coefficients from 1797.2γ to g.s. (2007Se02).
2787.05	2+	988.9 *1*	100.0[a] *27*	1797.30	2+	M1+E2	+0.21 *10*	B(M1)(W.u.)=0.100 *25*; B(E2)(W.u.)=25 *24* δ: The other value −3.7(18) (1968Ro18) is rejected in both 1968Ro18 and 1969Be31 on the basis of unlikely transition probability implications.
		2787.0 *2*	48.9[a] *27*	0.0	0+	E2		B(E2)(W.u.)=1.7 *4* I_γ: Others: 67 *5* (2015Do07) and 1.35 *20* (2014Ko41) both in (^{3}He,nγ).
3336.35	0+	549.3[#]	<2[b]	2787.05	2+	[d]		
		1539.0 *2*	100 *19*	1797.30	2+	E2[d]		B(E2)(W.u.)=10 *5*
3757.56	(3+)	970.5 *1*	82 *4*	2787.05	2+	(M1+E2)		Mult.: From (^{3}He,nγ) – 1969Be31. I_γ: Others: 47 *4* (2014Ko41) and 43 *14* (1969Be31) both in (^{3}He,nγ).
		1960.1 *2*	100 *4*	1797.30	2+	(M1+E2)		Mult.: From (^{3}He,nγ) – 1969Be31.
3842.2	(4+)	1055.1[#]	<15[b]	2787.05	2+	[d]		
		2044.8[#]	100[b] *28*	1797.30	2+			E_γ: Measured in γ-γ coincidence (1969Be31). $\Delta I\gamma$: Derived from 2004Th09.
4139.06	2+	802.7[#]	<12[b]	3336.35	0+			
		1351.5 *4*	4.9[b] *8*	2787.05	2+			I_γ: From 2014Ko41. Other: 11 *5* (2015Do07) both in (^{3}He,nγ).
		2341.8 *2*	100.0 *21*	1797.30	2+	M1+E2[e]		I_γ: From 2014Ko41. Other: 100 *4* (2015Do07) both in (^{3}He,nγ).
		4141[‡] *3*	11.8 *59*	0.0	0+	[E2]		B(E2)(W.u.)=0.28 *15* I_γ: From 2007Se02 (^{16}O,2nγ). Other: 25 *13* (1969Be31) in (^{3}He,nγ).
4187.77	(3+)	1400.5 *2*	100.0 *59*	2787.05	2+	D		I_γ: From 2007Se02 (^{16}O,2nγ). Other: 61 *5* (2015Do07) (^{3}He,nγ). Evaluators adopt as the strongest branch along with supporting evidence in 2014Ko41 (^{3}He,nγ).
		2390.3 *3*	57.4 *59*	1797.30	2+	D		I_γ: From 2007Se02 (^{16}O,2nγ). Other: 100 *5* (2015Do07) (^{3}He,nγ). Evaluators adopt this as a weaker branch along with supporting evidence in 2014Ko41 (^{3}He,nγ).
4446.37	(4+)	1658.3[@] *14*	10 *5*	2787.05	2+			
		2648.7 *2*	100.0 *22*	1797.30	2+	(E2)		B(E2)(W.u.)>2.3
4796.9	(4+)	2999.4 *8*	100	1797.30	2+	Q[e]		E_γ: Average of data from 2007Se02 (^{16}O,2nγ), and 2015Do07, 2014Ko41 both in (^{3}He,nγ).
4811.0	(2+)	2023.9 *10*	100 *12*	2787.05	2+	D+Q[e]		E_γ: Average of data from 2007Se02

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{26}Si)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[&]	E_f	J^π_f	Mult.[c]	Comments
							(^{16}O,2nγ), and 2015Do07, 2014Ko41 both in (^{3}He,nγ).
4811.0	(2$^+$)	4810.5[#]	<10[b]	0.0	0$^+$		
4831.2	(0$^+$)	2044.1 *3*	100	2787.05	2$^+$		
5147.5	2$^+$	2359.3[@] *15*	100 *4*	2787.05	2$^+$	D[e]	
		3350.3[@] *8*	19 *5*	1797.30	2$^+$		
5289.04	4$^+$	842.2 *2*	53 *7*	4446.37	(4$^+$)	D+Q[e]	
		1530.1 *10*	100 *7*	3757.56	(3$^+$)	D[e]	E_γ: Average of data from 2007Se02 (^{16}O,2nγ), and 2015Do07, 2014Ko41 both in (^{3}He,nγ).
		2501.9[@] *10*	8 *9*	2787.05	2$^+$		
		3492.0[@] *2*	43 *9*	1797.30	2$^+$	Q[e]	
5517.79	(4$^+$)	1071.6 *2*	65 *11*	4446.37	(4$^+$)		
		1329.5 *3*	95 *11*	4187.77	(3$^+$)	D[e]	
		1763.5 *8*	100 *11*	3757.56	(3$^+$)	D[e]	E_γ: Average of data from 2007Se02 (^{16}O,2nγ), and 2015Do07, 2014Ko41 both in (^{3}He,nγ).
		2733 *3*	11 *14*	2787.05	2$^+$		E_γ: From 2007Se02 (^{16}O,2nγ). Other: 2736.3 *10* (2015Do07) (^{3}He,nγ) – weak transition.
5676.2	1$^+$	2888.9[@] *9*	16 *7*	2787.05	2$^+$		
		3878.6 *3*	100 *5*	1797.30	2$^+$	D[e]	
5890.1	0$^+$	1751.9[@] *10*	76 *14*	4139.06	2$^+$		
		3103.1[@] *4*	95 *14*	2787.05	2$^+$	Q[e]	
		4092.1[@] *4*	100 *14*	1797.30	2$^+$	Q[e]	E_γ: a γ at 4094 keV *4* was also observed in 1969Be31 and tentatively assigned to deexcite a level at 4094 keV, with additional weaker γ rays. However, this state was not established in subsequent coincidence measurements in 2007Se02 (^{16}O,2nγ), 2015Do07 (^{3}He,nγ), and 2014Ko41 (^{3}He,nγ), suggesting it is likely to have been misplaced in 1969Be31.
5929.4	3$^+$	1741.6 *7*	100	4187.77	(3$^+$)		E_γ: From ^{26}P ε decay.

† Weighted average of data from 2007Se02 (^{16}O,2nγ), and 2015Do07, 2014Ko41 both in (^{3}He,nγ), except where noted. Uncertainty from the most precise measurement.

‡ From 2007Se02 (^{16}O,2nγ).

\# From level energy differences, recoil energy subtracted. Placement in 1969Be31 (^{3}He,nγ).

@ From 2015Do07 (^{3}He,nγ).

& From 2015Do07 (^{3}He,nγ), except where noted.

a From 2007Se02 (^{16}O,2nγ).

b Limits are proposed in Table 4 of 1969Be31, corresponding to the Doppler-shift attenuation measurement (DSAM) for ^{24}Mg(^{3}He,nγ).

c Inferred from deduced anisotropy coefficients for the angular distributions measured in the fusion-evaporation reaction ^{12}C(^{16}O,2nγ) from 2007Se02, except where noted or from $\gamma(\theta)$ measurements in 2015Do07 (^{3}He,nγ).

d From measured gamma-transition widths deduced using Doppler-shift attenuation method for ^{24}Mg(^{3}He,nγ) in 1969Be31.

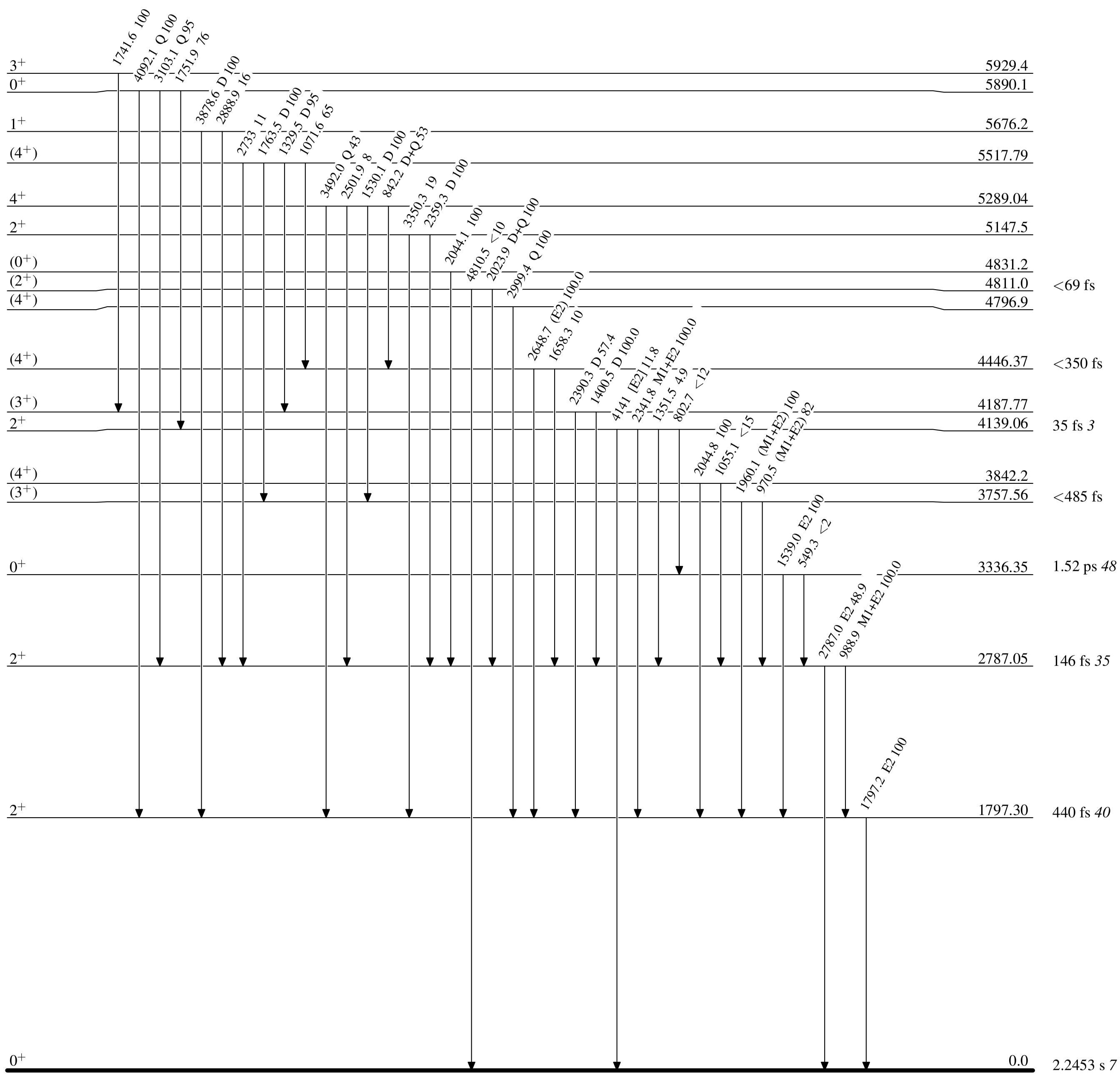
e In (^{3}He,nγ), assigned by evaluators based on $\gamma(\theta)$ data in 2015Do07 and RUL (if applicable).

f From ^{24}Mg(^{3}He,nγ), based on n-γ angular-correlation measurements in 1968Ro18.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



$^{26}_{14}Si_{12}$

Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 114, 1189 (2013)	1-Apr-2013

$Q(\beta^-)=-14345.1$ *12*; S(n)=17179.72 *14*; S(p)=11585.02 *10*; $Q(\alpha)=-9984.14$ *1* 2012Wa38

Other reactions:
$^{12}C(^{16}O,^{12}C^{12}C)\alpha$: 2001Fr19.
$^{12}C(^{24}Mg,^{12}C^{16}O)^{8}Be$: 2001Sh08.
$^{16}O(^{16}O,\alpha)$: 1963Ev03, 1966Le07, 1969Al01, 1982Ta02.
$^{16}O(^{16}O,^{12}C^{16}O)\alpha$: 2001As01.
$^{20}Ne(^{12}C,\alpha)$: 1981Ku07, 1986Ku06, 1986Ku13.
$^{24}Mg(^{6}Li,d)$: 1969Go17, 1974Dr07, 1975An13, 1975Ar21, 1983Ta08.
$^{24}Mg(^{7}Li,t)$: 1969Go17, 1974Ro02.
$^{24}Mg(^{12}C,^{8}Be)$: 1974Ho30, 1976Ma12.
$^{24}Mg(^{16}O,^{12}C)$: 1972Ma36, 1975Er02, 1976Pe05, 1980Sa31, 1985Sa11.
$^{24}Mg(^{24}Mg,^{20}Ne)$: 1987Sa05, 1989Le19.
$^{25}Mg(^{3}He,\gamma)$: 1986Ha30.
$^{25}Mg(^{12}C,^{9}Be)$: 1980Fo02.
$^{26}Mg(^{3}He,n)$: 1969Bo18, 1970Br40, 1976Bo24, 1982Bo14.
$^{26}Mg(^{3}He,n\gamma)$: 1977Mi01.
$^{26}Mg(^{16}O,^{14}C)$: 1974Si24, 1976Ge07.
$^{27}Al(\alpha,t)$: 1975Du14, 1977Ne08, 1978Du05, 1978Le08, 1980Me01, 1981Be19, 1982Ya06, 1984Ci04, 1984Sk02, 1986Ch35.
$^{27}Al(^{12}C,^{11}B)$: 1975Po02, 1989Wi07, 2012De22.
$^{27}Al(^{13}C,^{12}B)$: 1988Vo08.
$^{27}Al(^{16}O,^{15}N)$: 1973De38, 1976Ma51.
$^{27}Al(^{19}F,^{18}O)$: 1976Mc07.
$^{28}Si(d,d)$: 1980Cl06, 1980Ha14, 1980Ma10, 1981Ha02, 1982Cl01, 1983Cl06, 1983Vo08, 1987Nu01.
$^{28}Si(t,t)$: 1982Sc21, 1986Pe13, 1987Pe09.
$^{28}Si(^{3}He,^{3}He)$: 1978Fu06, 1982Ma04, 1982Ta05, 1982Ve13.
$^{28}Si(\alpha,\alpha')$: 1964We02, 1968Ro05, 1971Ha32, 1978Fu06, 1979Pa16, 1980Va10, 1981Kn05, 1981Ni06, 1981Va05, 1981Va09, 1982Bo14, 1983Or01, 1984Ja14, 1984Se02, 1985Lu04, 1986La28, 1987Ni04, 1989Ma50, 1990To04, 1992Wi13, 1994Ch36.
$^{28}Si(HI,HI)$: 1979Be21, 1979Me04, 1980An16, 1980Ec04, 1980Sc12, 1981Br13, 1981Ni06, 1981Sc16, 1982Bo25, 1982Ec01, 1983Sh18, 1983Vi03, 1984Ch01, 1984Ko14, 1985Ba74, 1986Ci06, 1986Vi02, 1987Ni04, 1988Bi06, 1988Bu15, 1989Na11, 1990Fe03.
$^{29}Si(^{3}He,\alpha)$: 1970Pe05, 1972Fo06, 1985Po17.
$^{29}Si(^{16}O,^{17}O)$: 1975Ts01.
$^{32}S(d,^{6}Li)$: 1983Oe03.
$^{32}S(^{3}He,^{7}Be)$: 1975Au01.

^{28}Si Levels

Cross Reference (XREF) Flags

A	$^{28}Al\ \beta^-$ decay	G	$^{14}N(^{16}O,pn\gamma)$	M	$^{28}Si(\gamma,\gamma),(e,e')$
B	$^{28}P\ \varepsilon$ decay	H	$^{24}Mg(\alpha,\gamma)$	N	$^{28}Si(n,n'\gamma)$
C	$^{29}S\ \beta^+p$ decay	I	$^{25}Mg(\alpha,n\gamma)$	O	$^{28}Si(p,p'),^{27}Al(p,p)$: res
D	$^{31}Ar\ \beta^+3p$ decay	J	$^{27}Al(p,\gamma)$	P	$^{28}Si(^{6}Li,^{6}Li')$
E	$^{32}Cl\ \beta^+\alpha$ decay	K	$^{27}Al(d,n\gamma),(d,n)$	Q	$^{29}Si(p,d),^{30}Si(p,t)$
F	$^{12}C(^{20}Ne,\alpha\gamma)$:SDB	L	$^{27}Al(^{3}He,d)$		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
0.0[j]	0^+	stable	ABCDEFGH JKLMNO Q	
1779.030[j] *11*	2^+	475 fs *17*	ABC F JKL PQ	μ=+1.12 *18*; Q=+0.16 *3* E(level): From ^{28}P ε decay. μ,Q: From 1989Ra17. $T_{1/2}$: From mean lifetime 686 fs *25*: weighted average of 720 fs *40* (1969Ha31), 689 fs *25* (1977Sc36), 667 fs *37* (1979Fo02), 697 fs *39* (1979Po01), 688 fs *26* (1980Sc25), and 648 fs *37* (1980Sp09): uncertainty – lowest experimental value. Other: 880 fs *130* (1990En02), 820 fs *190* and 1000 fs *+600−150*.
4617.86[j] *4*	4^+	37 fs *4*	BC F JKL NO Q	$T_{1/2}$: From mean lifetime 54 fs *6*: weighted average of 61 fs *10* (1968Gi05), 100 fs *20* (1969Li03), 58 fs *15* (1969Me14,1970Me04), 42 fs 10 (1970Al05,1974Da15), 54 fs *10* (1969Bi09), 39 fs *6* (1975Me14), 55 fs *15* (1968Ro05), 60 fs *20* (1969An08), 83 fs *14* (1971Ha32), 57 fs *7* (1972Bi04), 80 fs *20* (1975Kr09), 55 fs *8* (1983Mi32), and 84 fs *27* (1990En02): uncertainty – lowest experimental value. Other: mean lifetime 28 fs *5* (1989Ge09).
4979.92[m] *8*	0^+	35 fs *2*	B FG JKL NO Q	$T_{1/2}$: From mean lifetime 51 fs *3*: weighted average of 60 fs *20* (1969Li03), 41 fs *27* (1970Hu14,1971Hu04), 34 fs *12* (1969Bi09), 54 fs 13 (1978Da08), 81 fs *13* (1990En02), 65 fs *6* (1989Ge09), 47 fs *3* (^{16}O,pn) and 51 fs *4* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Other: mean lifetime 31 fs *6* (1969Me14,1970Me04).
6276.20[k] *7*	3^+	0.78 ps *6*	B FG JKL NO Q	$T_{1/2}$: From mean lifetime 1.12 fs *9*: weighted average of 1.35 ps *20* (1968Gi05), 1.15 ps *13* (1969Li03), 1.10 ps *28* (1970Al05,1974Da15), 1.5 ps *4* (1970Hu14,1971Hu04), 0.81 ps *49* (1969Bi09), 1.3 ps *2* (1969An08), 1.35 ps *40* (1978Da08), 0.89 ps *9* (1983Mi32), 0.99 ps *23* (1990En02), 1.25 ps *15* (^{16}O,pn) and 1.26 ps *11* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Other: mean lifetime 1.9 ps *2* (1989Ge09).
6690.74[l] *15*	0^+	147 fs *10*	F J L Q	$T_{1/2}$: From mean lifetime 212 fs *14* (1993Ti02). Others: 180 fs *40* (1969Li03), 88 fs *12* (1969Me14,1970Me04), 120 fs *30* (1970Al05,1974Da15), 100 fs *30* (1970Hu14,1971Hu04), 130 fs *30* (1975Me14), 125 fs *30* (1978Da08).
6878.79 *8*	3^-	1.9 ps *2*	JKL Q	$T_{1/2}$: From mean lifetime 2.7 ps *3*: weighted average of 2.3 ps *5* (1968Gi05), 2.7 ps *6* (1969Li03), 2.0 ps *15* (1970Al05,1974Da15), 2.4 ps *4* (1970Hu14,1971Hu04), 2.1 ps *4* (1970St10), 3.5 ps *3* (1972Na06): uncertainty – lowest experimental value. Other mean lifetimes: >1.8 (1969Me14,1970Me04), >3.7 (1990En02).
6887.65[k] *10*	4^+	33 fs *2*	FG JKLM PQ	$T_{1/2}$: From mean lifetime 48 fs *3*: weighted average of 70 fs *20* (1969Li03), 53 fs *10* (1969Me14,1970Me04), 44 fs *13* (1970Al05,1974Da15), 40 fs *8* (1975Me14), 67 fs *10* (1983Mi32), 27 fs *8* (1990En02), 47 fs *8* (^{16}O,pn) and 49 fs *3* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Other mean lifetimes: 100 fs *40* (1968Ro05), >4 ps (1969An08).
7380.59[l] *9*	2^+	5 fs *2*	FG J L Q	$T_{1/2}$: From mean lifetime 7 fs *3*: using the limitation of relative statistical weight averaging method of data 13 fs *3* (1968Gi05), 7 fs *4* (1969Me14,1970Me04), 6 fs *5* (1970Al05,1974Da15), 6 fs *2* (1970Hu14,1971Hu04), 8 fs *3* (1975Me14), 7 fs *4* (1978Da08), 11.5 fs *15* (^{16}O,pn) and 4.4 fs *10* (p,γ) (1993Ti02). Other: mean lifetime lt15 fs (1990En02).
7416.26[l] *9*	2^+	29 fs *3*	B FG JKL Q	$T_{1/2}$: From mean lifetime 42 fs *4*: weighted average of 40 fs *7* (1968Gi05), 40 fs *8* (1970Al05,1974Da15), 39 fs *5* (1970Hu14,1971Hu04), 30 fs *5* (1975Me14), 44 fs *10* (1978Da08),

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
				51 fs *4* (^{16}O,pn) and 50 fs *9* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Other: mean lifetime 24 fs *4* (1969Me14,1970Me04).
7799.01 *9*	3+	225 fs *10*	B JKL Q	$T_{1/2}$: From mean lifetime 325 fs *15*: weighted average of 310 fs *55* (1968Gi05), 300 fs *90* (1967Ca10), 300 fs *100* (1969Al01), 250 fs *75* (1975Me14), 300 fs *75* (1978Da08), 240 fs *45* (1990En02), and 340 fs *15* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Others: mean lifetime 190 fs *30* (1969Me14,1970Me04), 150 fs *85* (1970Hu14,1971Hu04).
7933.45 *10*	2+	11 fs *2*	B G JKL Q	$T_{1/2}$: From mean lifetime 16 fs *2*: weighted average of 15 fs *10* (1978Da08), 14 fs *2* (1990En02), 16 fs *2* (^{16}O,pn) and 17 fs *2* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Others: mean lifetime 50 fs *25* (1969An08), 21 fs *10* (1970St10).
8258.74[m] *10*	2(+)	10 fs *2*	B F J L Q	$T_{1/2}$: From mean lifetime 14 fs *4*: weighted average of 14 fs *6* (1968Gi05), 8 fs *6* (1970Hu14,1971Hu04), 12 fs *4* (1990En02), and 20 fs *5* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Other: mean lifetime 26 fs *10* (1975Me14).
8328.38 *12*	1+	347 fs *166*	JKL Q	$T_{1/2}$: From mean lifetime 500 fs *240*: unweighted average of 150 fs *85* (1970Hu14,1971Hu04), 380 fs *75* (1975Me14), and 960 fs *220* (1990En02).
8413.33 *10*	4−	324 fs *55*	JKL	$T_{1/2}$: From mean lifetime 467 fs *80*: weighted average of 280 fs *80* (1968Gi05), 560 fs *150* (1969Me14,1970Me04), 490 fs *110* (1970Al05,1974Da15), 580 fs *400* (1970Hu14,1971Hu04), 890 fs *160* (1990En02), and 540 fs *110* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Other: mean lifetime 230 fs *50* (1967Ca10).
8543.56[j] *20*	6+	11.4 fs *10*	FG J	J^{π}: From 1968No06 – ^{16}O(^{14}N,pnγ). $T_{1/2}$: From mean lifetime 16.4 fs *14* (1993Ti02). Others: 18 fs *7* (1974NeZZ), 18 fs *6* (1970Hu14,1971Hu04), <5 fs (1975Me14), 58 fs *12* (1969La13), 19 fs *8* (1975Di07), 15 fs *3* (1975Fr22), 31 fs *7* (1983Mi32), 38 fs *14* (1990En02).
8588.71 *10*	3+	11 fs *2*	B JKL Q	$T_{1/2}$: From mean lifetime 16 fs *2*: weighted average of 25 fs *5* (1968Gi05), 13 fs *4* (1970Al05,1974Da15), 10 fs *3* (1970Hu14,1971Hu04), 12 fs *3* (1990En02), and 19 fs *2* (p,γ) (1993Ti02): uncertainty – lowest experimental value. Other mean lifetimes: 5 fs *2* (1975Me14), <10 fs (1967Ca10), <25 fs (1969An08).
8819 *9*			K	
8904.8 *4*	1−	8 fs *2*	JKL Q	$T_{1/2}$: From mean lifetime 11 fs *3*: weighted average of 12 fs *4* (1969Me14,1970Me04) and 10 fs *3* (1975Me14): uncertainty – lower experimental value.
8945.20[k] *13*	5+	58 fs *6*	FG JKL	$T_{1/2}$: From mean lifetime 84 fs *8*: weighted average of 67 fs *16* (1974NeZZ), 65 fs *12* (1970Al05,1974Da15), 110 fs *30* (1971Go41), 105 fs *15* (1975Me14), 104 fs *17* (1975Fr22), 100 fs *10* (1986Gl05), 89 fs *10* (1983Mi32), 96 fs *19* (1990En02), and 70 fs *8* (1993Ti02): uncertainty – lowest experimental value.
8953.3 *4*	(0+,1,2)		J	J^{π}: γ ray to 2+ state at 1179 keV, γ ray feeding, and L(0) in 1982Bo14 (^{26}Mg(^{3}He,n)^{28}Si).
9164.68[l] *17*	(4+)	28 fs *3*	F J	J^{π}: From (p,γ) study in 1981Gl05. $T_{1/2}$: From mean lifetime 40 fs *5*: weighted average of 39 fs *7* (1968Gi05), 57 fs *10* (1970Hu14,1971Hu04), 37 fs *7* (1975Me14), 37 fs *5* (1981Gl05), and 65 fs *30* (1990En02): uncertainty – lowest experimental value.
9315.92 *10*	3+	1.5 fs *6*	B JKL Q	T=1 $T_{1/2}$: From mean lifetime 2.2 fs *9*: unweighted average of 3.1 fs

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
				15 (1990En02) and 1.3 fs *8* (1993Ti02). Other meanlives: <10 fs (1968Gi05), 15 fs *2* (1975An09), <5 (1969Me14,1970Me04), 13 fs *10* (1970Hu14,1971Hu04), <5 (1975Me14), 16 fs *4* (1983Mi32), and <30 fs (1977Mi01).
9381.55 *12*	2^+	1.1 fs *3*	B J L Q	T=1 $T_{1/2}$: From mean lifetime 1.6 fs *4*: average of 1.4 fs *4* (1990En02) and 1.8 fs *6* (1993Ti02), uncertainty from 1990En02. Other mean lifetimes: 12 fs *4* (1975An09), 5 fs *3* (1969Me14,1970Me04), <5 fs (1970Al05,1974Da15), <12 fs (1970Hu14,1971Hu04), <10 fs (1975Me14), 20 fs *+30−17* (1977Mi01).
9417.17 *14*	4^+	78 fs *12*	JKL	J^{π}: From 1986Gl05 (p,γ), based on γ-ray decay and feeding. $T_{1/2}$: From mean lifetime 113 fs *18*: weighted average of 130 fs *65* (1970Hu14,1971Hu04), 160 fs *35* (1971Go41), 115 fs *25* (1975Me14), 99 fs *18* (1990En02): uncertainty − lowest experimental value.
9479.49 *11*	(2^+)[#]	6 fs *2*	B G J L	$T_{1/2}$: From mean lifetime 8 fs *3*: weighted average of 13 fs *6* (1990En02) and 7 fs *3* (1993Ti02).
9496.04 *15*	(1^+)[#]	5 fs *2*	J L	$T_{1/2}$: From mean lifetime 7 fs *3*: weighted average of 9 fs *3* (1969Me14,1970Me04) and 5 fs *2* (1975Me14).
9702.34 *12*	(5^-)	4 ps *1*	J L O	J^{π}: L=3 in (^{3}He,d) and from 1975Ne03 (p,γ). $T_{1/2}$: From mean lifetime 4.8 ps *14* (1970Al05,1974Da15). Other: 8 ps *4* (1972Ba48).
9764.52 *11*	(3^-)	<2 fs	JKL O Q	$T_{1/2}$: From 1990En02.
9795.95[n] *14*	(2^+)[#]		B F J O	
9929.2 *17*	1^-		JKL O Q	E(level): Weighted average of data from (p,γ) and (p,p′). J^{π}: L=1 in 1982Bo14 (^{26}Mg(^{3}He,n)^{28}Si). γ ray to 0^+.
10181.60 *12*	(3^-)	7 fs *2*	JKLM O Q	$T_{1/2}$: From 1975Me14. Other: <6 fs (1990En02).
10189.59 *20*	$(5^-,3^-)$	<21 fs	IJ	J^{π}: From (α,nγ), based on n-γ angular correlation and mean lifetime measurements. γ ray to 3^-. $T_{1/2}$: From 1981Gl05.
10209.01 *20*	(3^+)[@]	10 fs *3*	B J O	$T_{1/2}$: From mean lifetime 14 fs *4*: weighted average of 15 fs *7* (1968Gi05), 13 fs *4* (1975Me14), and 17 fs *8* (1990En02).
10272.3 *8*	0^+	<42 fs	JKL O	T=1 E(level): Weighted average of data in (p,γ) and (p,p′). J^{π}: L=0 in 1982Bo14 (^{26}Mg(^{3}He,n)^{28}Si). $T_{1/2}$: From 1977Mi01.
10310.92 *13*	(4^+)[@]	11 fs *4*	J L O	$T_{1/2}$: From 1975Me14.
10376.24 *12*	$(3^+,4^+)$[#]		J L O	T=1
10418.25 *22*	(5^+)[&]	18 fs *4*	G JK O	$T_{1/2}$: From mean lifetime 26 fs *6*: weighted average of 23 fs *7* (1970Al05,1974Da15), 27 fs *8* (1975Me14), 22 fs *6* (1983Mi32), 27 fs 11 (1990En02), 38 fs *10* (1993Ti02): uncertainty − lowest experimental value. Other: mean lifetime 28 fs *+21−7* (1974NeZZ).
10514.1 *3*	(2^+)[#]		H J M O	J^{π}: From 1979Sc14 − (e,e′).
10541.0 *8*	(3^-)[#]		J L O	T=0 E(level): Weighted average of data in (p,γ) and (p,p′).
10596.18 *15*	(1^+)	388 as *83*	J LM O	T=0,1 J^{π}: 1^+ in (e,e′). $T_{1/2}$: From mean lifetime 560 as *120*: weighted average of 420 as *160* (1984Be26) and 640 as *120* (1979Sc14): uncertainty from 1979Sc14. Other mean lifetimes: <5000 as (1975Me14), <4000 as (1990En02).
10668.05 *13*	$(2,3)^+$	15 fs *3*	b iJ o	T=0

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
				$T_{1/2}$: From 1990En02.
10668.34 *11*	4^{+}[#]	18 fs *3*	b iJ L o	T=0 $T_{1/2}$: From mean lifetime 26 fs *5*: weighted average of 22 fs *7* (1975Me14), 27 fs *6* (1990En02), and 31 fs *8* (1993Ti02).
10724.7 *4*	(1^{+})	624 as *110*	J LM O	T=0,1 J^{π}: 1^{+} in (e,e′). $T_{1/2}$: From 1979Sc14. Other: <5545 as (1990En02).
10778 *2*	1^{+} to 5^{+}[#]		JK	
10805.5 *10*	(2^{+})		H J M O	J^{π}: 2^{+} in (e,e′).
10883.45 *14*	$(2,3^{+})$[a]		H J O	T=1
10900.42 *15*	(1^{+})[a]	83 as *7*	J LM O	T=1 $T_{1/2}$: From mean lifetime 120 as *10*: weighted average of 87 as *23* (1966Li08), 93 as *25* (1984Be26), and 131 as *10* (1979Sc14). Uncertainty – lowest experimental value. Other mean lifetime <7000 as (1990En02).
10915.6 *7*	(3^{-})[@]		HIJ L O	
10944.0[n] *3*	(4^{+})[@]	15 fs *10*	F HIJ O	$T_{1/2}$: From 1990En02.
10952.8 *3*	1 to 4[#]		H J O	
10994 *2*	$(1,2^{+})$[#]		H J O	E(level): Weighted average of data in (p,γ) and (p,p′).
11078.52 *14*	(3^{-})[@]		H J O	
11100.0 *10*	(6^{+})[&]	11.0 fs *10*	G IJ O	E(level): Weighted average of data in (p,γ), (p,p′), and (α,nγ). $T_{1/2}$: From 1993Ti02. Other: <11 fs (1981Gl05).
11142 *1*	(2^{+})		H J M O	T=0 J^{π}: 2^{+} in (e,e′).
11195.22 *13*	(4^{+})[@]		H J O	T=0
11242 *6*			K	
11265 *3*	(3^{-})[@]		IJ O	T=0
11295.6 *2*	(1^{-})	<150[g] eV	H J O	T=0 E(level),J^{π}: From (α,γ).
11331.9[k] *9*	6^{+}	<21 fs	F IJ O	E(level): Weighted average of data from (p,γ), (p,p′), and (α,nγ). J^{π}: From (p,γ), based on the γ-ray angular distribution, linear polarization, and transition rates. $K^{\pi}=3^{+}$ band member. $T_{1/2}$: From 1986Gl05.
11388 *3*			O	
11432.63 *18*	(2^{+})[a]	<21 fs	JK o	T=0,1 $T_{1/2}$: From 1977Mi01.
11434.50 *22*	(4^{-})[a]	14 fs *4*	JK o	T=0,1 $T_{1/2}$: From 1970Al05. Other: 87 fs *+90−42* (1977Mi01).
11446.00 *16*	(1^{+})	17.6 as *8*	J M O	T=1 J^{π}: 1^{+} in (e,e′). $T_{1/2}$: From mean lifetime 27.7 fs *15*: weighted average of 24 fs *4* (1966Li08), 31 fs *6* (1969Fa11), 28.1 fs *35* (1984Be26), and 28.0 fs *15* (1979Sc14): uncertainty – lowest experimental value. Other mean lifetime: 73 as *16* (1978Ma23).
11510.4[l] *10*	(6^{+})[@]	9 fs *2*	FG IJ	T=0 $T_{1/2}$: From 1993Ti02. Other: <21 fs (1981Gl05).
11515.5 *2*	(2^{+})	<200[g] eV	B H O	T=0 E(level),J^{π}: From (α,γ).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
11572.0 *7*	$(4,5^+)$[@]		J o	
11576 *2*	(6^-)[a]	235 fs *70*	IJKL o	T=0 E(level): Weighted average of 11577 keV *2* (p,γ), 11577 keV *3* – 1981Gl05 (α,nγ), and 11574 keV *3* (p,p′). $T_{1/2}$: From mean lifetime 351 fs *70*: weighted average of 340 fs *100* (1973Ne11), 220 fs *70* (1970Al05,1974Da15), and 530 fs *80* (1973Mi24): uncertainty – lowest experimental value.
11584.62 *19*	(3^-)	<200[g] eV	H J O	T=0 J^{π}: From (α,γ). 9803.74γ to 2^+ state.
11656.9 *3*	(2^+)	0.18[i] eV *7*	B H L O	T=0 E(level),J^{π}: From (α,γ).
11669.7 *2*	(1^-)	0.46[i] eV *10*	H L O	T=0 E(level),J^{π}: From (α,γ).
11778.7 *2*	(2^+)	<5[i] eV	h L o	T=0,1 E(level),J^{π}: From (α,γ).
11778.9 *10*	(5^+)[@]		h J o	E(level): From (α,γ).
11780.7 *9*	$(0^+$ to $4^+)$		J o	
11799.8 *4*	$(2,3)^-$	<35 eV	J L O	
11867.2 *4*	(4^+)	59 eV *14*	J L O	T=1 Γ from 1990En08. Other: <5 eV quoted from a private communication in 1998En04.
11899.9 *2*	4^+	<40[i] eV	H J L O	T=0,(1)
11933.5 *7*	5[@]		B IJ O	T=0
11975.7 *3*	$(3^-,4^+)$	<40 eV	H J L O	T=0,1 Γ – from Table 28.16 in 1990En08.
11986 *2*	(1 to 3)		J O	
12015.8 *5*	$(2^+,3)$[a]		J O	
12022.7 *2*	(5^-)	<250[g] eV	H O	T=0
12071.1 *1*	(2^+)	1.4[i] eV	B H J M o	T=0
12073.3 *1*	(2^-)	<80 eV	J L o	
12152.0 *10*	(6^+)	<7 fs	IJ O	J^{π},$T_{1/2}$: From (α,nγ).
12174.6 *1*	$(5^+,3^-,4)$[a]	9 fs *2*	J O	$T_{1/2}$: From 1972An10.
12182.0 *3*	(1^-)[b]	<250[g] eV	H O	T=0
12194.7 *1*	(3^-)[b]	6.7 eV *5*	H J L O	T=0
12204 *2*	$(6^-,4^-)$[c]	<21 fs	I O	T=0 E(level): Weighted average of data from (p,p′) and (α,nγ). $T_{1/2}$: From (α,nγ).
12216.3 *1*	(2^-)	<30 eV	J L O	T=0
12240.1 *1*	(3^+)	<80[g] eV	J L o	
12240.9 *3*	(4^+)[b]	<250[g] eV	H L o	T=0
12265.8 *23*	$(0,1)^+$		K	J^{π},E(level): L=0 in (^{3}He,n) and also 12270 keV *30* (1982Bo14).
12289.5 *3*	(2^+)[b]	13 eV *3*	B H J	T=0 Γ from 1973Na10 and 1980Fu02.
12295.2 *1*	$(2,3)^+$[d]	<60 eV	J O	
12301.4 *1*	$(0^+,1^-,2^+)$	<80[g] eV	H J L O	T=0 J^{π}: From (p,γ) – 1995Br17.
12318.3 *1*	(2^-)[d]	<40 eV	J O	T=0
12324.8 *1*	(4^+)[d]	<50 eV	J O	
12331.0 *1*	(1^+)	<80[g] eV	J M O	T=1 J^{π}: From (γ,γ),(e,e′).
12441.1 *1*	(2^+)	18 eV *3*	B H J M O	T=0

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
				J^{π}: From (e,e′), (α,γ), spectroscopic strength.
12475.0 *1*	(4^+)	<80[g] eV	H J O	T=0
12488.8 *1*	(3^-)[e]	100 eV *20*	H J L O	T=0
12541.5 *1*	(3^+)[e]	70 eV *14*	J L O	T=1
12551.2 *1*	(4^+)[b]	1.4[i] eV	B H J O	T=0
12573.7 *1*	(2^+)[e]	110 eV *22*	B J L O	T=1
12635.8 *1*	$(2,3)^+$[d]	<60[g] eV	J O	T=0
12643.1 *1*	(5^-)[@]	<80[g] eV	J L O	
12663.7 *1*	(4^-)[e]	700 eV *70*	J L O	T=1
12715.0 *1*	$(0^+,1^+)$	<100[g] eV	B J O	T=0
				J^{π}: From re-interpretation (by evaluator in 1998En04) of γ-decay in 1975Me14. L=0 is reported from the observed (p,p_1) yield in 1975Me14.
12726.2 *1*	(2^+)[d]	250 eV *5*	B H J M O	T=0
12742.5 *5*	(3^-)[e]	5.4 keV *5*	J L O	T=0,1
12754.8 *1*	$(1,2)^+$	<100[g] eV	J O	T=0,1
12802.7 *1*	(3^-)[e]	100 eV *20*	J L O	T=0
12805.3 *4*	$(1^-,2^+)$[b]	<350[g] eV	H	T=0
12815.4 *5*	(1^-)[b]	3.5 keV *10*	H o	T=0
				Γ from (α,γ).
12816.7 *1*	(5^+)	<100[g] eV	J o	T=0
12855.1 *1*	(4^+)	30 eV *6*	H J L O	T=0,1
12862[n]	(6^+)	<350 eV	F H L	T=0
				E(level): From Eγ. Other: 12859.1 *3* (α,γ).
				J^{π}: γ to (4^+) and member of the g.s. oblate band.
				Γ from (α,γ).
12866.5 *1*	$(2^+,3^+)$	35 eV *5*	J O	T=0
12900.4 *1*	(4^+)[&]	550 eV *60*	B H J o	T=0
12902.0 *2*	(2^+)	<200[g] eV	H J o	T=0
				J^{π}: From (p,p′).
12917.3 *1*	$(2,3)^+$[#]	780 eV *80*	J L O	T=1
12923.8 *1*	(3^+)	600 eV *60*	h J O	T=1
12924.0 *3*	(2^+)	200 eV *40*	h J O	T=0
12974.2 *3*	(1^-)	250 eV *50*	H J O	T=0
12976 *2*	(0^+)	5.2 keV *16*	H	T=0
				Γ from 1982Cs01.
12990.0 *2*	$(3,4)^-$	2.3 keV *2*	J L O	T=0
12994 *3*	$(5,6,7)^+$	16 fs *3*	FG I	J^{π}: 7^+ in (^{20}Ne,$\alpha\gamma$).
				$T_{1/2}$: From (^{16}O,pn). Other: <11 fs (α,nγ).
13014 *3*			O	
13033.5 *1*	(3^+)	550 eV *60*	J O	T=0
13039.8 *5*	(0^+)	3.2 keV *10*	H	T=0,1
				Γ from 1982Cs01.
13050.4 *2*	(2^-)	3.7 keV *4*	J L O	
13094.1 *1*	(4^+)	20 eV *3*	B H J O	Other Γ: 45 eV (1978Ma23).
13103.9 *10*			J	
13104.4 *10*		2.4 keV *3*	J O	XREF: O(13106.1).
13105.9 *4*		130 eV *3*	H J O	T=0
13114.9 *10*	$(3,4^+)$	<200[g] eV	J L O	T=0+1
13116.8 *10*			J	T=0
13121 *3*		<350 eV	H	Γ from ^{24}Mg(α,γ).
13173.3 *1*	(3^-)	340 eV *70*	J O	T=0
13188.6 *5*	(2^+)	1.9 keV *2*	J L O	T=0+1
13190.0 *2*	(1^+)	450 eV *50*	J L O	T=0

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
13204.6 *1*	$(2,3)^+$	210 eV *40*	J O	T=0
13208.5 *2*	2	<200[g] eV	J O	T=0
13229.7 *5*	(2^+)	1.1 keV *1*	H J O	T=0
13230.7 *10*	(6^+)		J	
13234 *2*	(0^+)	3.0 keV *9*	H	T=0 Γ from ^{24}Mg(α,γ).
13246.9 *6*	(5^-)	200 eV *40*	h J L O	T=1
13247.7 *6*	(3^-)	9.6 keV *10*	h J L O	T=0
13271.6 *5*	(2^-)	6.6 keV *7*	J O	
13318.2 *3*	$(3,4)^-$	1.2 keV *1*	J O	
13320.5 *1*	(1^+)	450 eV *60*	J O	T=1
13360.8 *5*	(4^+)	550 eV *60*	H J O	T=0
13415.3 *5*	(4^+)	140 eV *30*	JK O	T=0
13423.3 *5*	(1^-)	20 keV *1*	H JK O	T=0+1
13425.4 *4*	(5^+)	80 eV *20*	J O	T=1
13467 *3*			K	
13478.6 *5*	(2^-)	4.0 keV *4*	J O	
13483.7 *5*	(2^+)	1.5 keV *2*	JK O	T=0+1
13491.8 *6*	(3^-)	31 keV *3*	H J O	T=0
13500 *2*			K	
13510.0 *20*			K	
13546.7 *6*	(2^+)	8.5 keV *9*	JK O	T=0
13557.1 *1*	$(5^+,4^+)$	150 eV *30*	JK O	T=0+1
13560.3 *9*	(3^+)	1.8 keV *2*	J O	
13569.0 *7*	$(5^-,4^+)$[#&]		JK	
13582.3 *5*	(6^+)	<28 fs	hIJ	T=0 $T_{1/2}$: From 1981Gl05.
13604 *4*			h K	
13611.6 *8*	$(4^+,5^-)$[#&]		JK	
13616.1 *8*	(2^-)	11 keV *1*	J O	
13626.0 *15*			K	
13636.3 *7*	(3^+)	570 eV *60*	JK O	XREF: K(13633.0).
13639.9 *10*	(2^+)	5.7 keV *6*	H JK O	T=0
13640.4 *10*	$(1^-,2^+)$	120 eV *20*	J O	T=0 J^{π}: From re-interpretation (by evaluator in 1998En04) of γ-decay in 1975Me14.
13663.2 *7*	$(3,4)^-$	450 eV *50*	J O	
13668.1 *5*	(4^+)	250 eV *50*	JK O	T=0
13678.7 *7*	(2^+)	1.3 keV *2*	H J O	T=0
13686.4 *5*	$(2^+$ to $4^+)$		JK	
13706.6 *5*	$(2,3)^+$	500 eV *50*	JK O	XREF: K(13703.0).
13708.6 *10*	(4^+)	190 eV *40*	H J O	T=0
13710.2[k] *10*	7^+		F J	J^{π}: γ to 6^+, member of the $K^{\pi}=3^+$ band.
13711.8 *5*	(3^-)	20 keV *2*	JK O	
13734.7 *6*	(1^-)	35 keV *4*	JK O	
13744 *2*	$(4^-$ to $7^-)$	<21 fs	I K	E(level): Weighted average of data from (p,p′) and (d,nγ). $T_{1/2}$: From 1981Gl05.
13789.4 *7*	(3^-)	2.7 keV *3*	JK O	
13798 *2*			K	
13805.9 *8*	(4^+)	150 eV *30*	J O	T=0
13812.9 *8*	(1^-)	3.7 keV *4*	H JKL O	T=0 XREF: H(13816)K(13810.6).
13814.4 *10*	(3^+)	320 eV *30*	J O	T=0
13821 *2*			K	
13830.4 *8*	(3,4)	2.2 keV *2*	H JK O	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)†	Jπ‡	$T_{1/2}$ f	XREF	Comments
13860.6 *15*	(3⁻)	3.9 keV *4*	JK O	T=0 XREF: K(13864).
13874.0 *12*	(3⁻)	7.1 keV *7*	H JK O	T=0,1
13889.3 *8*	(3 to 6)⁻	35 eV *7*	JK O	
13901.7 *11*	(1⁻)	2.7 keV *3*	H J L O	T=0
13941.0 *10*	(2⁺)	5.2 keV *5*	H JK O	T=0
13968.2 *7*	(4⁺)	250 eV *50*	Jk O	T=0
13972.4 *7*	(2⁺)	2.5 keV *3*	H Jk O	T=0
13979.9 *7*	(4⁺)	2.6 keV *3*	H Jk O	T=1
13982.6 *7*	(6⁻)	300 eV *60*	JkL O	
13984.1 *7*	(2⁺)	380 eV *60*	Jk O	T=0
14012.4 *10*	(4⁺)	100 h eV *2*	J O	
14024 *3*	(1⁻)	16 keV *2*	H O	
14037 *3*	(3⁻,2⁻)	45 keV *5*	O	
14048 *3*	(5,4)⁺	1.2 keV *1*	O	
14049 *3*	(2⁺)	2.4 keV *2*	O	
14065 *3*	(2⁺)	6.1 keV *6*	H O	
14075 *3*	(2⁻)	47 keV *5*	O	
14089 *3*	(3⁻)	4.3 keV *4*	H O	
14094 *3*	(1⁺)	12 keV *1*	O	
14095 *3*	(4⁺)	830 eV *80*	O	
14102.8 *10*	(5⁻)	240 eV *20*	J O	
14159 *3*	(4,3)⁻	13 keV *1*	K O	XREF: K(14151.8).
14163.7 *10*	(5⁺)		J	
14198.6 *10*	(3⁺)	1.1 keV *1*	J O	
14207.5 *10*	(4⁺)	1.0 keV *1*	J O	
14210 *3*	(2⁻)	20 keV *2*	O	
14212.1 *10*	(5⁺)	600 eV *60*	J O	
14227 *3*	(3⁺)	2.1 keV *2*	O	
14245 *3*	(3⁻)	41 keV *4*	h O	
14245.4 *10*	(7⁺)		h J	
14247 *3*	(2⁺)	26 keV *3*	h K O	
14272 *3*			K	
14287.6 *25*			K	
14294 *3*	(2⁺)	2.0 keV *2*	O	
14298 *3*	(4⁺)	1.4 keV *1*	K O	XREF: K(14300.0).
14306 *3*	(1⁻)	74 keV *7*	O	
14308 *5*	(2⁺)		H	
14318 *4*			K	
14328 *3*	(4⁺)	620 eV *120*	O	
14331.7 *10*	(5⁺)	70 eV *15*	JK O	
14338 *5*			H	
14346.2 *10*	(4⁻)	2.3 keV *2*	JK O	XREF: K(14349.0)O(14349).
14356 *3*	(6⁻)	4.0 keV *2*	J O	T=1 Jπ: From an M1 transition to 11576 keV level ((p,γ)−1975Ne03). $T_{1/2}$: Γ from 1983Sn02.
14358 *3*	(4⁺)	3.5 keV *4*	k O	
14358 *3*	(2⁻)	43 keV *4*	k O	
14375 *3*	(2⁺)	27 keV *3*	K O	
14391 *3*	(0⁺)	9.0 keV *9*	O	
14392.9 *10*	(3⁺)	560 eV *60*	J O	
14402.0 *10*	(4⁻)	430 eV *40*	JK O	XREF: K(14398.0).
14417.3 *20*			K	
14434 *3*	(3⁺)	19 keV *2*	K O	
14471.2 *10*	(6⁻)	180 eV *40*	J O	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	$T_{1/2}$[f]	XREF	Comments
14478.0 *20*			K	
14493 *3*	(2^+)	23 keV *2*	k o	
14493 *3*	(3^+)	5.9 keV *6*	k o	
14515 *3*	(3^-)	950 eV *100*	O	
14523 *3*	(3^-)	11 keV *1*	K O	
14535 *1*		<2 keV	JK	
14542 *1*		4 keV *2*	J	
14550.5 *10*	$(3^+,4)$	<2 keV	J	
14554.5 *10*	(2^+)	6 keV *2*	J	
14561 *3*			K	
14572.0 *10*	5	<2 keV	J	
14577.4 *10*	(2^+)	<2 keV	J	
14625 *4*			K	
14633.3 *10*	(5^+)	<2 keV	J	
14643[j] *3*	8^+		F IJK	J^{π}: γ to 6^+, member of the g.s. oblate band.
14650 *1*		10 keV *2*	J	
14687 *1*		4 keV *2*	J	
14709 *4*			K	
14722.0 *10*	$(4^+,5)$	<2 keV	J	
14728 *1*		13 keV *2*	J	
14741.6 *10*	$(3^+$ to $5^+)$	<2 keV	J	
14762 *1*		6 keV *2*	JK	XREF: K(14756).
14766 *1*		<2 keV	J	
14785 *3*			K	
14799 *1*		<2 keV	J	
14802.6 *10*	(4^+)	<2 keV	J	
14854 *1*		5 keV *2*	JK	
14860 *1*		4 keV *2*	J	
14864 *1*		4 keV *2*	J	
14897 *1*		<2 keV	J	
14904 *1*		<2 keV	J	
14926 *1*		10 keV *2*	J	
14954.2 *10*	$(3,4^+)$	10 keV *2*	J	
15006 *1*		<3 keV	J	
15021 *1*		<2 keV	J	
15027.1 *10*	(5)	<5 keV	J	
15034 *1*		5 keV *2*	J	
15051 *1*	$(0$ to $6)^-$	<2 keV	J	
15076 *1*		4 keV *2*	J	
15085 *1*		<3 keV	J	
15113 *1*		5 keV *2*	J	
15127.0 *10*	(5^-)	<2 keV	J	
15153 *1*		5 keV *2*	J	
15182.7 *10*	6	<2 keV	J	
15227 *1*	(0^+)	90 eV *15*	H J	T=2
15239.5 *10*	(4)	<2 keV	J	
15243 *1*		<2 keV	J	
15250 *1*		<3 keV	J	
15264 *1*		4 keV *2*	J	
15267 *1*		4 keV *2*	J	
15272 *1*		<2 keV	J	
15292 *1*		<2 keV	J	
15357 *1*		<3 keV	J	
15386 *1*		<2 keV	J	
15402.5 *10*	(5)	<2 keV	J	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{28}Si Levels (continued)

E(level)[†]	J^{π}[‡]	XREF
15494 *10*	(0 to 6)$^-$	L
15914.8 *10*	(6$^+$)	J

[†] From (p,γ), except otherwise noted.
[‡] From L values in (d,n), (p,d), and (^{3}He,d), and γ-ray transitions, except otherwise noted. Additional arguments are presented as comments and footnotes. For resonance states (above 11780 keV), spin/parity assignments are based on available data from (p,γ):resonance strength, (e,e′), (p,p′), (α,γ) studies, along with the L values from (^{3}He,d).
[#] From γ-ray decay.
[@] From (p,γ), based on $\gamma(\theta)$ measurements.
[&] From (p,γ), based on the γ-ray angular distribution, linear polarization, and transition rates.
[a] From γ-ray decay and γ-ray feeding.
[b] From (α,γ), based on γ-ray angular distribution measurements.
[c] From (α,nγ), based on n-γ angular correlation and mean lifetime.
[d] From spectroscopic strength in (p,γ): Resonance and/or based on the α_0 or α_1 decay.
[e] From 1984Ne03 and 1984Ne04 in (p,p): Resonance.
[f] $T_{1/2}$ or Γ. Γ from 1984Ne03 or 1984Ne04, except otherwise noted. For levels at 14535 keV and above − Γ quoted from 1995Br16.
[g] Γ from 1978Ma23.
[h] Γ − from 1995Br16.
[i] Γ − From Table 28.17 in 1990En08.
[j] Band(A): Oblate band based on g.s.
[k] Band(B): K^{π}=3$^+$ band.
[l] Band(C): Prolate band based on 0$^+$.
[m] Band(D): Vibrational band.
[n] Band(E): SD band based on 2$^+$.

γ(^{28}Si)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[@]	E_f	J^{π}_f	Mult.[b]	δ	Comments
1779.030	2$^+$	1778.969[‡] *11*	100	0.0	0$^+$	E2		B(E2)(W.u.)=13.2 *5*
4617.86	4$^+$	2838.29[‡] *15*	100	1779.030	2$^+$	(E2)		B(E2)(W.u.)=16.4 *18*
4979.92	0$^+$	3200.7[‡] *5*	100	1779.030	2$^+$	E2		B(E2)(W.u.)=9.5 *6*
6276.20	3$^+$	1658.2	13.4 *4*	4617.86	4$^+$			
		4496.92[‡] *25*	100.0 *4*	1779.030	2$^+$	(M1+E2)	−0.14 *2*	B(M1)(W.u.)=0.000269 *21*; B(E2)(W.u.)=0.0013 *4* δ: From 1974Da15. Other: −0.12 *5* (1963Br15).
6690.74	0$^+$	4910.8 *5*	100	1779.030	2$^+$	E2		B(E2)(W.u.)=0.267 *19*
6878.79	3$^-$	2260.7	3.9 *6*	4617.86	4$^+$	(E1)		B(E1)(W.u.)=9.1×10^{-7} *17*
		5098.8	39.0 *15*	1779.030	2$^+$			
		6877.0	100.0 *16*	0.0	0$^+$	[E3]		B(E3)(W.u.)=13.2 *15*
6887.65	4$^+$	2269.6	1.31 *9*	4617.86	4$^+$			
		5107.6	100.00 *9*	1779.030	2$^+$	(E2)		B(E2)(W.u.)=0.96 *6*
7380.59	2$^+$	2400.5	0.47 *16*	4979.92	0$^+$	E2		B(E2)(W.u.)=0.8 *5*
		5600.4	100.0 *8*	1779.030	2$^+$			
		7378.5	57.3 *8*	0.0	0$^+$	E2		B(E2)(W.u.)=0.37 *15*
7416.26	2$^+$	5636.0	6.4 *22*	1779.030	2$^+$			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{28}Si)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f	Mult.[b]	δ	Comments
7416.26	2^+	7414.2	100.0 *22*	0.0	0^+	E2		B(E2)(W.u.)=0.162 *18*
7799.01	3^+	911.3	0.21 *3*	6887.65	4^+			
		1522.7	49.5 *17*	6276.20	3^+			
		3180.8	2.00 *13*	4617.86	4^+			
		6018.6	100.0 *17*	1779.030	2^+			
7933.45	2^+	1657.1	2.9 *15*	6276.20	3^+			
		2953.2	4.81 *24*	4979.92	0^+	E2		B(E2)(W.u.)=1.8 *4*
		3315.2	5.65 *24*	4617.86	4^+	(E2)		B(E2)(W.u.)=1.20 *23*
		6153.0	6.61 *24*	1779.030	2^+			
		7931.0	100.0 *18*	0.0	0^+	E2		B(E2)(W.u.)=0.27 *5*
8258.74	$2^{(+)}$	3278.4	24.3 *15*	4979.92	0^+	E2		B(E2)(W.u.)=5.0 *11*
		3640.4	5.7 *15*	4617.86	4^+	(E2)		B(E2)(W.u.)=0.70 *24*
		6478.1	100 *3*	1779.030	2^+			
		8256.1	12.9 *22*	0.0	0^+	E2		B(E2)(W.u.)=0.026 *7*
8328.38	1^+	2052.0	28 *4*	6276.20	3^+			
		6547.7	45 *9*	1779.030	2^+			
		8325.7	100 *9*	0.0	0^+	M1		B(M1)(W.u.)=6.E−5 *4*
8413.33	4^-	1534.5	100.0 *8*	6878.79	3^-	(M1+E2)	−0.17 *1*	B(M1)(W.u.)=0.0146 *25*; B(E2)(W.u.)=0.91 *19* δ: From 1974Da15. Other: −0.18 *4* (1981Gl05).
		3794.9	3.50 *25*	4617.86	4^+			
		6632.6	21.3 *8*	1779.030	2^+	(M2+E3)	+2.5 *2*	B(M2)(W.u.)=0.019 *5*; B(E3)(W.u.)=21 *4* δ: From 1974Da15.
8543.56	6^+	3925.1 *3*	100	4617.86	4^+	[E2]		B(E2)(W.u.)=10.6 *10*
8588.71	3^+	789.7	0.59 *10*	7799.01	3^+	[M1]		B(M1)(W.u.)=0.021 *6*
		1700.9	0.34 *23*	6887.65	4^+			
		2312.3	7.85 *23*	6276.20	3^+			
		3970.3	4.89 *23*	4617.86	4^+			
		6807.9	100.0 *5*	1779.030	2^+			
8904.8	1^-	7123.8	100 *6*	1779.030	2^+	[E1]		B(E1)(W.u.)=0.00013 *4*
		8901.8	89 *6*	0.0	0^+	[E1]		B(E1)(W.u.)=6.1×10^{-5} *16*
8945.20	5^+	2057.4	64 *4*	6887.65	4^+	(M1+E2)	>25	B(M1)(W.u.)<3.1×10^{-5}; B(E2)(W.u.)>18 δ: From 1986Gl05.
		4326.6	100 *4*	4617.86	4^+	(M1+E2)	+7 *+7−2*	B(M1)(W.u.)=6.E−5 *+12−6*; B(E2)(W.u.)=0.76 *10* δ: From 1995Br17.
8953.3	$(0^+,1,2)$	7172.3	100	1779.030	2^+			
9164.68	(4^+)	1748.3	9.8 *11*	7416.26	2^+	[E2]		B(E2)(W.u.)=11.1 *18*
		1784.0	29.3 *22*	7380.59	2^+	[E2]		B(E2)(W.u.)=30 *4*
		2276.8	6.3 *7*	6887.65	4^+			
		2285.7	4.1 *7*	6878.79	3^-	[E1]		B(E1)(W.u.)=4.2×10^{-5} *9*
		4546.0	67.0 *9*	4617.86	4^+			
		7383.6	100 *5*	1779.030	2^+	[E2]		B(E2)(W.u.)=0.084 *11*
9315.92	3^+	727.2	0.8 *3*	8588.71	3^+			
		1516.8	2.4 *6*	7799.01	3^+			
		3039.4	37 *3*	6276.20	3^+	(M1+E2)	−0.2 *2*	B(M1)(W.u.)=0.13 *6*; B(E2)(W.u.)=3 *+6−3* δ: From 1978Da08.
		7534.7	100 *3*	1779.030	2^+	(M1+E2)	+0.01 *1*	B(M1)(W.u.)=0.024 *10*; B(E2)(W.u.)=0.00022 *+45−22* δ: From 1978Ma23. Other: +0.08 *6* (1978Da08).
9381.55	2^+	1122.7	0.60 *18*	8258.74	$2^{(+)}$	(M1)		B(M1)(W.u.)=0.08 *3*
		1448.0	3.14 *23*	7933.45	2^+	(M1)		B(M1)(W.u.)=0.18 *6*
		1965.1	0.12 *7*	7416.26	2^+			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{28}Si)$ (continued)

E_i(level)	J^π_i	E_γ [†]	I_γ [@]	E_f	J^π_f	Mult. [b]	δ	Comments
9381.55	2^+	3105.0	4.48 *23*	6276.20	3^+	(M1)		B(M1)(W.u.)=0.027 *8*
		7600.3	100.0 *13*	1779.030	2^+	(M1+E2)	+0.09 *5*	B(M1)(W.u.)=0.040 *11*; B(E2)(W.u.)=0.03 *+4−3* δ: From 1978Ma23.
		9378.2	3.7 *4*	0.0	0^+	(E2)		B(E2)(W.u.)=0.046 *14*
9417.17	4^+	1483.6	27 *4*	7933.45	2^+	(E2)		B(E2)(W.u.)=23 *5*
		1618.1	100 *6*	7799.01	3^+			
		2000.8	13 *9*	7416.26	2^+			
		2036.4	1.2 *2*	7380.59	2^+	(E2)		B(E2)(W.u.)=0.21 *5*
		2529.3	18.8 *6*	6887.65	4^+			
		3140.6	3.1 *2*	6276.20	3^+			
		4798.4	36.3 *14*	4617.86	4^+			
		7635.9	33.3 *10*	1779.030	2^+	(E2)		B(E2)(W.u.)=0.0079 *13*
9479.49	(2^+)	2063.1	0.58 *7*	7416.26	2^+			
		2098.7	0.71 *24*	7380.59	2^+			
		4498.8	5.3 *18*	4979.92	0^+	(E2)		B(E2)(W.u.)=0.46 *22*
		4860.7	7.5 *4*	4617.86	4^+	(E2)		B(E2)(W.u.)=0.44 *15*
		7698.2	3.04 *15*	1779.030	2^+			
		9476.1	100.0 *24*	0.0	0^+	(E2)		B(E2)(W.u.)=0.21 *7*
9496.04	(1^+)	7714.7	18 *5*	1779.030	2^+			
		9492.6	100 *5*	0.0	0^+	(M1)		B(M1)(W.u.)=0.0044 *18*
9702.34	(5^-)	1288.9	100 *5*	8413.33	4^-	(M1+E2)	<+2.0	B(M1)(W.u.)>0.00017; B(E2)(W.u.)<3.6 δ: From 1981Gl05.
		2814.4	15.6 *23*	6887.65	4^+			
		2823.2	51.1 *23*	6878.79	3^-	(E2)		B(E2)(W.u.)=0.036 *10*
		5083.5	33.3 *23*	4617.86	4^+			
		7920.9	22.2 *23*	1779.030	2^+	(E3)		B(E3)(W.u.)=0.33 *9*
9764.52	(3^-)	2885.4	0.57 *16*	6878.79	3^-			
		3487.9	2.6 *3*	6276.20	3^+	(E1)		B(E1)(W.u.)>0.00022
		7983.1	100.0 *3*	1779.030	2^+	(E1)		B(E1)(W.u.)>0.00070
9795.95	(2^+)	3105 [#]		6690.74	0^+			I_γ: γ-ray branching not available.
		4815.1	7.2 *4*	4979.92	0^+			
		8014.5	78 *2*	1779.030	2^+			
		9792.3	100 *2*	0.0	0^+	(E2)		
9929.2	1^-	9925.4	100	0.0	0^+	(E1)		
10181.60	(3^-)	1016.9	31.0 *14*	9164.68	(4^+)	(E1)		B(E1)(W.u.)=0.022 *7*
		3904.8	10 *3*	6276.20	3^+	(E1)		B(E1)(W.u.)=0.00012 *6*
		5562.6	100 *3*	4617.86	4^+	(E1)		B(E1)(W.u.)=0.00043 *13*
10189.59	$(5^-,3^-)$	3310.4	100	6878.79	3^-			
10209.01	(3^+)	2792.5	4.7 *20*	7416.26	2^+			
		5590.0	29 *7*	4617.86	4^+	(E2)		B(E2)(W.u.)=0.45 *18*
		8427.3	100 *7*	1779.030	2^+			
10272.3	0^+	1943.8	70 *3*	8328.38	1^+	M1		B(M1)(W.u.)>0.029
		8490.5	100 *3*	1779.030	2^+	E2		B(E2)(W.u.)>0.036
10310.92	(4^+)	4034.1	20 *6*	6276.20	3^+			
		5691.8	100 *10*	4617.86	4^+			
		8529.1	80 *12*	1779.030	2^+			
10376.24	$(3^+,4^+)$	1787.4	75 *4*	8588.71	3^+			
		3488.1	21 *4*	6887.65	4^+			
		4099.4	100 *11*	6276.20	3^+			
		5757.1	79 *7*	4617.86	4^+			
		8594.4	70 *5*	1779.030	2^+			
10418.25	(5^+)	2619.0	6.2 *11*	7799.01	3^+	(E2)		B(E2)(W.u.)=2.3 *7*
		3530.1	11.4 *7*	6887.65	4^+			
		4141.4	100 *3*	6276.20	3^+	(E2)		B(E2)(W.u.)=3.7 *9*

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{28}Si)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[@]	E_f	J_f^π	Mult.[b]	Comments
10418.25	(5^+)	5799.1	19 *3*	4617.86	4^+		
10514.1	(2^+)	5533.0	7.3 *11*	4979.92	0^+		
		8732.1	100 *2*	1779.030	2^+		
		10510.0	51 *2*	0.0	0^+	E2	
10541.0	(3^-)	3661.7	52 *13*	6878.79	3^-		
		8759.0	100 *13*	1779.030	2^+		
10596.18	(1^+)	2267.6	5.7 *17*	8328.38	1^+		
		3179.5	7 *3*	7416.26	2^+		
		5615.1	23 *7*	4979.92	0^+	(M1)	B(M1)(W.u.)=0.054 *21*
		10592.0	100 *7*	0.0	0^+	(M1)	B(M1)(W.u.)=0.035 *8*
10668.05	$(2,3)^+$	1352.1	100 *7*	9315.92	3^+	(M1)	B(M1)(W.u.)=0.29 *7*
		2734.3	2.2 *7*	7933.45	2^+		
		3251.4	22.9 *15*	7416.26	2^+		
		3287.1	4.3 *9*	7380.59	2^+		
		3780.0	13.9 *11*	6887.65	4^+		
		4391.1	11 *3*	6276.20	3^+		
		8886.0	49 *7*	1779.030	2^+		
10668.34	4^+	1251.1	0.88 *17*	9417.17	4^+		
		1286.7	0.76 *23*	9381.55	2^+	(E2)	B(E2)(W.u.)=5.3 *19*
		1352.4	100 *7*	9315.92	3^+	(M1)	B(M1)(W.u.)=0.19 *4*
		1723.0	1.9 *4*	8945.20	5^+		
		2079.5	13.3 *4*	8588.71	3^+		
		2124.6	0.86 *15*	8543.56	6^+	(E2)	B(E2)(W.u.)=0.48 *12*
		2409.4	1.73 *19*	8258.74	$2^{(+)}$		
		2734.6	14.1 *4*	7933.45	2^+	(E2)	B(E2)(W.u.)=2.2 *4*
		2869.0	3.8 *3*	7799.01	3^+		
		3251.7	30.2 *11*	7416.26	2^+		
		3287.3	1.0 *3*	7380.59	2^+		
		3780.1	3.5 *4*	6887.65	4^+		
		4391.4	49.4 *17*	6276.20	3^+		
		6049.1	18.4 *13*	4617.86	4^+		
		8886.3	15.3 *7*	1779.030	2^+		
10724.7	(1^+)	10720.3	100	0.0	0^+	(M1)	B(M1)(W.u.)=0.029 *6*
10778	1^+ to 5^+	4501	100	6276.20	3^+		
10883.45	$(2,3^+)$	3466.7	5.7 *16*	7416.26	2^+		
		9101.2	100 *7*	1779.030	2^+		
10900.42	(1^+)	9118.2	47 *5*	1779.030	2^+		
		10895.9	100 *5*	0.0	0^+	(M1)	B(M1)(W.u.)=0.133 *16*
10915.6	(3^-)	1599.6	16 *3*	9315.92	3^+		
		6296.2	19 *4*	4617.86	4^+		
		9133.4	100 *4*	1779.030	2^+		
10944.0	(4^+)	2685.0	26 *4*	8258.74	$2^{(+)}$		
		3527.3	42 *6*	7416.26	2^+		
		3562.9	21 *4*	7380.59	2^+		
		9161.8	100 *6*	1779.030	2^+		
10952.8	1 to 4	9170.5	100	1779.030	2^+		
10994	$(1,2^+)$	9212	100	1779.030	2^+		
11078.52	(3^-)	1696.9	20 *3*	9381.55	2^+		
		1762.5	34 *3*	9315.92	3^+		
		3661.8	49 *3*	7416.26	2^+		
		4801.4	83 *3*	6276.20	3^+		
		9296.2	100 *3*	1779.030	2^+		
11100.0	(6^+)	6480.5	100	4617.86	4^+	(E2)	B(E2)(W.u.)=0.89 *9*
11142	(2^+)	3725	32[a] *5*	7416.26	2^+		
		3761	73[a] *7*	7380.59	2^+		

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{28}Si)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f	Mult.[b]	δ	Comments
11142	(2+)	6523	23[a] 2	4617.86	4+			
		9360	100[a] 9	1779.030	2+			
11195.22	(4+)	1399.2	13 6	9795.95	(2+)			
		1879.2	21 8	9315.92	3+			
		3814.1	23 6	7380.59	2+			
		4918.1	26 6	6276.20	3+			
		6575.7	74 13	4617.86	4+			
		9412.8	100 16	1779.030	2+			
11265	(3−)	1083.4	4.4 19	10181.60	(3−)			
		9482.5	100 4	1779.030	2+			
		11260.1	13 4	0.0	0+			
11295.6	(1−)	4416	4.1[a] 14	6878.79	3−			
		4604	3.0[a] 14	6690.74	0+			
		6314	3.4[a] 14	4979.92	0+			
		9513	26[a] 3	1779.030	2+			
		11291	100[a] 7	0.0	0+			
11331.9	6+	2386.5	16 4	8945.20	5+			
		4443.5	7.4 25	6887.65	4+	(E2)		B(E2)(W.u.)>0.18
		6712.3	100 4	4617.86	4+	(E2)		B(E2)(W.u.)>0.32
11432.63	(2+)	2843.6	59.6 4	8588.71	3+			
		3173.5	5.6 13	8258.74	2(+)			
		3498.7	10.2 15	7933.45	2+			
		3633.1	9.6 17	7799.01	3+			
		4015.8	5.6 15	7416.26	2+			
		4051.4	6.5 17	7380.59	2+			
		9650.0	100 2	1779.030	2+			
		11427.6	19.3 4	0.0	0+			
11434.50	(4−)	2118.4	100 2	9315.92	3+			
		3020.8	13 2	8413.33	4−			
		4546.1	51 5	6887.65	4+			
		5157.3	70 4	6276.20	3+	(E1)		B(E1)(W.u.)=0.00011 4
11446.00	(1+)	11441.0	100	0.0	0+	(M1)		B(M1)(W.u.)=0.84 4
11510.4	(6+)	2345.5	36 7	9164.68	(4+)	(E2)		B(E2)(W.u.)=37 11
		4621.9	100 7	6887.65	4+	(E2)		B(E2)(W.u.)=3.4 9
		6890.7	36 4	4617.86	4+	(E2)		B(E2)(W.u.)=0.17 5
11572.0	(4,5+)	4683.5	100.0 2	6887.65	4+			
		6952.3	17.0 2	4617.86	4+			
11576	(6−)	1874	100.0[&] 22	9702.34	(5−)			
		3032	7.5[&] 22	8543.56	6+	(E1)		B(E1)(W.u.)=8.E−6 4
11584.62	(3−)	9801.9	100	1779.030	2+			
11778.9	(5+)	7158.9	100	4617.86	4+	(M1+E2)	−0.02 3	δ: From 1995Br17.
11933.5	5	5044.9	6 2	6887.65	4+			
		7313.6	100 2	4617.86	4+			
11986	(1 to 3)	10203	100	1779.030	2+			
12152.0	(6+)	5263.3	100	6887.65	4+			
12204	(6−,4−)	2014	9.9[&] 22	10189.59	(5−,3−)			
		3790	100.0[&] 22	8413.33	4−			
12862	(6+)	1919[#]		10944.0	(4+)			
		3700[#]		9164.68	(4+)			
		5977[#]		6887.65	4+			
		8247[#]		4617.86	4+			
12994	(5,6,7)+	4450	100	8543.56	6+			
13710.2	7+	5166[#]	100	8543.56	6+			

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

$\gamma(^{28}Si)$ (continued)

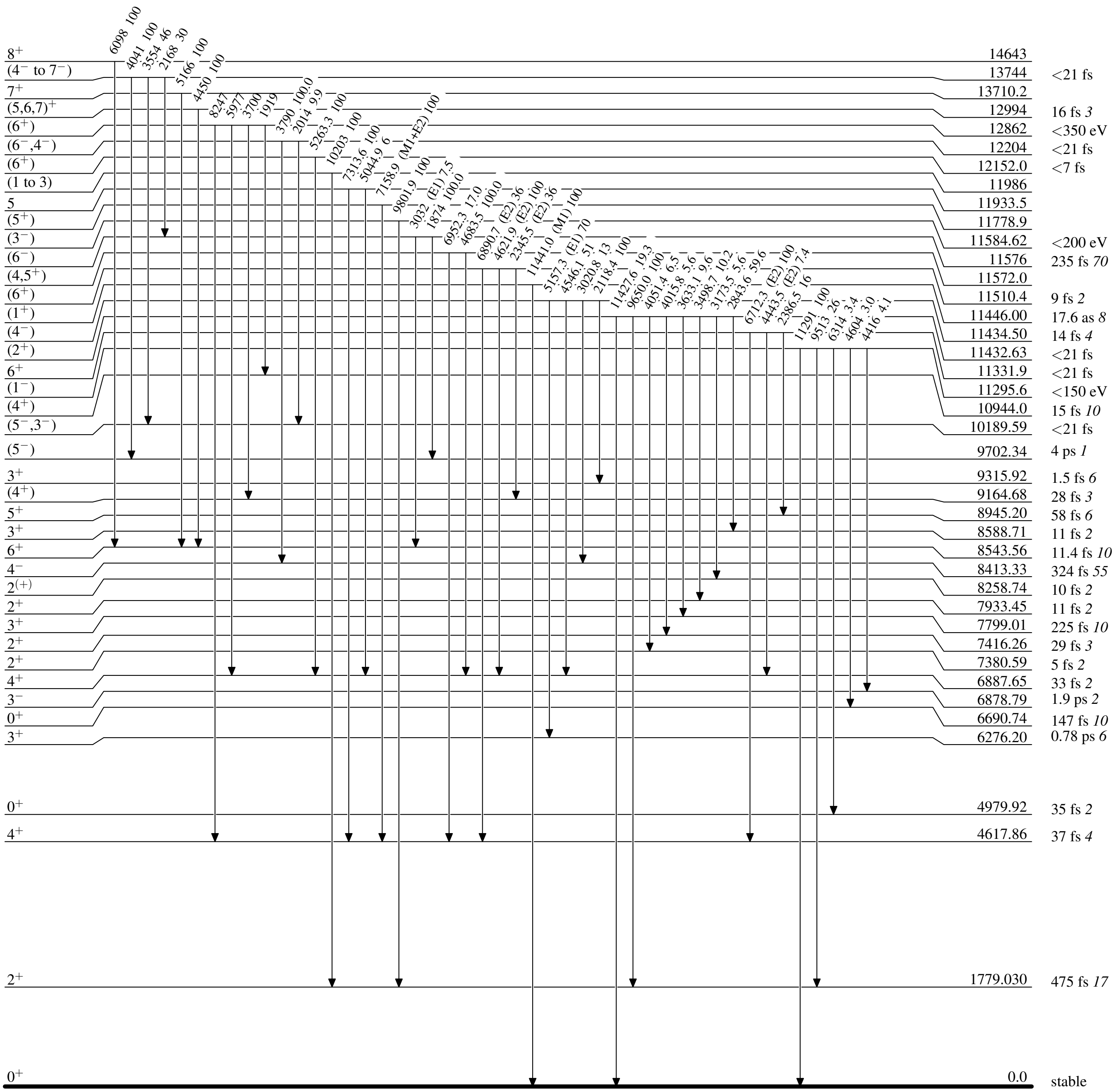
E_i(level)	J^π_i	E_γ[†]	I_γ[@]	E_f	J^π_f
13744	(4^- to 7^-)	2168	30[&] *6*	11576	(6^-)
		3554	46[&] *6*	10189.59	(5^-,3^-)
		4041	100[&] *9*	9702.34	(5^-)
14643	8^+	6098[#]	100	8543.56	6^+

[†] Calculated by the evaluator from level energy differences, except otherwise noted. Recoil energy has been subtracted.
[‡] From ^{28}P ε decay.
[#] From (^{20}Ne,$\alpha\gamma$).
[@] From (p,γ), except otherwise noted. In some cases, weighted averages of data from (p,γ) and (^{28}P ε decay-1982Wa05) are presented.
[&] From (α,nγ).
[a] From (α,γ).
[b] Assigned by the evaluator based on γ-ray angular distribution measurements, RUL, mixing ratio, ΔJ^π, etc.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

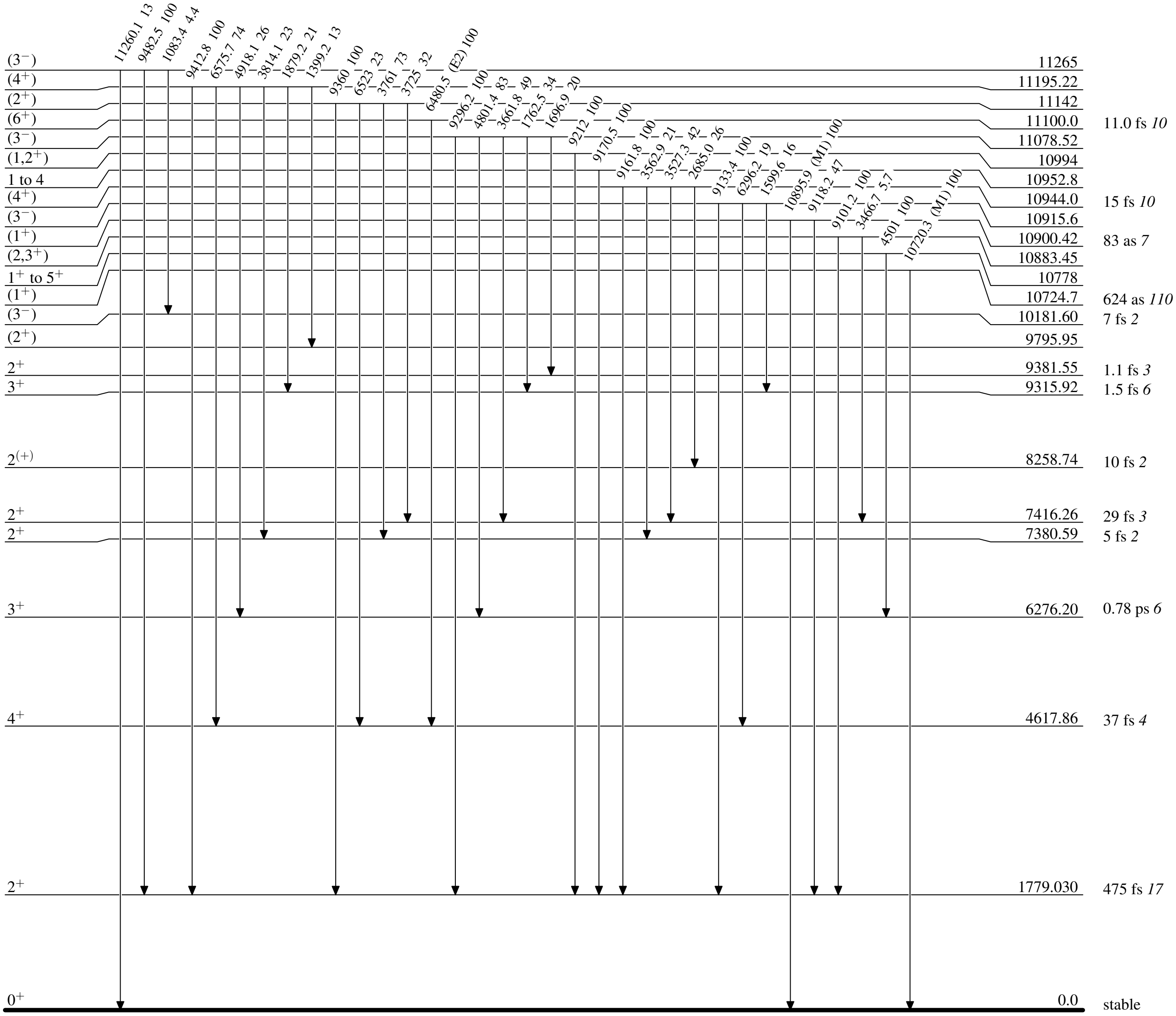


$^{28}_{14}Si_{14}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

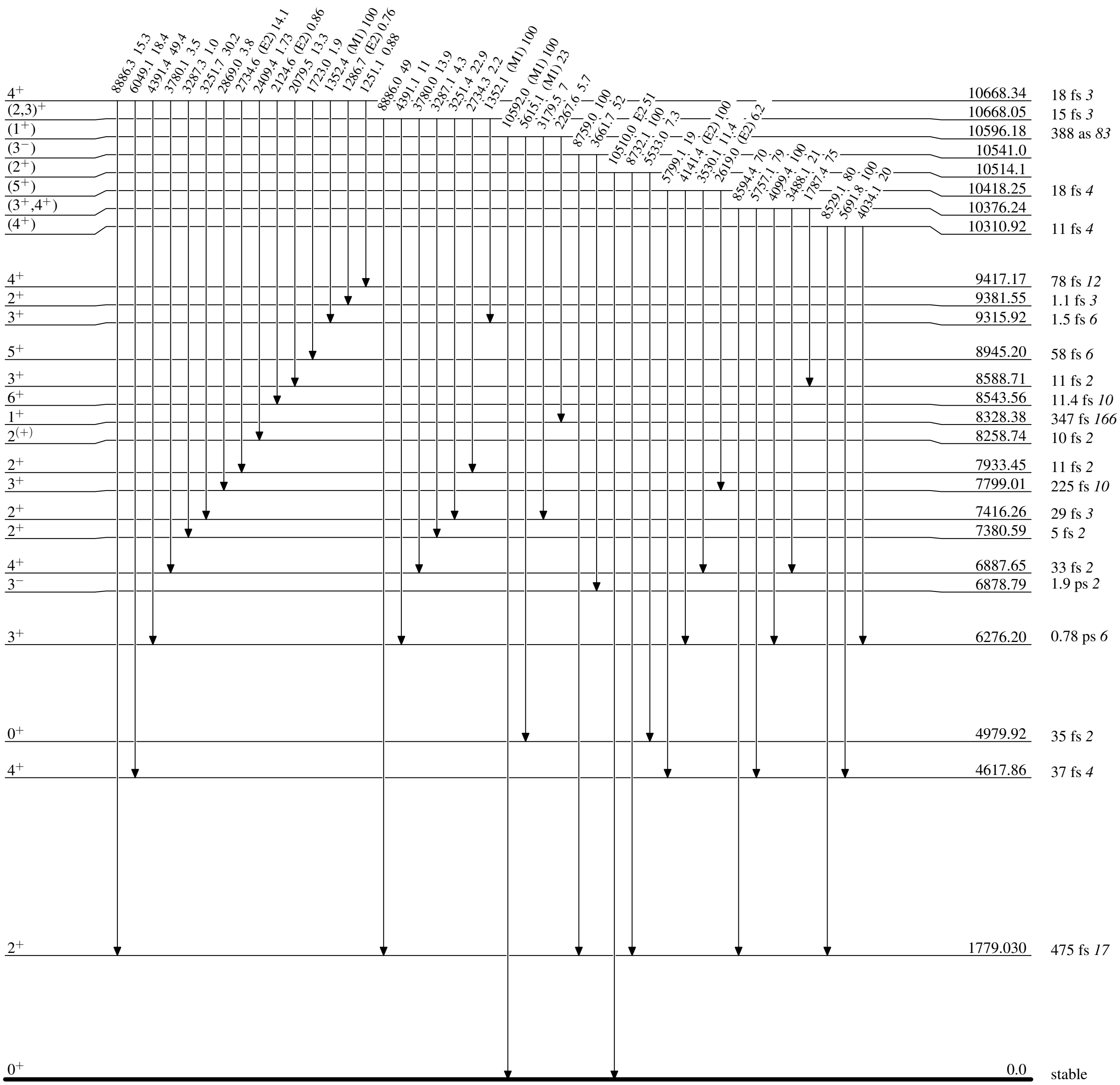


$^{28}_{14}Si_{14}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

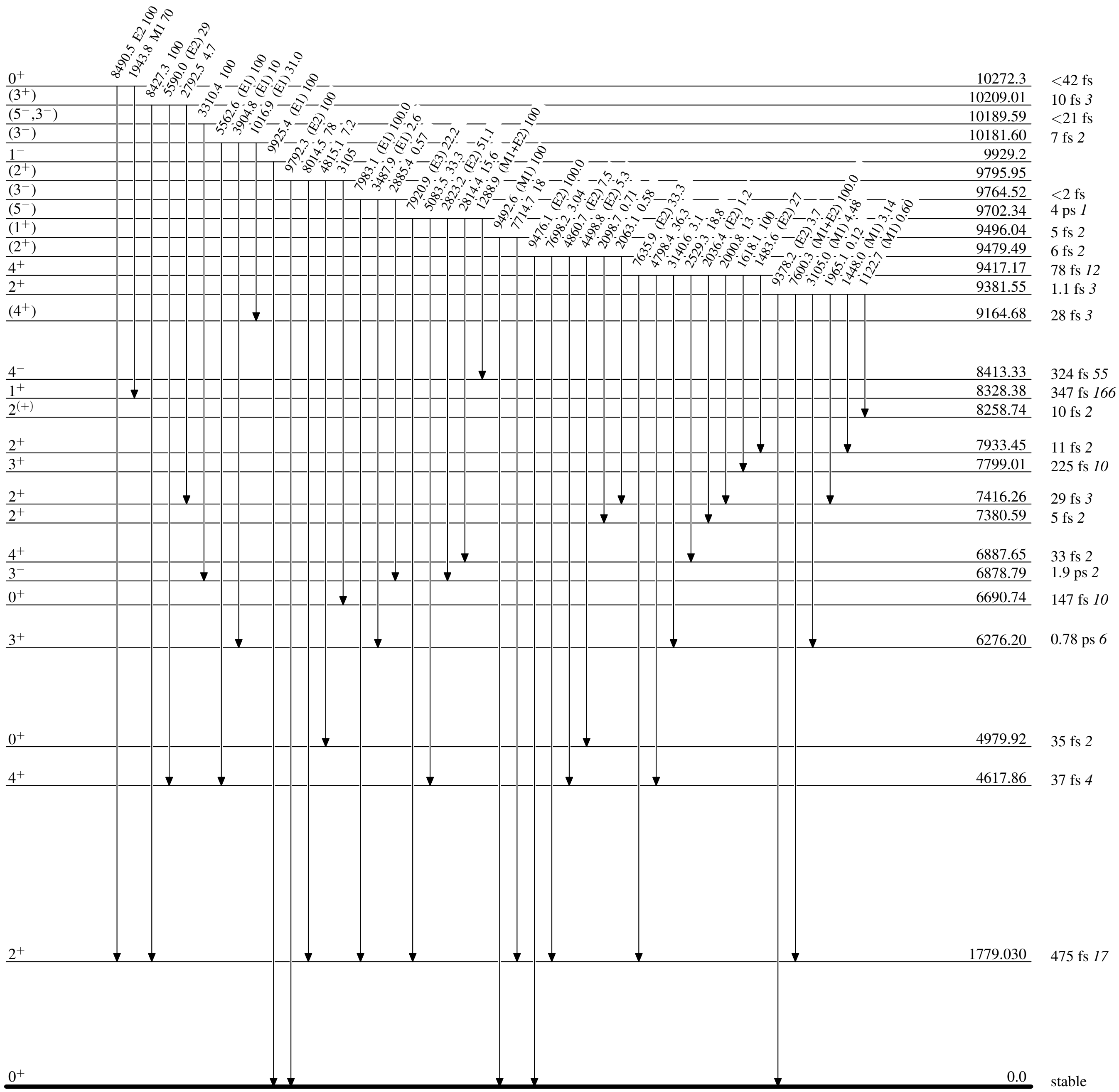


$^{28}_{14}Si_{14}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

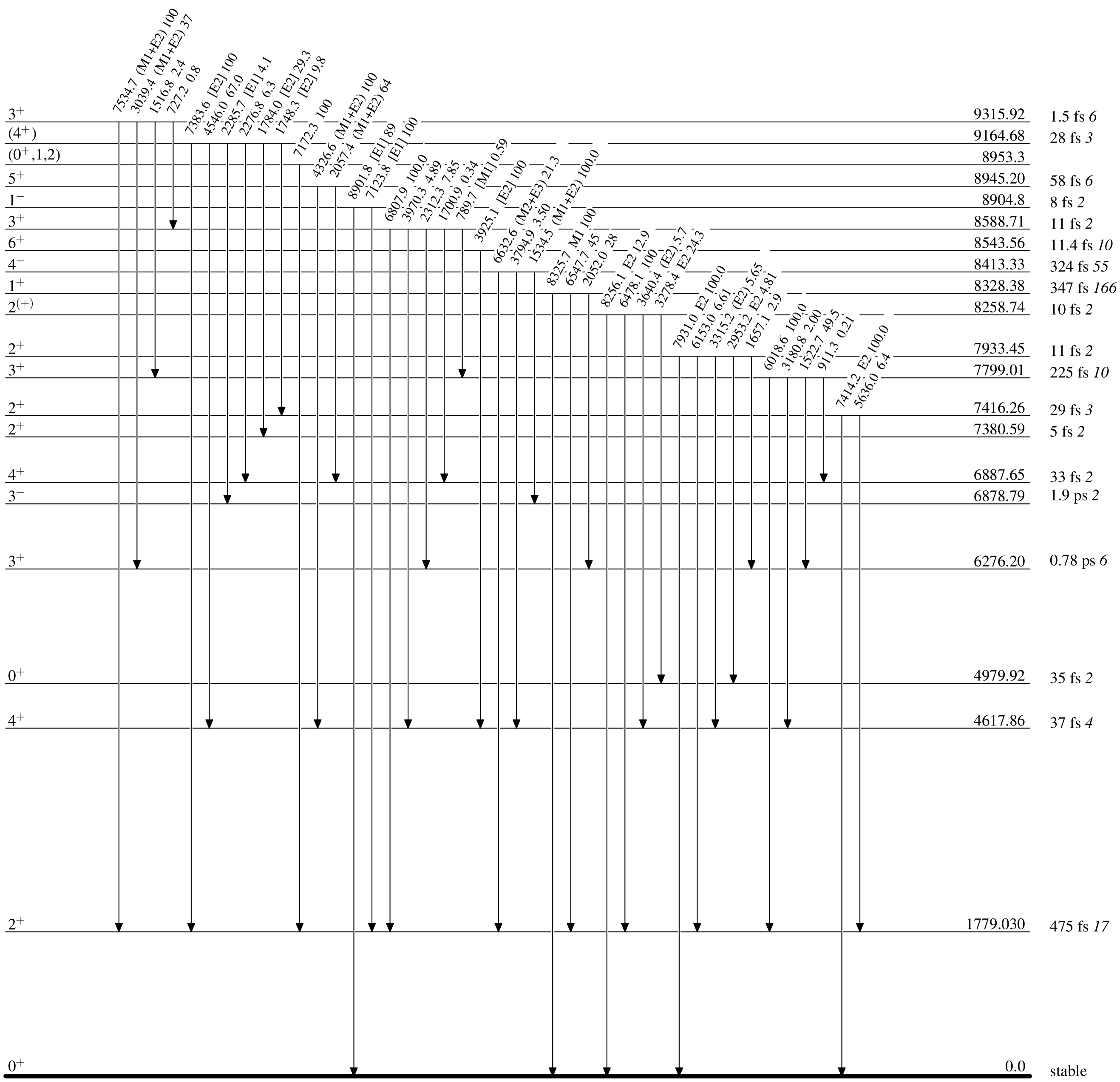


$^{28}_{14}Si_{14}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

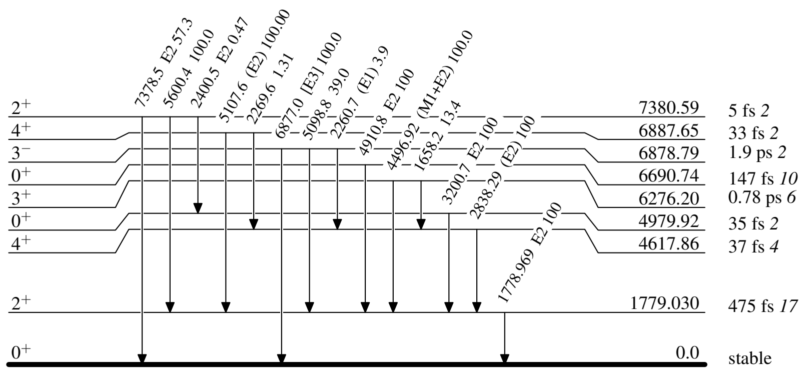


$^{28}_{14}Si_{14}$

Adopted Levels, Gammas

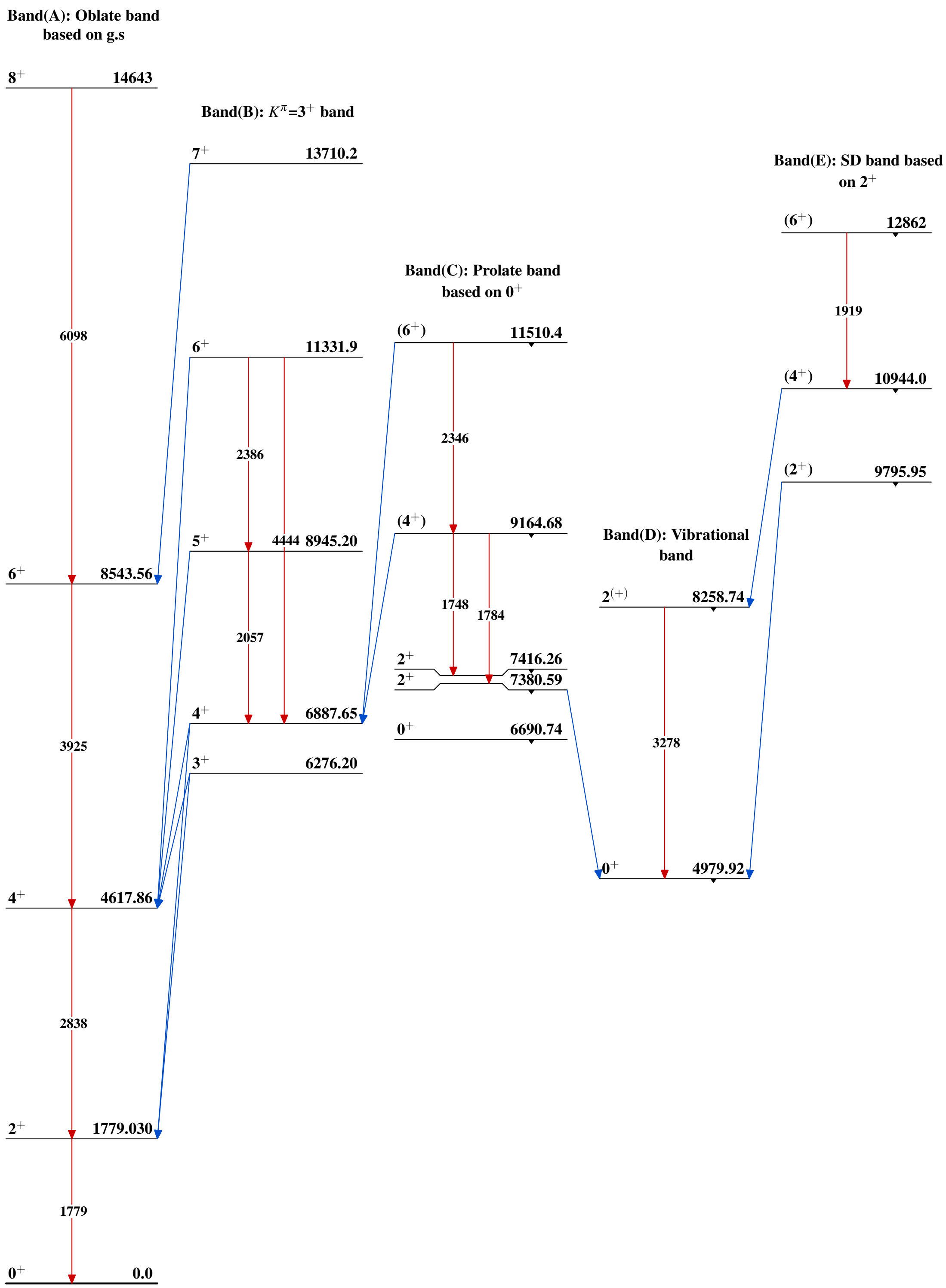
Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{28}_{14}Si_{14}$

Adopted Levels, Gammas



$^{28}_{14}Si_{14}$

Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	M. Shamsuzzoha Basunia	NDS 111,2331 (2010)	30-Jun-2010

Q(β^-)=−4232.4 *4*; S(n)=10609.20 *2*; S(p)=13517.3 *10*; Q(α)=−10643.3 *1* 2012Wa38
Note: Current evaluation has used the following Q record −4232.4 3 *10609*.20 *2* 13506.612 2009AuZZ.
Q(α)=−10643.29 *4* (2009AuZZ).
Q(β^-)=−4232.4 *3*, S(n)=10609.20 *2*, S(p)=13506.6 *12* S(α)=−10643.26 *4* (2003Au03).

There are 26 neutron resonances for the ^{29}Si+n reaction in the 15 keV to 1389 keV energy range (2006MuZX). Other: 2003Gu05.

2007No13: Production cross section ~80 mb and ~70 mb, measured in ^{40}Ar fragmentation reactions of ^{9}Be(^{40}Ar,X), E=90α MeV, and ^{181}Ta(^{40}Ar,X), E=94α MeV, reactions, respectively.

2001Pa52: ^{29}Si(n,γ) − mass measurement.

^{30}Si Levels

Cross Reference (XREF) Flags

A	^{30}Al β^- decay	D	^{27}Al(α,p),(α,pγ)
B	^{30}P β^+ decay	E	^{28}Si(t,p)
C	^{14}C(^{18}O,2nγ)	F	^{29}Si(n,γ) E=thermal

E(level)[†]	J$^\pi$[#]	T$_{1/2}$[b]	XREF	Comments
0	0$^+$	stable	AB DEF	J$^\pi$: L=0 in (t,p).
2235.322 *18*	2$^+$	215 fs *28*	ABCDEF	μ=+0.76 *18* Q=−0.05 *6* J$^\pi$: L=2 in (t,p). μ: From 1978Za13 − Perturbed angular correlation after ion implantation, re-evaluated data (Same in 1989Ra17 and 2005St24). Q: or +0.01 *6*, both from 1979Fe08 − depending on constructive or destructive interference from the 2nd excited state − Method: Coulomb Excitation Reorientation. In a compilation, 1981Sp07 reported only −0.05 *6*. 1989Ra17 and 2005St24 reported both values.
3498.49 *3*	2$^+$	58 fs *17*	ABCDEF	J$^\pi$: L=2 in (t,p).
3769.48 *4*	1$^+$	36 fs *9*	AB DEF	J$^\pi$: From angular correlation fit ((α,p),(α,pγ)−1971Sy01).
3787.72 *4*	0$^+$	8.3 ps *5*	B DEF	J$^\pi$: From isotropic distribution characteristics of 1552γ ((α,p),(α,pγ)−1971Sy01).
4810.31 *11*	2$^+$[&]	104 fs *15*	A DEF	
4830.85 *4*	3$^+$[&]	83 fs *24*	A CDEF	
5231.38 *7*	3$^+$[&]	43 fs *21*	A CDEF	
5279.37 *14*	4$^+$	83 fs *22*	CDE	J$^\pi$: L=4 in (t,p).
5372.2 *6*	0$^+$	59 fs *21*	DEF	J$^\pi$: 3136.6γ to 2$^+$ and, 1602γ to (1$^+$), absence of g.s. branching.
5487.50[‡] *5*	3$^-$	43 fs *12*	CDEF	J$^\pi$: L=3 in (t,p).
5614.04 *13*	2$^+$	<21 fs	A DEF	J$^\pi$: L=2 in (t,p).
5950.73 *15*	4$^+$	15 fs *8*	A CDE	J$^\pi$: Assigned by 1971Sy01 based on (α,α') population at 180° γ-ray angular distribution.
6503.41[‡] *8*	4$^-$	139 fs *35*	CDE	J$^\pi$: Assigned by 1971Sy01 based on 540γ angular correlation measurements; feeding of this level from the 7044 keV level (J^π=5$^-$).
6537.5 *16*	2$^+$	<17 fs	DE	XREF: E(6541). J$^\pi$: L=2 in (t,p).
6641.21 *7*	2$^-$	21 fs *9*	F	J$^\pi$: 1810.4γ to 3$^+$, 1153.6γ to 3$^-$. For the second member of the doublet, 1973Ba50 (t,p) suggested J^π=0$^-$,1$^-$ or 2$^-$, 1980Bi14 excluded 0$^-$ and 1$^-$

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{30}Si Levels (continued)

E(level)[†]	J^{π}[#]	$T_{1/2}$[b]	XREF	Comments
				assignments from 18010γ intensity and feeding the 3^+ state.
6642 *3*	0^+		DE	J^{π}: L=0 in (t,p).
6744.06 *4*	1^-	<14 fs	DEF	J^{π}: L=1 in (t,p).
6865.2 *12*	3^+	23 fs *16*	DE	J^{π}: Assigned by 1980Bi14 based on γ-ray feeding to 4^+, 3^+, 2^+ states. $J^{\pi}=4^+$ is rejected from E2 strength calculation (1971Sy01).
6914.79 *24*	(2^+)	<24 fs	DEF	J^{π}: L=(2) in (t,p).
6998.90 *15*	5^+	104 fs *35*	CDE	XREF: E(6990). J^{π}: Assigned by 1980Bi14 based on lifetime, unnatural parity, population from 8196 keV ($J^{\pi}=5^-$) level.
7043.21 *14*	5^-	0.83 ps *20*	CDE	J^{π}: L=5 in (t,p).
7079.4 *14*	$(1^+,2^-,3^+)$	<14 fs	DE	XREF: E(7070). J^{π}: Assigned by 1971Sy01 based on population or absence of population in the (α,p), (α,α′), (α,α γ) reactions.
7223.2 *4*	4^+[@]	<14 fs	CDE	
7255.8 *16*	2^+	<35 fs	DE	J^{π}: L=2 in (t,p).
7441 *4*	0^+		DE	XREF: E(7446). J^{π}: L=0 in (t,p).
7507.84 *5*	(2^-)	<24 fs	DEF	
7612.4 *13*	(4^-)	13 fs *6*	DE	
7623.9 *23*	(2^+)	<17 fs	D	
7634 *3*			D	
7667.4 *6*	$(1^+,2^+)$	<14 fs	DEF	XREF: E(7660). J^{π}: 5431γ to 2^+ (1980Bi14).
7809.7 *13*	4^+	12 fs *8*	DE	XREF: E(7800). J^{π}: L=4 in (t,p).
7911.8 *20*	2^+	21 fs *15*	DE	XREF: E(7894). J^{π}: L=2 in (t,p).
8104.8 *3*	$(2^+,3^-)$	<24 fs	DEF	J^{π}: 3295γ to 2^+, 5869γ to 2^+, 2628γ from $(3^-,4^+)$ (α,p),(α,pγ) – 1980Bi14. L=(0) in (t,p) is inconsistent with this assignment.
8156.1 *7*	$(1^-$ to $4^+)$		D F	
8163.22 *7*	1^-		DEF	J^{π}: L=1 in (t,p).
8190.6 *24*	(2^+)	<24 fs	D	
8194.0[‡] *4*	5^-	35 fs *12*	CDE	XREF: E(8204). J^{π}: L=5 in (t,p).
8289.5 *23*	(1 to 3)		D	
8332.7 *13*			D	
8441.2 *23*	3^-		DE	XREF: E(8453). J^{π}: L=3 in (t,p).
8536.4 *16*	$(3^+,4^+)$	31 fs *16*	D	J^{π}: 1535 to 5^+, 6300γ to 2^+.
8554 *3*	3^-	<14 fs	DE	XREF: E(8564). J^{π}: L=3 in (t,p).
8595.9 *17*	(4^-)	<24 fs	D	J^{π}: γ-decays to 3^+,3^-,4^+ states.
8639.4 *21*	$(1^+$ to $4^+)$	<24 fs	D	
8672.2 *18*	$(1^-,2^+)$		D	
8683.7 *15*	2^+	<24 fs	DE	J^{π}: L=2 in (t,p).
8734 *3*	$(0^+$ to $3^+)$		D	
8799 *3*	$(1,2^+)$		D	
8887 *4*	$(0^+$ to $4^+)$		DE	XREF: E(8893). J^{π}: L=(2,3) in (t,p).
8898.10 *11*	(1^-)		D F	
8939 *3*	(2^+)		DEF	J^{π}: 6700γ to 2^+, 5165γ to 1^+, L=(2,3) in (t,p).
8953.4 *5*	$(1,2^+)$		D F	
8959.4 *7*	(5^-)	17 fs *10*	CDE	J^{π}: L=(5) in (t,p).
8979 *3*	$(1,2^+)$		D	
9034.8 *23*	$(0^+$ to $3^+)$		D	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{30}Si Levels (continued)

E(level)[†]	J^{π}[#]	$T_{1/2}$[b]	XREF	Comments
9044.8 *18*	(3,4)	<24 fs	D	
9103.73 *6*	(1^-,2^-)	<24 fs	D F	J^{π}: 2359.6γ to 1^- and 998.9γ to (2^+,3^-).
9106.76 *17*	6^-[@]	24 fs *6*	CD	
9129.8 *20*	(4^+,5^+)	<17 fs	D	
9166.4 *16*	(1^+ to 3^+)	<24 fs	DE	J^{π}: Other: L=3 in (t,p).
9255.2 *20*	(2^+,3^+)		D	
9308.11 *22*	(1 to 3^+)	<24 fs	D F	
9349.3 *17*	(4^-)	<24 fs	D	
9362 *4*	(1,2^+)		D	
9367.2 *4*	6^+[@]	<17 fs	CD	
9405.7 *20*	(1^+ to 4^+)	<24 fs	DE	J^{π}: Other: L=4 in (t,p).
9439 *3*	(1^-)		D	
9474.1 *24*	(2^+ to 4^+)		D	
9505.2 *17*	(5^-)	<17 fs	D	
9575 *3*	(1^+ to 3)		D	
9597.3 *3*	(0^+ to 4^+)		D F	
9604.5 *20*	(2 to 4^+)		D	
9619.74 *13*	(1^-)		D F	
9647.3 *20*	(3^-,4)	<35 fs	D	
9688 *4*	(0 to 3^-)		D	
9725 *3*	(0^+ to 4^+)		D	
9760.5 *20*	(2^+ to 4^+)	<35 fs	D	
9768 *3*	(1,2^+)		D	
9773.7[‡] *5*	6^-[@]	<24 fs	CD	
9792.3 *3*	(1^-)		D F	
9816 *4*	(0^+ to 4^+)		D	
9881.8 *20*	(3,4)		DE	J^{π}: L=4 in (t,p).
9896.6 *20*	(0^+ to 4^+)		D	
9953.9 *16*	(4,5)	<14 fs	D	
9958 *3*	(1,2^+)		D	
10026.6 *23*	(2 to 4^+)		D	
10056.4 *20*	4^+		DE	J^{π}: L=4 in (t,p).
10078.7 *24*	(1^+ to 4^+)		D	
10115.8 *24*	(1^- to 4^+)		D	
10183.8 *23*	(0^+ to 3^+)		D	
10186.7 *17*	(5^-)	19 fs *14*	D	
10202.3 *5*	(1^-)		D F	
10219 *4*	(0^+ to 4^+)		D	
10275.5 *7*	(0^+ to 4^+)		D F	
10286.7 *24*	(4^+,5^+)	<28 fs	D	
10304.4 *18*	(3^-)		D	
10347.8 *20*	(3^+,4)	<24 fs	D	
10354.9 *23*	(0^+ to 4^+)		D	
10396 *3*	(3,5^+)	<24 fs	D	
10420 *4*	(2^+ to 6^+)		D	
10449 *3*	(0 to 3^+)		D	
10464.1 *20*	(3^+,4)	<35 fs	D	
10472 *3*	(1,2^+)		D	
10507.9 *23*	(0^+ to 3^+)		D	
10554.6 *3*	(6^-)	<35 fs	CD	
10581 *4*	(0 to 3^+)		D	
10622 *4*	(0 to 4^+)		D	
10668.2 *21*	(3^-,4^-,5)	<17 fs	D	
10675.4 *12*	(6^+)	12 fs *8*	CDE	J^{π}: L=6 in (t,p).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{30}Si Levels (continued)

E(level)[†]	Jπ[#]	$T_{1/2}$[b]	XREF	Comments
10719.33 *19*	(7⁻)[@]	17 fs *9*	CDe	Jπ: 1613γ to 5⁻, 3681 to 6⁻.
10731.4 *18*	(3⁻,4⁻,5⁻)	<28 fs	De	Jπ: 2628γ to (2⁺,3⁻), L=5 in (t,p) for doublet.
10794.5 *24*	(2 to 4)		D	
10805 *4*	(0⁺ to 4⁺)		D	
10821.6 *18*	(4,5⁺,6⁺)	<24 fs	D	
10835 *4*	(1⁺ to 5⁺)		D	
10865.1 *18*	(3⁻ to 5)	<35 fs	D	
10909 *10*			E	Additional information 1.
10975 *4*	(0⁺ to 4⁺)		D	
10990.0 *17*	(3 to 5)		DE	
11015 *3*	(2⁺ to 4⁺)		D	
11037.5 *24*	(3⁻ to 6⁺)	<52 fs	D	
11073 *4*	(3 to 5)	<35 fs	D	
11082.7 *16*	(4⁻ to 6⁻)	24 fs *9*	CD	Jπ: 2010StZZ (^{18}O,2nγ) proposes J^{π} to be 6⁻ or 7⁻ based on γ-ray feeding. 4040γ to 5⁻.
11090 *4*	(3 to 5)	<35 fs	D	
11205 *3*	(0⁺ to 4⁺)		D	
11209.5 *21*	(4,5⁺)		D	
11248.2 *13*		<24 fs	D	
11268 *3*	(2⁺ to 5⁺)		D	
11321.8 *24*	(2⁺ to 5⁺)		D	
11348 *4*	(2⁺ to 6⁺)		D	
11382 *4*	(0⁺ to 4⁺)		D	
11416.3 *20*	(6⁺,4⁺)	<35 fs	D	
11473.6 *18*	(6⁻,5⁻)		D	
11492.0 *24*	(3⁺ to 6⁺)		D	
11510 *3*	(4 to 5⁺)		D	
11539.4[‡] *8*	7⁻[@]		CD	
11563 *3*	(5,3⁺)	<24 fs	D	
11659.4 *24*	(4 to 6)		D	
11739.5 *20*	(3 to 5)		D	
11783.7 *24*	(4,5⁺)	<35 fs	D	
11842 *4*	(0⁺ to 4⁺)		D	
11879 *4*	(3⁻ to 7⁻)		D	
12014.1 *24*	(4 to 6⁺)		D	
12393.8 *24*			C	
12510 *3*			C	
12714.9 *15*			C	
12832.02 *24*	(8⁻)[a]		C	
13202.8 *5*	(8⁻)[a]		C	
15191.4 *5*	(9⁻)[a]		C	
15528.8 *14*	(9⁻)[a]		C	

† From a least-squares fit to the γ-ray energies. ΔE=4 keV assumed by the evaluator when no uncertainty is given (in 1980Bi14, ((α,p),(α,pγ)), 4 keV uncertainty is quoted for the reported excitation energies). During the least squares fit uncertainties of the γ-rays 3043.2(1), 2168.9(3), 1556.3(1) and 3676.7(2) depopulating the states 5279, 6998, 7043 and 10719 keV, respectively, increased to 0.3, 0.4, 0.3, and 0.4 keV, respectively, to yield less than 3σ deviation.

‡ K^{π}=3⁻ band; with an absolute value of intrinsic quadrupole moment Q_o=350 *+250−70* mb.

\# Assignments are based on L values in (t,p) reaction, the γ-ray linear polarization calculation, measured angular correlation coefficients and recommended upper limits of the calculated transition rates from lifetime and mixing ratio ((α,p),(α,pγ)) – 1980Bi14).

@ Consistent with γ-ray polarization data (1980Si14).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{30}Si Levels (continued)

[&] Assigned by 1971Sy01 based on γ-rays angular correlation and branching ratio measurements.
[a] Assigned by 2010StZZ (^{18}O,2nγ), based on γ-feeding sequence to the lower levels.
[b] From (α,p),(α,pγ), except otherwise noted.

Adopted Levels, Gammas (continued)

γ(^{30}Si)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[b]	δ[b]	α[c]	Comments
2235.322	2+	2235.23[‡] *2*	100[‡]	0	0+	E2		0.000436 *6*	B(E2)(W.u.)=8.5 *11* α(K)=5.65×10^{-6} *8*; α(L)=4.03×10^{-7} *6*; α(M)=2.66×10^{-8} *4*; α(N+..)=0.000429 *6* α(IPF)=0.000429 *6*
3498.49	2+	1263.13[#] *3*	100 *3*	2235.322	2+	M1+E2	+0.18 *5*	2.90×10^{-5} *5*	B(M1)(W.u.)=0.09 *3*; B(E2)(W.u.)=9 *6* α(K)=1.359×10^{-5} *21*; α(L)=9.70×10^{-7} *15*; α(M)=6.39×10^{-8} *10*; α(N+..)=1.438×10^{-5} *24* α(IPF)=1.438×10^{-5} *24* δ: From 1971Sh11 (α,p),(α,pγ).
		3498.33[‡] *5*	98[‡] *3*	0	0+	E2		0.000994 *14*	B(E2)(W.u.)=1.7 *5* α(K)=2.75×10^{-6} *4*; α(L)=1.96×10^{-7} *3*; α(M)=1.292×10^{-8} *18*; α(N+..)=0.000991 *14* α(IPF)=0.000991 *14*
3769.48	1+	1534.12[‡] *4*	100[‡] *3*	2235.322	2+	M1+E2	−0.09 *3*	8.40×10^{-5} *12*	B(M1)(W.u.)=0.091 *23*; B(E2)(W.u.)=1.5 *11* α(K)=9.60×10^{-6} *14*; α(L)=6.85×10^{-7} *10*; α(M)=4.52×10^{-8} *7*; α(N+..)=7.37×10^{-5} *11* α(IPF)=7.37×10^{-5} *11*
		3769.22[‡] *5*	85[‡] *3*	0	0+	M1		0.000949 *14*	B(M1)(W.u.)=0.0052 *14* α(K)=2.37×10^{-6} *4*; α(L)=1.691×10^{-7} *24*; α(M)=1.115×10^{-8} *16*; α(N+..)=0.000947 α(IPF)=0.000947 *14*
3787.72	0+	1552.36[‡] *4*	≈100[‡]	2235.322	2+	E2		0.0001212 *17*	B(E2)(W.u.)≈1.4 α(K)=1.121×10^{-5} *16*; α(L)=8.00×10^{-7} *12*; α(M)=5.27×10^{-8} *8*; α(N+..)=0.0001091 α(IPF)=0.0001091 *16*
4810.31	2+	1040	10 *3*	3769.48	1+				
		1311.80[‡] *14*	89[‡] *7*	3498.49	2+	M1+E2	−0.17 *6*	3.58×10^{-5} *6*	B(M1)(W.u.)=0.036 *7*; B(E2)(W.u.)=2.8 *20* α(K)=1.268×10^{-5} *20*; α(L)=9.06×10^{-7} *14*; α(M)=5.97×10^{-8} *9*; α(N+..)=2.22×10^{-5} *4* α(IPF)=2.22×10^{-5} *4*
		2574.8[‡] *5*	28[‡] *7*	2235.322	2+	M1+E2	−0.52 *11*	0.000513 *11*	B(M1)(W.u.)=0.0012 *4*; B(E2)(W.u.)=0.23 *11* α(K)=4.21×10^{-6} *7*; α(L)=3.00×10^{-7} *5*; α(M)=1.98×10^{-8} *3*; α(N+..)=0.000509 *11* α(IPF)=0.000509 *11*
		4810.0[‡] *3*	100[‡] *7*	0	0+	E2		0.001434 *20*	B(E2)(W.u.)=0.17 *3* α(K)=1.741×10^{-6} *25*; α(L)=1.242×10^{-7} *18*; α(M)=8.18×10^{-9} *12*; α(N+..)=0.001432 α(IPF)=0.001432 *20*

$^{30}_{14}$Si$_{16}$-6

$\gamma(^{30}Si)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[b]	δ[b]	α[c]	Comments
4830.85	3^+	1332.48[‡] *16*	10.1[‡] *12*	3498.49	2^+	D+Q	+0.7 *5*		
		2595.39[‡] *4*	100[‡] *3*	2235.322	2^+	M1+E2	+0.73 *9*	0.000537 *10*	B(M1)(W.u.)=0.0014 *5*; B(E2)(W.u.)=0.51 *17* α(K)=4.20×10^{-6} *7*; α(L)=2.99×10^{-7} *5*; α(M)=1.97×10^{-8} *3*; α(N+..)=0.000532 *10* α(IPF)=0.000532 *10*
5231.38	3^+	400.2[&] *2*	4.5 *15*	4830.85	3^+				
		421.0[‡] *5*	5.3[‡] *15*	4810.31	2^+				
		1732.7[&] *1*	100 *5*	3498.49	2^+	M1+E2	+0.12 *6*	0.0001497 *23*	B(M1)(W.u.)=0.08 *4*; B(E2)(W.u.)=1.8 *+20−18* α(K)=7.82×10^{-6} *12*; α(L)=5.58×10^{-7} *8*; α(M)=3.68×10^{-8} *6*; α(N+..)=0.0001413 *2* α(IPF)=0.0001413 *22*
		2995.0[&] *5*	10.6 *23*	2235.322	2^+				
5279.37	4^+	1782	1.0 *3*	3498.49	2^+				
		3043.2[@] *1*	100.0 *3*	2235.322	2^+	(E2)		0.000808 *12*	B(E2)(W.u.)=4.7 *13* α(K)=3.40×10^{-6} *5*; α(L)=2.42×10^{-7} *4*; α(M)=1.597×10^{-8} *23*; α(N+..)=0.000804 *12* α(IPF)=0.000804 *12*
5372.2	0^+	1602.8[‡] *9*	66[‡] *20*	3769.48	1^+	M1		0.0001049 *15*	B(M1)(W.u.)=0.036 *19* α(K)=8.89×10^{-6} *13*; α(L)=6.35×10^{-7} *9*; α(M)=4.18×10^{-8} *6*; α(N+..)=9.54×10^{-5} *14* α(IPF)=9.54×10^{-5} *14*
		3136.6[‡] *7*	100[‡] *27*	2235.322	2^+	E2		0.000847 *12*	B(E2)(W.u.)=3.4 *17* α(K)=3.24×10^{-6} *5*; α(L)=2.31×10^{-7} *4*; α(M)=1.525×10^{-8} *22*; α(N+..)=0.000843 *12* α(IPF)=0.000843 *12*
5487.50	3^-	1989.02[‡] *7*	96[‡] *5*	3498.49	2^+	(E1+M2)	−0.02 *7*	0.000640 *10*	B(E1)(W.u.)=(0.0010 *3*); B(M2)(W.u.)=(0.5 *+33−5*) α(K)=4.21×10^{-6} *8*; α(L)=3.01×10^{-7} *6*; α(M)=1.98×10^{-8} *4*; α(N+..)=0.000635 *10* α(IPF)=0.000635 *10*
		3252.00[‡] *9*	100[‡] *5*	2235.322	2^+	(E1+M2)	−0.04 *5*	0.001366 *20*	B(E1)(W.u.)=(0.00024 *7*); B(M2)(W.u.)=(0.17 *+42−17*) α(K)=2.18×10^{-6} *4*; α(L)=1.557×10^{-7} *24*; α(M)=1.026×10^{-8} *16*; α(N+..)=0.001363 α(IPF)=0.001363 *20*
5614.04	2^+	783	6 *2*	4830.85	3^+	M1+E2	+0.20 *11*	3.65×10^{-5} *14*	B(M1)(W.u.)>0.066 α(K)=3.39×10^{-5} *13*; α(L)=2.43×10^{-6} *10*; α(M)=1.60×10^{-7} *7*
		805	2 *1*	4810.31	2^+				

$^{30}_{14}Si_{16}$-7

$\gamma(^{30}Si)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[b]	δ[b]	α[c]	Comments
5614.04	2^+	1844.40[‡] 16	100[‡] 8	3769.48	1^+	M1+E2	+0.11 5	0.000191 3	B(M1)(W.u.)>0.090; B(E2)(W.u.)>0.15 α(K)=7.04×10^{-6} 10; α(L)=5.03×10^{-7} 7; α(M)=3.31×10^{-8} 5; α(N+..)=0.000183 3 α(IPF)=0.000183 3
		3378.68[‡] 25	73[‡]	2235.322	2^+				
5950.73	4^+	671	0.5 2	5279.37	4^+				
		720	0.3 1	5231.38	3^+				
		1120	1.7 4	4830.85	3^+				
		2452.6[@] 13	5 3	3498.49	2^+	(E2)		0.000540 8	B(E2)(W.u.)=4 3 α(K)=4.82×10^{-6} 7; α(L)=3.44×10^{-7} 5; α(M)=2.27×10^{-8} 4; α(N+..)=0.000535 8 α(IPF)=0.000535 8
		3714.9[@] 2	100 3	2235.322	2^+	(E2)		0.001074 15	B(E2)(W.u.)=9 5 α(K)=2.51×10^{-6} 4; α(L)=1.79×10^{-7} 3; α(M)=1.181×10^{-8} 17; α(N+..)=0.001071 15 α(IPF)=0.001071 15
6503.41	4^-	551.9[a] 11	1.11[a] 18	5950.73	4^+				
		1016.0[a] 1	12.9[a] 9	5487.50	3^-	D+Q	−0.23 2		
		1271.9[a] 2	100[a] 4	5231.38	3^+	(E1)		0.0001159 17	B(E1)(W.u.)=0.0013 5 α(K)=8.50×10^{-6} 12; α(L)=6.07×10^{-7} 9; α(M)=4.00×10^{-8} 6; α(N+..)=0.0001068 1 α(IPF)=0.0001068 15
		1672.4[a] 1	61.1[a] 18	4830.85	3^+	(E1)		0.000409 6	B(E1)(W.u.)=0.00048 18 α(K)=5.45×10^{-6} 8; α(L)=3.89×10^{-7} 6; α(M)=2.56×10^{-8} 4; α(N+..)=0.000403 6 α(IPF)=0.000403 6
6537.5	2^+	923	13 4	5614.04	2^+				
		1306	16 7	5231.38	3^+				
		2768	35 9	3769.48	1^+				
		3039	100 7	3498.49	2^+				
		4302	27 7	2235.322	2^+				
		6537	100	0	0^+	E2			B(E2)(W.u.)>0.17 α(N+..)=0.00186 3 α(IPF)=0.00186 3
6641.21	2^-	1153.61[‡] 13	15.6[‡] 12	5487.50	3^-				
		1810.42[‡] 22	15.6[‡] 12	4830.85	3^+				
		1830.6[‡] 4	7.8[‡] 12	4810.31	2^+				
		2871.6[‡] 3	11.6[‡] 14	3769.48	1^+				
		4405.56[‡] 8	100[‡] 3	2235.322	2^+				

$^{30}_{14}Si_{16}$-8

$\gamma(^{30}Si)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[b]	δ[b]	α[c]	Comments
6641.21	2^-	6640.7[‡] *9*	4.9[‡] *14*	0	0^+				
6642	0^+	4406	100	2235.322	2^+				
6744.06	1^-	1933.9[‡] *5*	0.60[‡] *11*	4810.31	2^+				
		2956.25[‡] *12*	3.55[‡] *19*	3787.72	0^+				
		4508.64[‡] *17*	2.16[‡] *13*	2235.322	2^+	(E1)		0.00186 *3*	B(E1)(W.u.)>1.1×10^{-5} α(K)=1.468×10^{-6} *21*; α(L)=1.047×10^{-7} *15*; α(M)=6.90×10^{-9} *10*; α(N+..)=0.00186 *3* α(IPF)=0.00186 *3*
		6743.22[‡] *4*	100[‡] *3*	0	0^+	E1			B(E1)(W.u.)>0.00015 α(N+..)=0.00246 *4* α(IPF)=0.00246 *4*
6865.2	3^+	914	6 *2*	5950.73	4^+	D+Q	−0.03 *10*		
		1251	4 *2*	5614.04	2^+				
		1585	4 *2*	5279.37	4^+				
		1634	4 *2*	5231.38	3^+				
		2034	73 *12*	4830.85	3^+	D+Q	+1.2 *5*		
		2056	12 *4*	4810.31	2^+				
		4630	100 *16*	2235.322	2^+	D+Q	−0.15 *12*		
6914.79	(2^+)	1301	4.2 *22*	5614.04	2^+				
		3146	20 *7*	3769.48	1^+				
		3415.7[‡] *7*	31[‡] *8*	3498.49	2^+				
		4679.2[‡] *3*	100[‡] *8*	2235.322	2^+	M1+E2	−0.63 *14*	0.001286 *23*	B(M1)(W.u.)>0.0024; B(E2)(W.u.)>0.16 α(K)=1.77×10^{-6} *3*; α(L)=1.266×10^{-7} *18*; α(M)=8.34×10^{-9} *12*; α(N+..)=0.001284 *2* α(IPF)=0.001284 *23*
		6913.7[‡] *5*	78[‡] *12*	0	0^+	E2			B(E2)(W.u.)>0.090 α(N+..)=0.00194 *3* α(IPF)=0.00194 *3*
6998.90	5^+	1048.2[@] *2*	18 *3*	5950.73	4^+	D+Q	+0.12 *2*		
		1719.4[@] *1*	100 *7*	5279.37	4^+	D+Q	+0.25 *5*		
		1767.7[a] *10*	7.5[a] *15*	5231.38	3^+				
		2168.9[@] *3*	35 *5*	4830.85	3^+	Q			
7043.21	5^-	539.5[@] *3*	96 *9*	6503.41	4^-	M1+E2	+0.04 *3*	7.56×10^{-5} *12*	B(M1)(W.u.)=0.056 *15*; B(E2)(W.u.)=1.4 *+22−14* α(K)=7.03×10^{-5} *11*; α(L)=5.03×10^{-6} *8*; α(M)=3.31×10^{-7} *5*
		1092.1[@] *2*	100 *8*	5950.73	4^+	D+Q	−0.02 *1*		
		1556.3[@] *1*	32 *4*	5487.50	3^-	Q			

$^{30}_{14}Si_{16}$-9

Adopted Levels, Gammas (continued)

$\gamma(^{30}\mathrm{Si})$ (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[b]	δ[b]	α[c]	Comments
7043.21	5^-	1763.8[@] 1	62 6	5279.37	4^+	D+Q	+0.06 3		
7079.4	$(1^+,2^-,3^+)$	1848	<8	5231.38	3^+				
		2270	45 8	4810.31	2^+	D+Q	+0.15 1		
		3581	22 5	3498.49	2^+				
		4844	100 17	2235.322	2^+	D+Q	−0.00 6		
7223.2	4^+	720	<2	6503.41	4^-				
		1274	24 7	5950.73	4^+				
		1738	<9	5487.50	3^-				
		1943.0[@] 11	100 7	5279.37	4^+	M1+E2	+0.3 4	0.000235 17	B(M1)(W.u.)>0.074 α(K)=6.51×10^{-6} 22; α(L)=4.65×10^{-7} 16; α(M)=3.06×10^{-8} 11; α(N+..)=0.000228 1 α(IPF)=0.000228 17
		1991.5[@] 4	30 7	5231.38	3^+	M1+E2	+0.6 2	0.000268 10	B(M1)(W.u.)>0.017; B(E2)(W.u.)>4.5 α(K)=6.39×10^{-6} 13; α(L)=4.56×10^{-7} 10; α(M)=3.00×10^{-8} 6; α(N+..)=0.000261 10 α(IPF)=0.000261 10 I_γ: 63 15 in (^{18}O,2nγ).
		2394	23 4	4830.85	3^+	D+Q	+0.10 3		
		3725.5[@] 10	25 5	3498.49	2^+				I_γ: 69 22 in (^{18}O,2nγ).
7255.8	2^+	1768	31 7	5487.50	3^-				
		2024	24 7	5231.38	3^+				
		2424	17 7	4830.85	3^+				
		2446		4810.31	2^+	D+Q	−1.5 14		
		3757	66 14	3498.49	2^+	D+Q	−0.17 15		
		5020	100 10	2235.322	2^+	M1+E2	+3.7 15	0.00148 3	B(M1)(W.u.)>2.7×10^{-5}; B(E2)(W.u.)>0.27 α(K)=1.639×10^{-6} 24; α(L)=1.169×10^{-7} 17; α(M)=7.71×10^{-9} 11; α(N+..)=0.00148 3 α(IPF)=0.00148 3
		7256	64 9	0	0^+	E2			B(E2)(W.u.)>0.031 α(N+..)=0.00200 3 α(IPF)=0.00200 3
7441	0^+	3671	100	3769.48	1^+				
7507.84	(2^-)	1893.6[‡] 5	1.01[‡] 21	5614.04	2^+				
		2020.33[‡] 23	8.0[‡] 3	5487.50	3^-				
		2276.22[‡] 8	7.9[‡] 4	5231.38	3^+				
		2676.87[‡] 6	13.8[‡] 6	4830.85	3^+				
		3738.20[‡] 18	10.8[‡] 5	3769.48	1^+				
		4009.09[‡] 21	5.9[‡] 3	3498.49	2^+				

$^{30}_{14}\mathrm{Si}_{16}$-10

$\gamma(^{30}Si)$ (continued)

E_i(level)	J_i^π	E_γ †	I_γ †	E_f	J_f^π	Mult. b	δ b	Comments
7507.84	(2⁻)	5272.09‡ *7*	100‡ *3*	2235.322	2⁺			
		7507.4‡ *8*	0.9‡ *2*	0	0⁺			
7612.4	(4⁻)	1108	7 *2*	6503.41	4⁻			
		2126	98 *12*	5487.50	3⁻	D+Q	+0.25 *3*	
		2333	17 *5*	5279.37	4⁺			
		2382	17 *5*	5231.38	3⁺			
		2782	100 *10*	4830.85	3⁺	D+Q	−0.00 *5*	
7623.9	(2⁺)	4125	100 *16*	3498.49	2⁺			
		5388	61 *11*	2235.322	2⁺	D+Q	+0.38 *6*	
		7623	14 *5*	0	0⁺	(E2)		B(E2)(W.u.)>0.019 α(N+..)=0.00206 *3* α(IPF)=0.00206 *3*
7634		3846	43 *14*	3787.72	0⁺			
		3865	100 *14*	3769.48	1⁺			
7667.4	(1⁺,2⁺)	4170	23 *5*	3498.49	2⁺			
		5431.5‡ *6*	100‡ *10*	2235.322	2⁺			
		7668	12 *4*	0	0⁺			
7809.7	4⁺	731	4 *2*	7079.4	(1⁺,2⁻,3⁺)			
		945	12 *4*	6865.2	3⁺			
		1859	46 *8*	5950.73	4⁺			
		2530	100 *10*	5279.37	4⁺			
		2579	18 *4*	5231.38	3⁺			
		2979	20 *4*	4830.85	3⁺			
7911.8	2⁺	2424	11 *4*	5487.50	3⁻			
		4142	40 *9*	3769.48	1⁺			
		4413	25 *7*	3498.49	2⁺			
		5676	100	2235.322	2⁺	D+Q	+0.7 *3*	
8104.8	(2⁺,3⁻)	1188	3 *2*	6914.79	(2⁺)			
		2489	5 *3*	5614.04	2⁺			
		2616	9 *3*	5487.50	3⁻			
		2872	14 *5*	5231.38	3⁺			
		3294.9‡ *9*	29‡ *9*	4810.31	2⁺			
		4334	6 *3*	3769.48	1⁺			
		5868.8 *7*	100 *19*	2235.322	2⁺			
8156.1	(1⁻ to 4⁺)	2668	29 *10*	5487.50	3⁻			
		4657	43 *14*	3498.49	2⁺			
		5920.2‡ *7*	100‡ *14*	2235.322	2⁺			
8163.22	1⁻	4375.18‡ *15*	41.5‡ *17*	3787.72	0⁺			
		4393.43‡ *23*	24.1‡ *14*	3769.48	1⁺			

$^{30}_{14}Si_{16}$-11

Adopted Levels, Gammas (continued)

$\gamma(^{30}Si)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[b]	δ[b]	Comments
8163.22	1^-	4664.36[‡] *12*	38.7[‡] *14*	3498.49	2^+			
		5927.24[‡] *15*	45.8[‡] *22*	2235.322	2^+			
		8162.01[‡] *11*	100[‡] *3*	0	0^+			
8190.6	(2^+)	2576	18 *6*	5614.04	2^+			
		4692 *3*	100 *6*	3498.49	2^+			
8194.0	5^-	970.3[@] *7*	34 *3*	7223.2	4^+	D+Q	−0.00 *3*	
		1151	6 *1*	7043.21	5^-	D+Q	−0.15 *3*	
		1195	6 *1*	6998.90	5^+			
		1690.2[@] *5*	100 *6*	6503.41	4^-			
		2242.7[@] *18*	77 *6*	5950.73	4^+			
		2707.5[@] *16*	43 *9*	5487.50	3^-			I_γ: 90 *19* in (^{18}O,2nγ).
		2916	20 *3*	5279.37	4^+	D+Q	+0.06 *3*	
8289.5	(1 to 3)	2802	9 *4*	5487.50	3^-			
		4790	16 *5*	3498.49	2^+			
		6054	100 *7*	2235.322	2^+			
8332.7		1109	13 *4*	7223.2	4^+			
		1254	30 *7*	7079.4	$(1^+,2^-,3^+)$			
		1332	7 *4*	6998.90	5^+			
		2720	27 *7*	5614.04	2^+			
		2845	20 *4*	5487.50	3^-			
		3053	37 *10*	5279.37	4^+			
		3502	100 *17*	4830.85	3^+			
		3523	13 *7*	4810.31	2^+			
		6097	87 *14*	2235.322	2^+			
8441.2	3^-	2954	16 *4*	5487.50	3^-			
		4942	100 *11*	3498.49	2^+			
		6205	63 *11*	2235.322	2^+			
8536.4	$(3^+,4^+)$	1535	39 *7*	6998.90	5^+			
		3306	23 *5*	5231.38	3^+			
		3727	100 *14*	4810.31	2^+			
		5037	16 *5*	3498.49	2^+			
		6300	50 *9*	2235.322	2^+			
8554	3^-	1911	6.3 *25*	6642	0^+			
		3066	100 *7*	5487.50	3^-			
		3744	19 *7*	4810.31	2^+			
8595.9	(4^-)	1372	16 *5*	7223.2	4^+	D+Q	−0.13 *13*	
		2645	24 *5*	5950.73	4^+			
		3108	82 *12*	5487.50	3^-	D+Q	+0.08 *3*	
		3365	100 *12*	5231.38	3^+	D+Q	−0.01 *4*	
8639.4	$(1^+$ to $4^+)$	1774	25 *13*	6865.2	3^+			

$^{30}_{14}Si_{16}$-12

Adopted Levels, Gammas (continued)

$\gamma(^{30}$Si) (continued)

E_i(level)	J^{π}_i	E_γ[†]	I_γ[†]	E_f	J^{π}_f	Mult.[b]	δ[b]
8639.4	(1^+ to 4^+)	3026	25 *13*	5614.04	2^+		
		5140	100 *25*	3498.49	2^+		
		6403	100 *25*	2235.322	2^+		
8672.2	(1^-,2^+)	3185	100 *20*	5487.50	3^-		
		4902	53 *14*	3769.48	1^+		
		5173	87 *17*	3498.49	2^+		
		6436	77 *17*	2235.322	2^+		
		8671	20 *10*	0	0^+		
8683.7	2^+	1460	11 *4*	7223.2	4^+		
		1604	21 *8*	7079.4	(1^+,2^-,3^+)		
		2733	54 *15*	5950.73	4^+		
		3070	21 *8*	5614.04	2^+		
		3403	100 *18*	5279.37	4^+		
		3453	50 *11*	5231.38	3^+		
		3852	43 *11*	4830.85	3^+		
		3874	57 *15*	4810.31	2^+		
8734	(0^+ to 3^+)	5235	100 *12*	3498.49	2^+		
		6498	47 *12*	2235.322	2^+		
8799	(1,2^+)	5029	100 *30*	3769.48	1^+		
		8797	100 *30*	0	0^+		
8887	(0^+ to 4^+)	6651	100	2235.322	2^+		
8898.10	(1^-)	1390.3[‡] *5*	3.7[‡] *11*	7507.84	(2^-)		
		2154.3[‡] *6*	7.1[‡] *14*	6744.06	1^-		
		2256.7[‡] *4*	12.8[‡] *20*	6641.21	2^-		
		3283.8[‡] *3*	22[‡] *3*	5614.04	2^+		
		4087.6[‡] *5*	20.5[‡] *20*	4810.31	2^+		
		5128.18[‡] *17*	100[‡] *4*	3769.48	1^+		
		5398.8[‡] *4*	25[‡] *3*	3498.49	2^+		
		6662.00[‡] *25*	64[‡] *3*	2235.322	2^+		
		8896.7[‡] *3*	31[‡] *3*	0	0^+		
8939	(2^+)	5169	100 *40*	3769.48	1^+		
		6703	100 *40*	2235.322	2^+		
8953.4	(1,2^+)	6717.3[‡] *8*	92[‡] *6*	2235.322	2^+		
		8951.9[‡] *5*	100[‡] *6*	0	0^+		
8959.4	(5^-)	766	11 *4*	8194.0	5^-	D+Q	−0.04 *3*
		1152	5.6 *19*	7809.7	4^+		
		1349	30 *4*	7612.4	(4^-)	D+Q	+0.22 *5*
		1915.6[@] *7*	93 *12*	7043.21	5^-	D+Q	−0.03 *13*

From ENSDF

$^{30}_{14}$Si$_{16}$-13

Adopted Levels, Gammas (continued)

$\gamma(^{30}Si)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[b]	δ[b]
8959.4	(5⁻)	1961	19 4	6998.90	5⁺		
		2459	52 8	6503.41	4⁻	D+Q	−0.13 3
		3012	15 4	5950.73	4⁺		
		3475	48 8	5487.50	3⁻		
		3682	100 12	5279.37	4⁺	D+Q	−0.02 3
8979	(1,2⁺)	6743	100 40	2235.322	2⁺		
		8978	100 40	0	0⁺		
9034.8	(0⁺ to 3⁺)	5265	100 20	3769.48	1⁺		
		5536	60 16	3498.49	2⁺		
		9033	40 12	0	0⁺		
9044.8	(3,4)	2541	48 17	6503.41	4⁻		
		3094	65 13	5950.73	4⁺		
		3557	100 17	5487.50	3⁻		
		3814	29 10	5231.38	3⁺		
		4213	81 17	4830.85	3⁺		
9103.73	(1⁻,2⁻)	998.9 3	7.2 8	8104.8	(2⁺,3⁻)		
		2359.57 4	100.0 8	6744.06	1⁻		
9106.76	6⁻	914.0[@] 13	2.6 6	8194.0	5⁻		
		2063.4[@] 1	100.0 6	7043.21	5⁻	D+Q	+0.35 4
9129.8	(4⁺,5⁺)	1907	43 9	7223.2	4⁺		
		2129	100 11	6998.90	5⁺		
		3180	62 11	5950.73	4⁺		
		4299	65 9	4830.85	3⁺		
9166.4	(1⁺ to 3⁺)	2301	40 12	6865.2	3⁺		
		2629	40 12	6537.5	2⁺		
		4335	100 20	4830.85	3⁺		
		4357	40 20	4810.31	2⁺		
		5396	80 20	3769.48	1⁺		
		5667	20 12	3498.49	2⁺		
		6930	80 24	2235.322	2⁺		
9255.2	(2⁺,3⁺)	3641	24 6	5614.04	2⁺		
		4024	48 6	5231.38	3⁺		
		4445	13 4	4810.31	2⁺		
		7018	100 10	2235.322	2⁺		
9308.11	(1 to 3⁺)	2667.0[‡] 6	16[‡] 4	6641.21	2⁻		
		5538.05[‡] 24	100[‡] 7	3769.48	1⁺		
		7071.8[‡] 7	19[‡] 4	2235.322	2⁺		
9349.3	(4⁻)	753	13 5	8595.9	(4⁻)		
		1736	63 25	7612.4	(4⁻)		
		2270	10 5	7079.4	(1⁺,2⁻,3⁺)		

$\gamma(^{30}Si)$ (continued)

E_i(level)	J_i^π	E_γ[†]	I_γ[†]	E_f	J_f^π	Mult.[b]	δ[b]
9349.3	(4$^-$)	2846	40 15	6503.41	4$^-$		
		3862	25 8	5487.50	3$^-$		
		4118	100 25	5231.38	3$^+$		
9362	(1,2$^+$)	9360	100	0	0$^+$		
9367.2	6$^+$	2368.0[@] 4	83 10	6998.90	5$^+$	D+Q	+0.24 3
		3418.8[@] 14	55 8	5950.73	4$^+$	Q	
		4088.7[@] 20	100 12	5279.37	4$^+$	Q	
9405.7	(1$^+$ to 4$^+$)	4174	66 11	5231.38	3$^+$		
		4574	100 15	4830.85	3$^+$		
		4596	21 9	4810.31	2$^+$		
		5906	26 7	3498.49	2$^+$		
9439	(1$^-$)	5669	100 40	3769.48	1$^+$		
		9438	100 40	0	0$^+$		
9474.1	(2$^+$ to 4$^+$)	2395	50 20	7079.4	(1$^+$,2$^-$,3$^+$)		
		4194	100 20	5279.37	4$^+$		
		7238	50 10	2235.322	2$^+$		
9505.2	(5$^-$)	2463	6 3	7043.21	5$^-$		
		2505	17 3	6998.90	5$^+$	D+Q	−0.00 3
		3003	6 3	6503.41	4$^-$		
		4019	14 5	5487.50	3$^-$		
		4226	100 8	5279.37	4$^+$	D+Q	−0.00 7
9575	(1$^+$ to 3)	4744	54 16	4830.85	3$^+$		
		6076	100 16	3498.49	2$^+$		
9597.3	(0$^+$ to 4$^+$)	4766.7[‡] 7	19[‡] 5	4830.85	3$^+$		
		4786.5[‡] 8	16[‡] 5	4810.31	2$^+$		
		6098.0[‡] 3	100[‡] 8	3498.49	2$^+$		
		7360	43 11	2235.322	2$^+$		
9604.5	(2 to 4$^+$)	4117	43 12	5487.50	3$^-$		
		4373	100 18	5231.38	3$^+$		
		6105	71 15	3498.49	2$^+$		
		7368	71 15	2235.322	2$^+$		
9619.74	(1$^-$)	9618.08 13	100	0	0$^+$		
9647.3	(3$^-$,4)	2604	38 8	7043.21	5$^-$		
		4160	29 6	5487.50	3$^-$		
		4367	25 8	5279.37	4$^+$		
		4816	100 12	4830.85	3$^+$		
9688	(0 to 3$^-$)	2944	100	6744.06	1$^-$		
9725	(0$^+$ to 4$^+$)	6226	100 13	3498.49	2$^+$		
		7489	54 13	2235.322	2$^+$		
9760.5	(2$^+$ to 4$^+$)	3810	100 14	5950.73	4$^+$		

$^{30}_{14}Si_{16}$-15

Adopted Levels, Gammas (continued)

$\gamma(^{30}Si)$ (continued)

E_i(level)	J_i^{π}	E_γ[†]	I_γ[†]	E_f	J_f^{π}	Mult.[b]	δ[b]	Comments
9760.5	(2$^+$ to 4$^+$)	4929	78 *12*	4830.85	3$^+$			
		6261	22 *7*	3498.49	2$^+$			
		7524	22 *7*	2235.322	2$^+$			
9768	(1,2$^+$)	7532	67 *17*	2235.322	2$^+$			
		9766	100 *17*	0	0$^+$			
9773.7	6$^-$	1578.7[@] *6*	79 *6*	8194.0	5$^-$	D+Q	+0.26 *5*	
		2730.5[@] *8*	100 *9*	7043.21	5$^-$	D+Q	+0.10 *3*	
		2776.1[@] *16*	30 *6*	6998.90	5$^+$	D+Q	−0.00 *5*	
		3271.6[@] *10*	94 *9*	6503.41	4$^-$	Q		I_γ: Strongest in (^{18}O,2nγ).
9792.3	(1$^-$)	6004.4[‡] *9*	7[‡] *3*	3787.72	0$^+$			
		9790.5[‡] *3*	100[‡] *5*	0	0$^+$			
9816	(0$^+$ to 4$^+$)	6317	100	3498.49	2$^+$			
9881.8	(3,4)	3378	51 *9*	6503.41	4$^-$			
		3931	89 *11*	5950.73	4$^+$			
		4394	30 *6*	5487.50	3$^-$			
		4650	100 *11*	5231.38	3$^+$			
9896.6	(0$^+$ to 4$^+$)	2981	83 *24*	6914.79	(2$^+$)			
		5087	67 *17*	4810.31	2$^+$			
		6397	100 *20*	3498.49	2$^+$			
		7660	83 *17*	2235.322	2$^+$			
9953.9	(4,5)	1417	13 *4*	8536.4	(3$^+$,4$^+$)			
		2144	100 *8*	7809.7	4$^+$			
		2953	25 *4*	6998.90	5$^+$			
		3089	21 *4*	6865.2	3$^+$			
		4004	11.5 *20*	5950.73	4$^+$			
		4674	13 *4*	5279.37	4$^+$			
		4723	7.7 *20*	5231.38	3$^+$			
9958	(1,2$^+$)	7721	100 *11*	2235.322	2$^+$			
		9956	54 *11*	0	0$^+$			
10026.6	(2 to 4$^+$)	4539	30 *6*	5487.50	3$^-$			
		4795	70 *12*	5231.38	3$^+$			
		6527	100 *14*	3498.49	2$^+$			
10056.4	4$^+$	3553	50 *10*	6503.41	4$^-$			
		4106	100 *20*	5950.73	4$^+$			
		4776	100 *20*	5279.37	4$^+$			
		5225	83 *17*	4830.85	3$^+$			
10078.7	(1$^+$ to 4$^+$)	3163	60 *10*	6914.79	(2$^+$)			
		5247	40 *8*	4830.85	3$^+$			
		5269	100 *12*	4810.31	2$^+$			
10115.8	(1$^-$ to 4$^+$)	4165	75 *13*	5950.73	4$^+$			

$^{30}_{14}Si_{16}$-16

$\gamma(^{30}Si)$ (continued)

E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	Mult.[b]	δ[b]
10115.8	(1^- to 4^+)	4628	100 15	5487.50	3^-		
		7879	75 13	2235.322	2^+		
10183.8	(0^+ to 3^+)	5374	56 12	4810.31	2^+		
		6413	100 18	3769.48	1^+		
		7947	67 14	2235.322	2^+		
10186.7	(5^-)	1991	15 8	8194.0	5^-		
		2377	50 10	7809.7	4^+	D+Q	−0.02 8
		3144	100 15	7043.21	5^-	D+Q	−0.26 6
		3186	23 5	6998.90	5^+		
		3684	63 10	6503.41	4^-	D+Q	−0.10 5
10202.3	(1^-)	6431.7 9	60 14	3769.48	1^+		
		7965.8 9	25 8	2235.322	2^+		
		10200.6 6	100 8	0	0^+		
10219	(0^+ to 4^+)	5408	100	4810.31	2^+		
10275.5	(0^+ to 4^+)	5465	20 4	4810.31	2^+		
		6487.0[‡] 7	[‡]	3787.72	0^+		
		6776	13 4	3498.49	2^+		
		8040	100 5	2235.322	2^+		
10286.7	(4^+,5^+)	3286	100 8	6998.90	5^+		
		4337	30 4	5950.73	4^+		
		5007	70 8	5279.37	4^+		
10304.4	(3^-)	2691	100 18	7612.4	(4^-)		
		3801	83 14	6503.41	4^-		
		4691	52 11	5614.04	2^+		
		5024	59 11	5279.37	4^+		
		6805	52 11	3498.49	2^+		
10347.8	(3^+,4)	3347	100 14	6998.90	5^+		
		4861	30 6	5487.50	3^-		
		5068	40 10	5279.37	4^+		
		5517	30 6	4830.85	3^+		
10354.9	(0^+ to 4^+)	5545	100 20	4810.31	2^+		
		6855	75 15	3498.49	2^+		
		8118	75 15	2235.322	2^+		
10396	(3,5^+)	5116	100 8	5279.37	4^+		
		5165	25 8	5231.38	3^+		
10420	(2^+ to 6^+)	4469	100	5950.73	4^+		
10449	(0 to 3^+)	6679	67 17	3769.48	1^+		
		8213	100 17	2235.322	2^+		
10464.1	(3^+,4)	3463	29 15	6998.90	5^+		
		4514	100 15	5950.73	4^+		
		5233	71 15	5231.38	3^+		

Adopted Levels, Gammas (continued)

$\gamma(^{30}Si)$ (continued)

E_i(level)	J^{π}_i	E_{γ}[†]	I_{γ}[†]	E_f	J^{π}_f	Mult.[b]	δ[b]	α[c]	Comments
10464.1	$(3^+,4)$	5633	86 18	4830.85	3^+				
10472	$(1,2^+)$	6972	100 30	3498.49	2^+				
		10470	100 30	0	0^+				
10507.9	$(0^+$ to $3^+)$	5698	36 9	4810.31	2^+				
		6737	45 11	3769.48	1^+				
		8271	100 15	2235.322	2^+				
10554.6	(6^-)	1053	30.2 24	9505.2	(5^-)				
		1447.9[@] 5	44 5	9106.76	6^-	D+Q	−0.10 5		
		1597	7.0 24	8959.4	(5^-)				
		3511.0[@] 3	100 10	7043.21	5^-	D+Q	+0.27 2		
		3559	42 5	6998.90	5^+	D+Q	−0.04 8		
		4057	9.3 24	6503.41	4^-				
10581	$(0$ to $3^+)$	6811	100	3769.48	1^+				
10622	$(0$ to $4^+)$	7123	100	3498.49	2^+				
10668.2	$(3^-,4^-,5)$	2858	7 3	7809.7	4^+				
		3625	14 5	7043.21	5^-				
		4165	100 8	6503.41	4^-				
		5388	21 5	5279.37	4^+				
10675.4	(6^+)	3631.4[@] 12	100 4	7043.21	5^-	(E1)		0.001538 22	B(E1)(W.u.)=0.0010 7 α(K)=1.90×10^{-6} 3; α(L)=1.355×10^{-7} 19; α(M)=8.93×10^{-9} 13; α(N+..)=0.001536 2 α(IPF)=0.001536 22
		4175	12.5 25	6503.41	4^-				
		5398	12.5 25	5279.37	4^+				
10719.33	(7^-)	1353.2[a] 13	7.2[a] 7	9367.2	6^+				
		1612.5[@] 1	100 6	9106.76	6^-	D+Q	+0.27 3		
		3676.7[@] 2	92 6	7043.21	5^-				I_{γ}: Strongest in (^{18}O,2nγ).
10731.4	$(3^-,4^-,5^-)$	2535	20 10	8194.0	5^-				
		2628	20 6	8104.8	$(2^+,3^-)$				
		4228	100 10	6503.41	4^-				
		4781	30 6	5950.73	4^+				
		5451	30 6	5279.37	4^+				
10794.5	(2 to 4)	3929	100 25	6865.2	3^+				
		5306	50 13	5487.50	3^-				
		5563	100 25	5231.38	3^+				
10805	$(0^+$ to $4^+)$	8568	100	2235.322	2^+				
10821.6	$(4,5^+,6^+)$	2626	22 7	8194.0	5^-				
		3599	11 5	7223.2	4^+				
		3821	11 5	6998.90	5^+				
		4872	78 18	5950.73	4^+				

$^{30}_{14}Si_{16}$-18

γ(^{30}Si) (continued)

E$_i$(level)	J$^\pi_i$	E$_\gamma$†	I$_\gamma$†	E$_f$	J$^\pi_f$
10821.6	(4,5$^+$,6$^+$)	5542	100 20	5279.37	4$^+$
10835	(1$^+$ to 5$^+$)	5603	100	5231.38	3$^+$
10865.1	(3$^-$ to 5)	2669	18 6	8194.0	5$^-$
		3822	18 4	7043.21	5$^-$
		4362	27 6	6503.41	4$^-$
		4915	18 4	5950.73	4$^+$
		5585	100 9	5279.37	4$^+$
10975	(0$^+$ to 4$^+$)	8738	100	2235.322	2$^+$
10990.0	(3 to 5)	2453	100 25	8536.4	(3$^+$,4$^+$)
		3989	100 50	6998.90	5$^+$
		4487	75 15	6503.41	4$^-$
		5040	100 25	5950.73	4$^+$
		5710	75 15	5279.37	4$^+$
		6159	50 10	4830.85	3$^+$
11015	(2$^+$ to 4$^+$)	5064	100 34	5950.73	4$^+$
		5401	67 34	5614.04	2$^+$
11037.5	(3$^-$ to 6$^+$)	3994	100 35	7043.21	5$^-$
		5087	75 25	5950.73	4$^+$
		5757	75 25	5279.37	4$^+$
11073	(3 to 5)	5122	100	5950.73	4$^+$
11082.7	(4$^-$ to 6$^-$)	1972	17 5	9106.76	6$^-$
		2487	25 5	8595.9	(4$^-$)
		3470	17 9	7612.4	(4$^-$)
		4040.0@ 22	100 10	7043.21	5$^-$
		4580	8 4	6503.41	4$^-$
11090	(3 to 5)	5810	100	5279.37	4$^+$
11205	(0$^+$ to 4$^+$)	7705	54 16	3498.49	2$^+$
		8968	100 16	2235.322	2$^+$
11209.5	(4,5$^+$)	1021	43 15	10186.7	(5$^-$)
		3400	43 15	7809.7	4$^+$
		5259	100 29	5950.73	4$^+$
		5978	100 29	5231.38	3$^+$
11248.2		1472	17 7	9773.7	6$^-$
		2139	10 7	9106.76	6$^-$
		2286	23 7	8959.4	(5$^-$)
		2917	13 7	8332.7	
		3053	10 7	8194.0	5$^-$
		3637	67 7	7612.4	(4$^-$)
		4206	17 7	7043.21	5$^-$
		4249	100 17	6998.90	5$^+$
		4746	17 7	6503.41	4$^-$

$\gamma(^{30}Si)$ (continued)

E_i(level)	J_i^π	E_γ†	I_γ†	E_f	J_f^π	Comments
11248.2		5762	33 *10*	5487.50	3^-	
		5969	27 *7*	5279.37	4^+	
11268	(2^+ to 5^+)	5988	54 *12*	5279.37	4^+	
		6437	100 *12*	4830.85	3^+	
11321.8	(2^+ to 5^+)	3512	88 *15*	7809.7	4^+	
		4097	100 *20*	7223.2	4^+	
		6091	63 *10*	5231.38	3^+	
11348	(2^+ to 6^+)	6068	100	5279.37	4^+	
11382	(0^+ to 4^+)	9145	100	2235.322	2^+	
11416.3	(6^+,4^+)	4192	21 *4*	7223.2	4^+	
		4416	28 *4*	6998.90	5^+	
		5466	100 *9*	5950.73	4^+	
		6137	26 *4*	5279.37	4^+	
11473.6	(6^-,5^-)	916	36 *6*	10554.6	(6^-)	
		1700	39 *9*	9773.7	6^-	
		2366	67 *15*	9106.76	6^-	
		4432	100 *12*	7043.21	5^-	
		4476	61 *9*	6998.90	5^+	
11492.0	(3^+ to 6^+)	4268	78 *11*	7223.2	4^+	
		4492	100 *22*	6998.90	5^+	
		6213	44 *9*	5279.37	4^+	
11510	(4 to 5^+)	2401	100 *17*	9106.76	6^-	
		6232	67 *17*	5279.37	4^+	
11539.4	7^-	1767	42 *6*	9773.7	6^-	
		2173	42 *6*	9367.2	6^+	
		2431.8@ *11*	86 *6*	9106.76	6^-	I_γ: 35 *6* in (^{18}O,2nγ).
		3345.7@ *13*	100 *8*	8194.0	5^-	
		4499	8 *3*	7043.21	5^-	
11563	(5,3^+)	4339	100 *3*	7223.2	4^+	
		6284	11 *3*	5279.37	4^+	
11659.4	(4 to 6)	3465	100 *6*	8194.0	5^-	
		4616	13 *4*	7043.21	5^-	
		4660	13 *4*	6998.90	5^+	
11739.5	(3 to 5)	4695	100 *20*	7043.21	5^-	
		5235	100 *20*	6503.41	4^-	
		5789	100 *20*	5950.73	4^+	
		6460	100 *20*	5279.37	4^+	
11783.7	(4,5^+)	4787	100 *7*	6998.90	5^+	
		6502	20 *4*	5279.37	4^+	
		6951	13 *4*	4830.85	3^+	
11842	(0^+ to 4^+)	9605	100	2235.322	2^+	

$^{30}_{14}Si_{16}$-20

Adopted Levels, Gammas (continued)

$\gamma(^{30}Si)$ (continued)

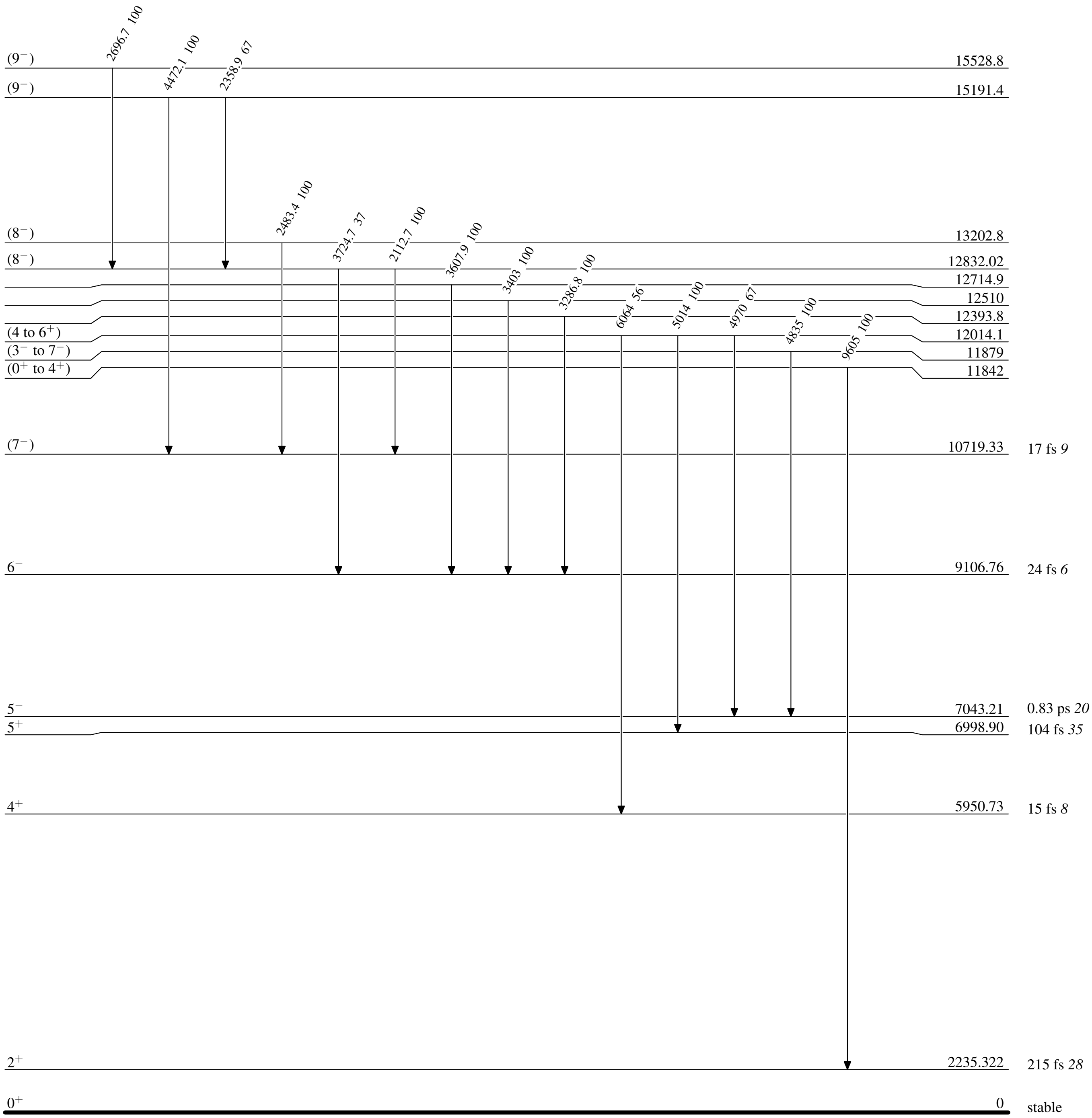
E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f	E_i(level)	J^π_i	E_γ[†]	I_γ[†]	E_f	J^π_f
11879	$(3^-$ to $7^-)$	4835	100	7043.21	5^-	12832.02	(8^-)	2112.7[@] *2*	100 *4*	10719.33	(7^-)
12014.1	(4 to 6^+)	4970	67 *11*	7043.21	5^-			3724.7[@] *3*	37 *7*	9106.76	6^-
		5014	100 *18*	6998.90	5^+	13202.8	(8^-)	2483.4[@] *4*	100	10719.33	(7^-)
		6064	56 *11*	5950.73	4^+	15191.4	(9^-)	2358.9[@] *6*	67 *7*	12832.02	(8^-)
12393.8		3286.8[@] *24*	100	9106.76	6^-			4472.1[@] *6*	100 *7*	10719.33	(7^-)
12510		3403[@] *3*	100	9106.76	6^-	15528.8	(9^-)	2696.7[@] *13*	100	12832.02	(8^-)
12714.9		3607.9[@] *15*	100	9106.76	6^-						

[†] From (α,p),(α,pγ), except otherwise noted.
[‡] From (n,γ), except otherwise noted.
[#] From ^{30}Al β^- decay.
[@] From (^{18}O,2nγ).
[&] Weighted average of (^{18}O,2nγ) and (n,γ).
[a] From (^{18}O,2nγ).
[b] From (α,p),(α,pγ), multipolarities are based on γ-ray linear polarization and correlation measurements.
[c] 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.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level

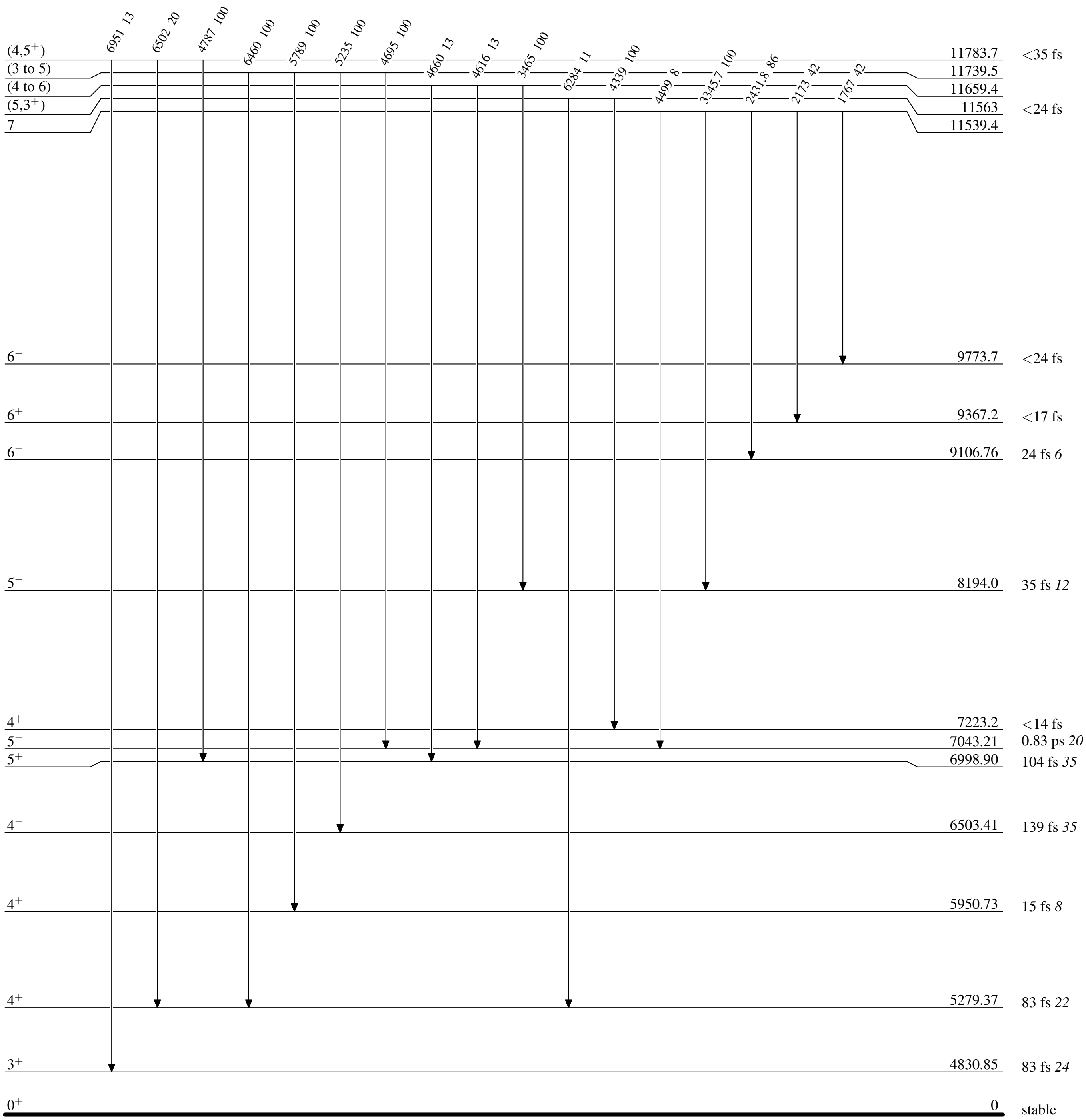


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intentities: Relative photon branching from each level

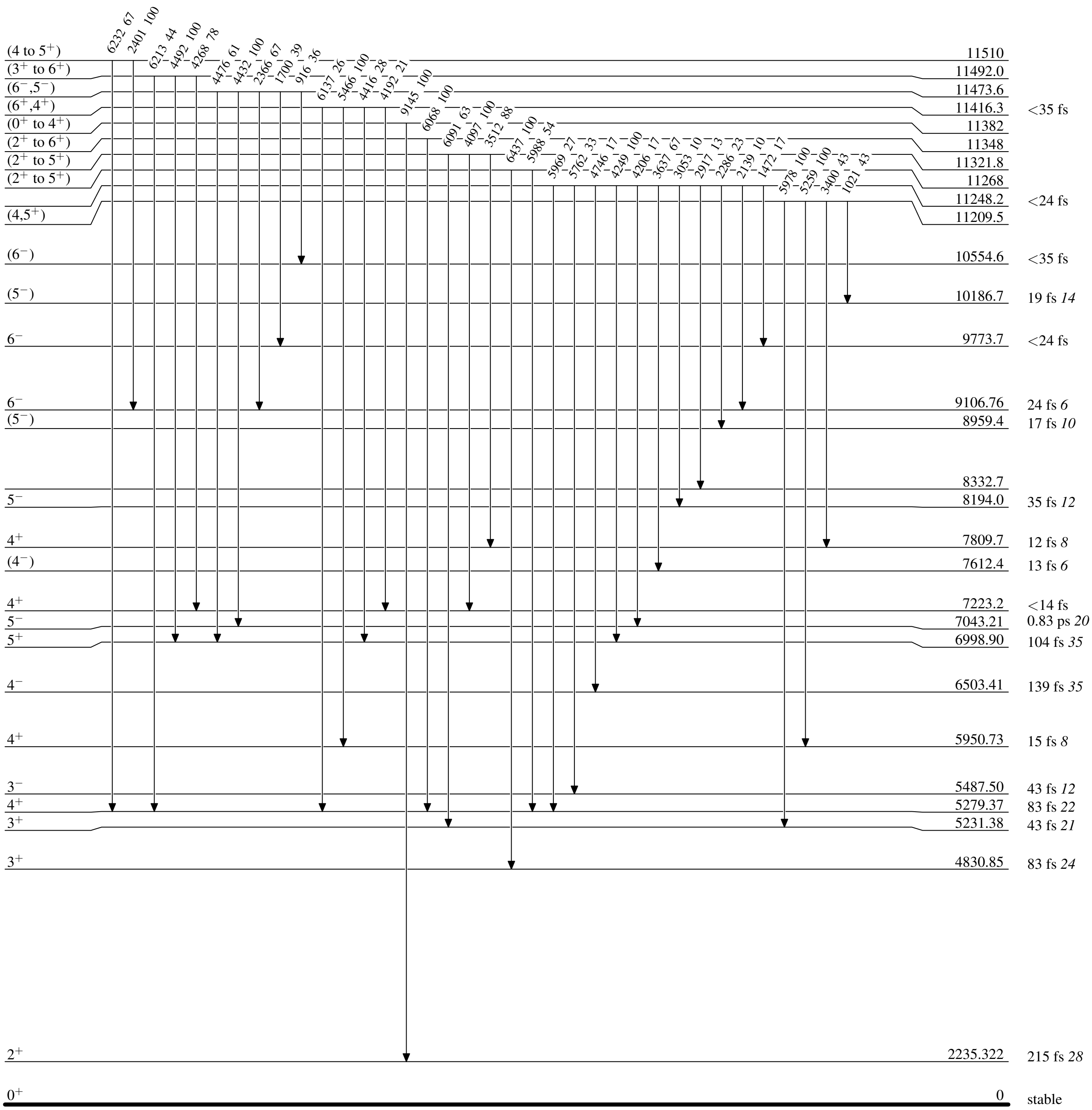


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

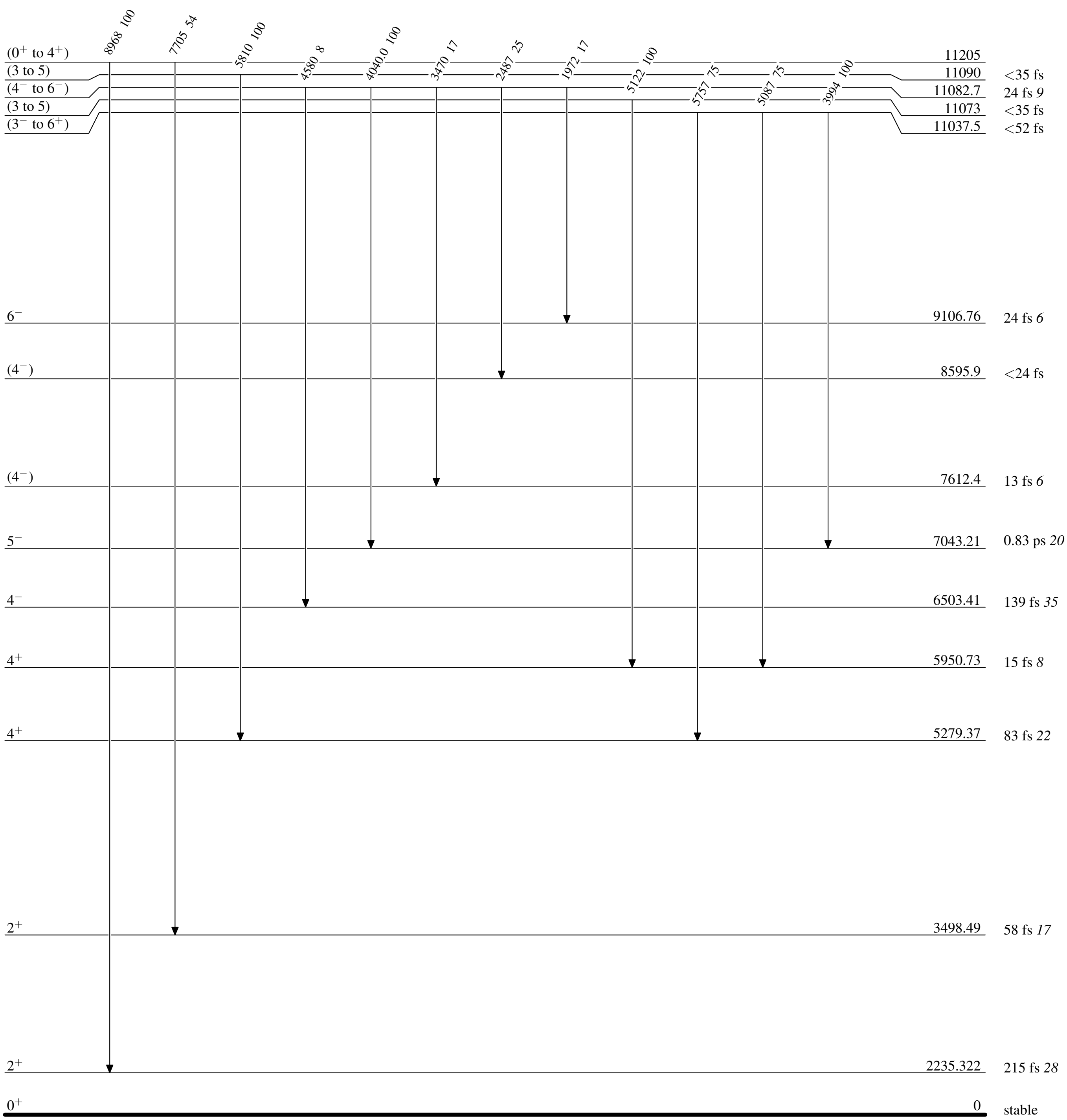


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

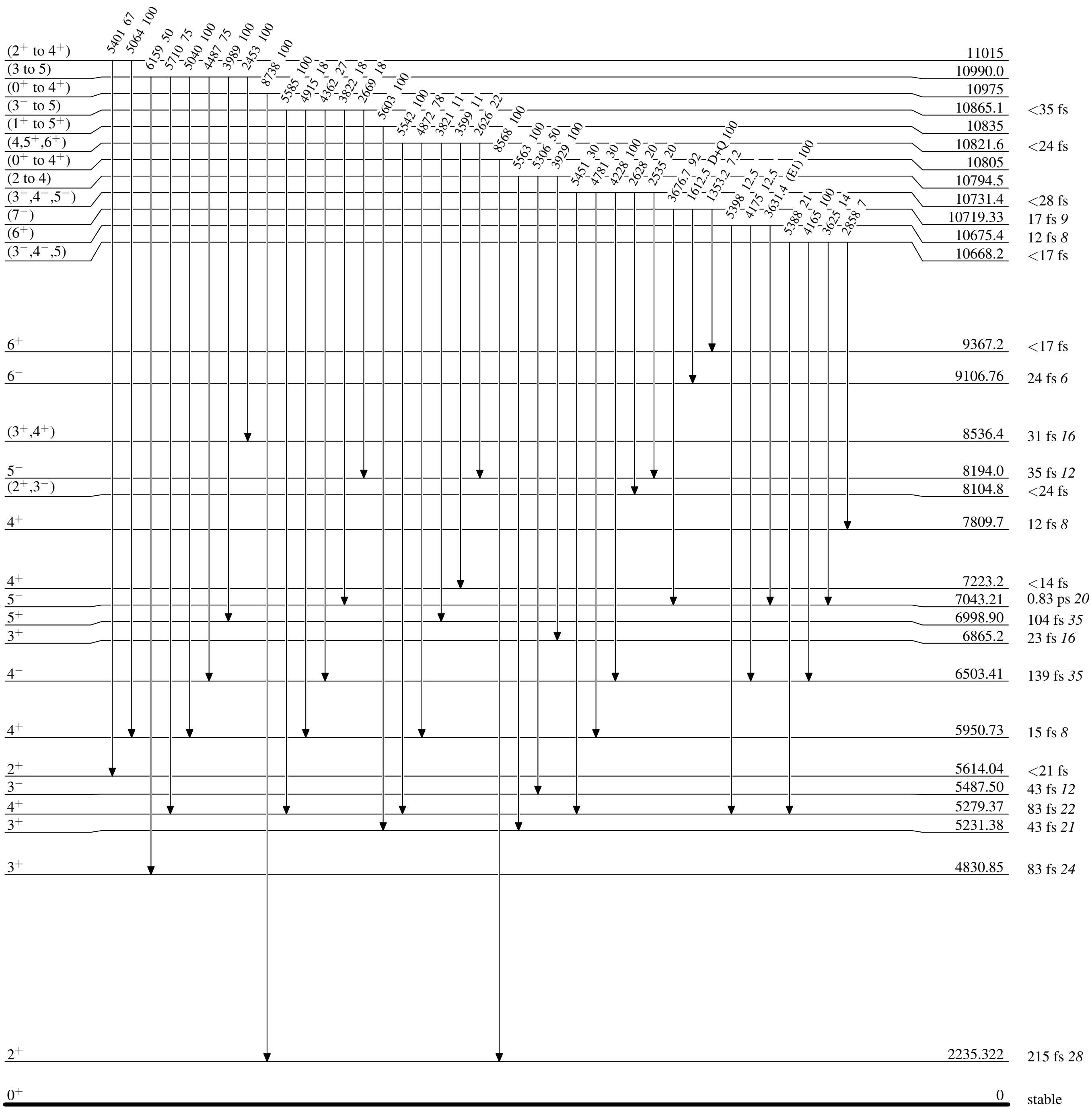


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

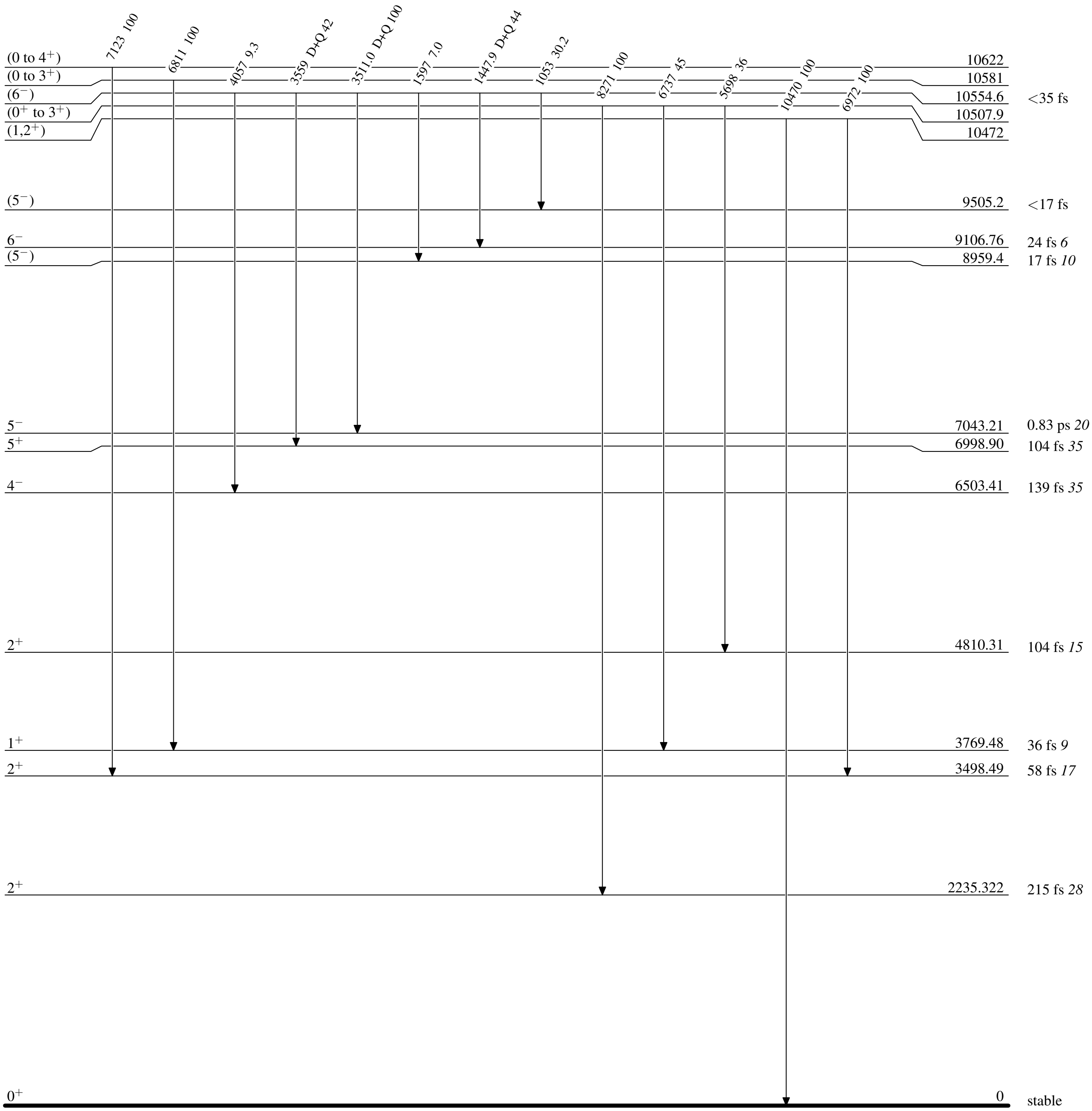


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

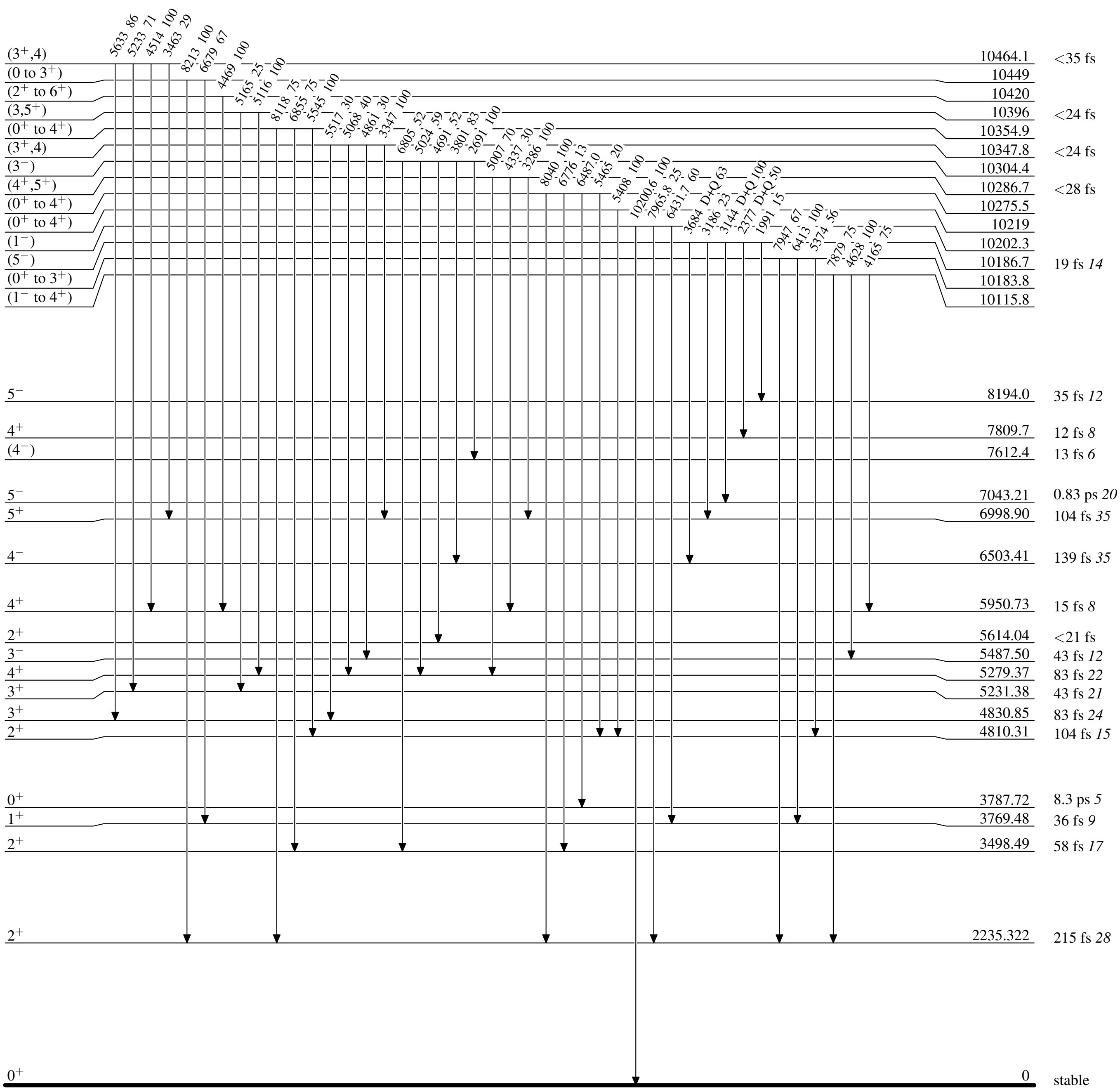


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

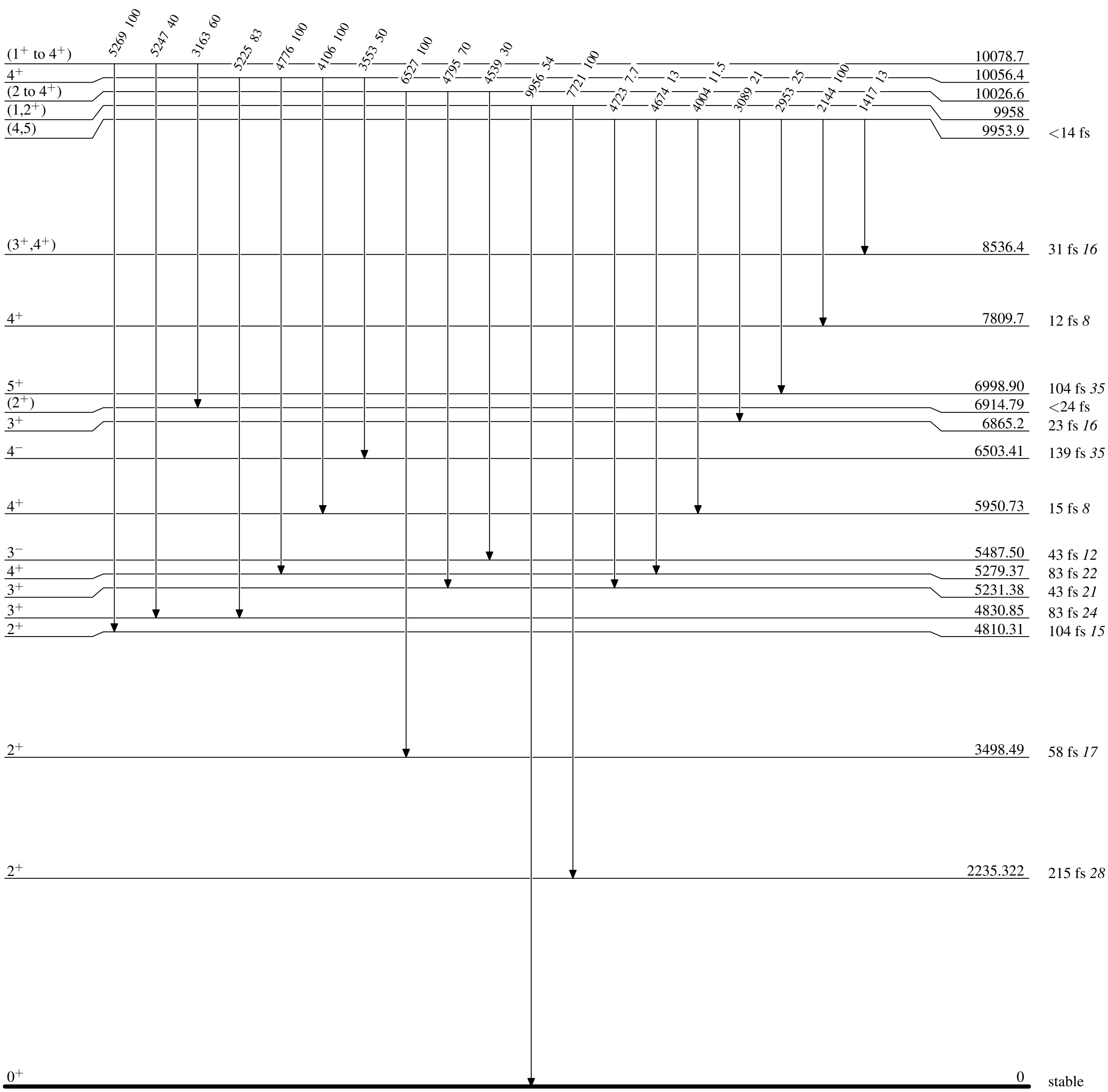


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

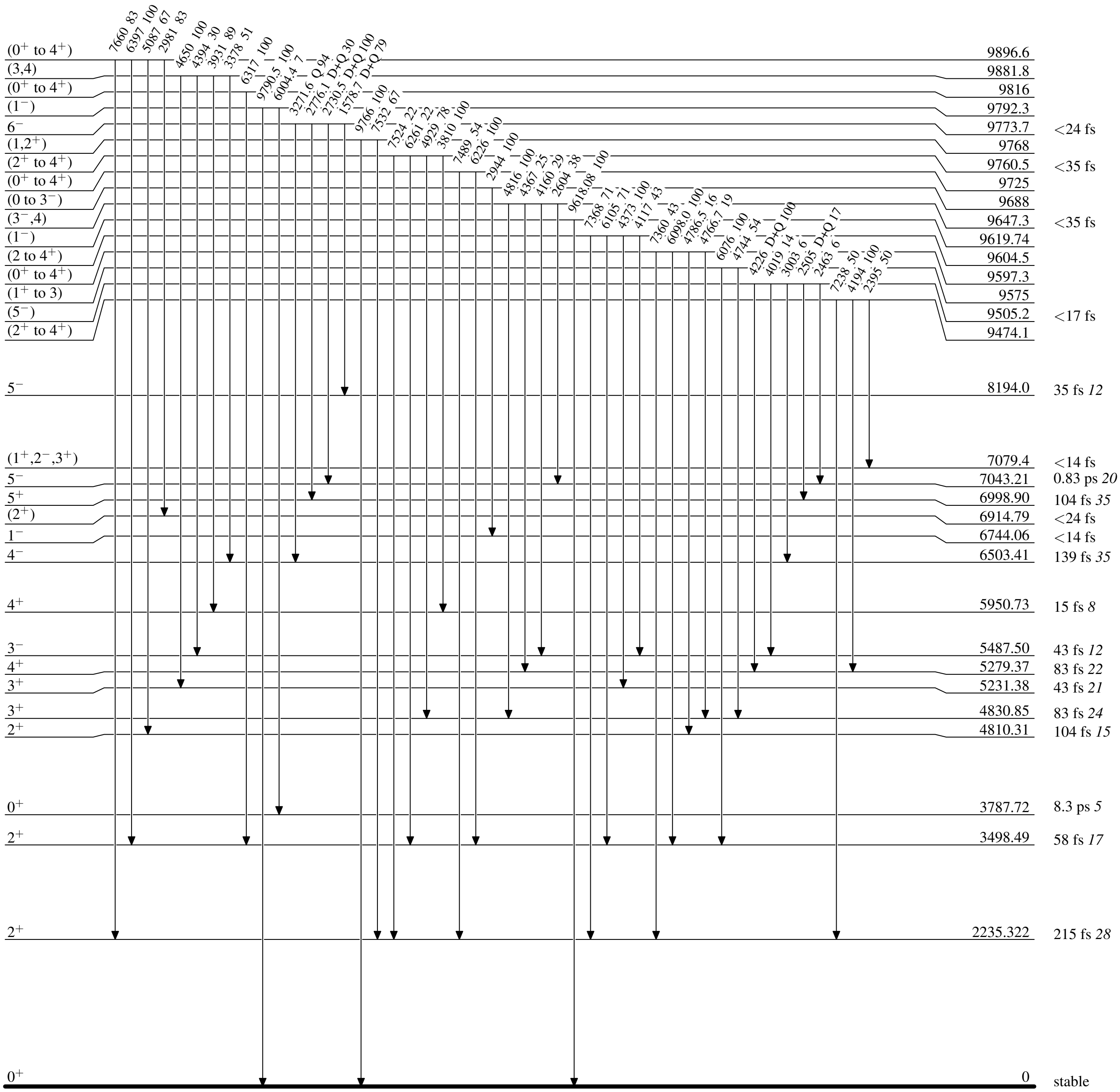


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

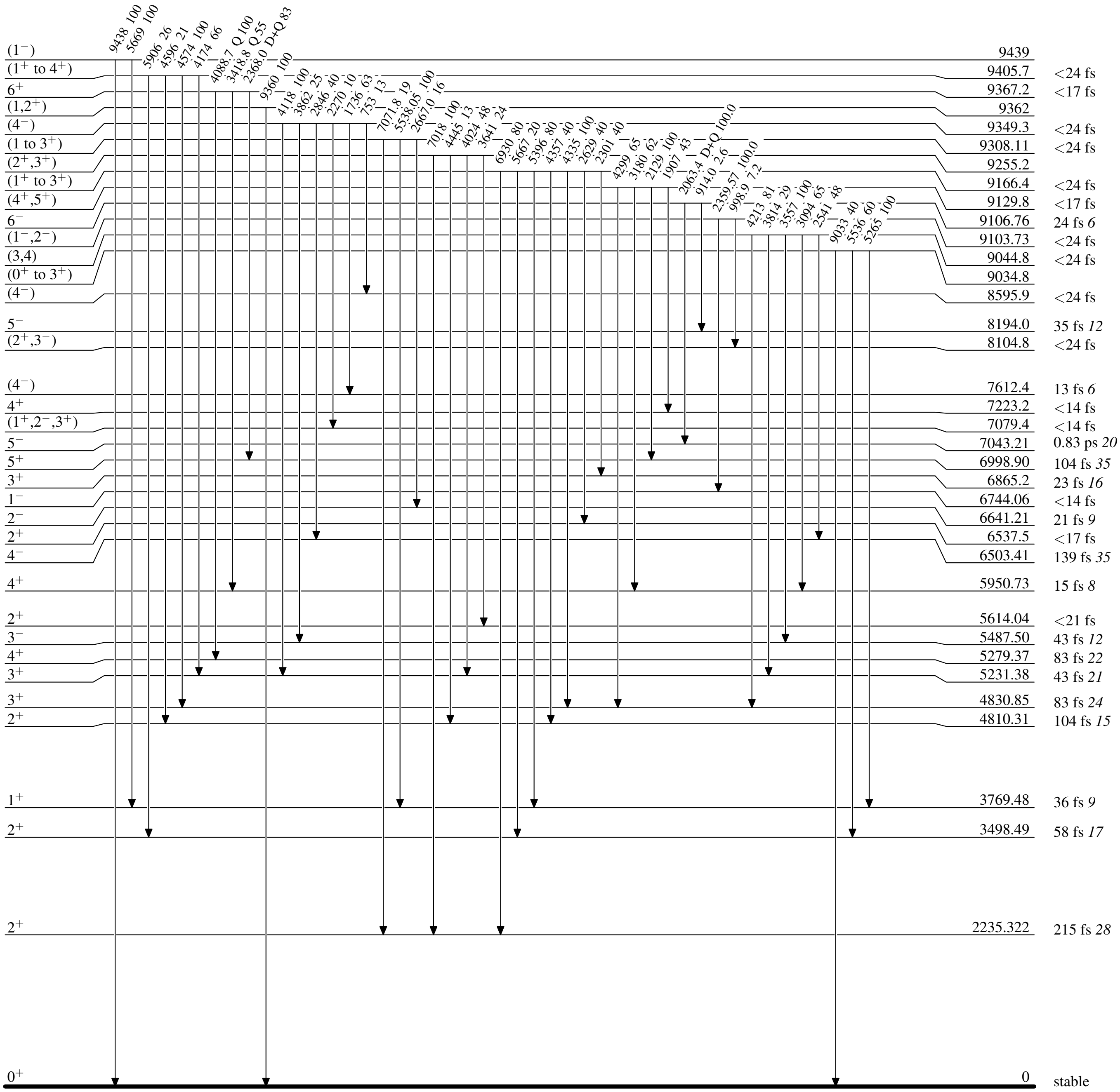


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

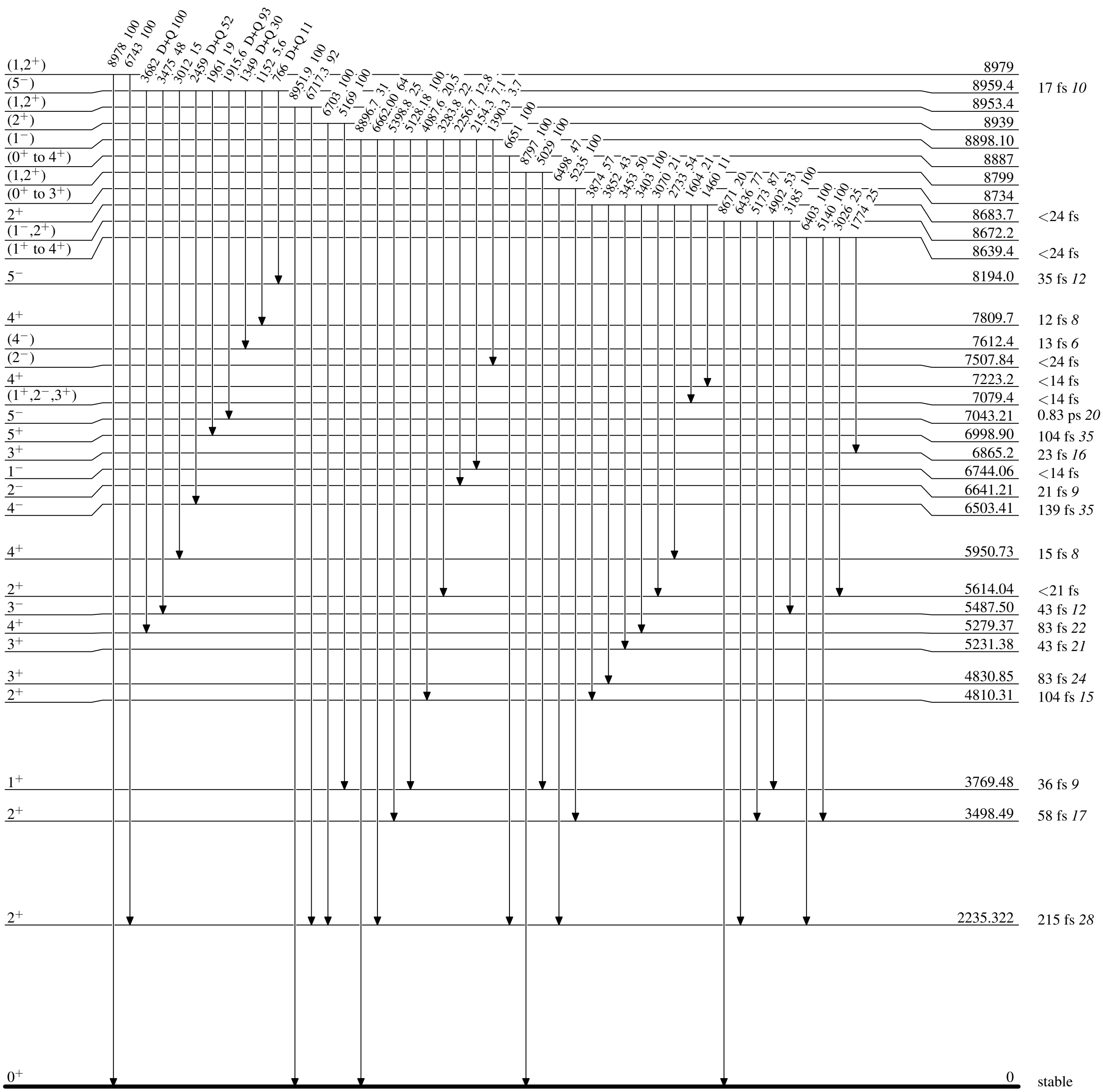


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

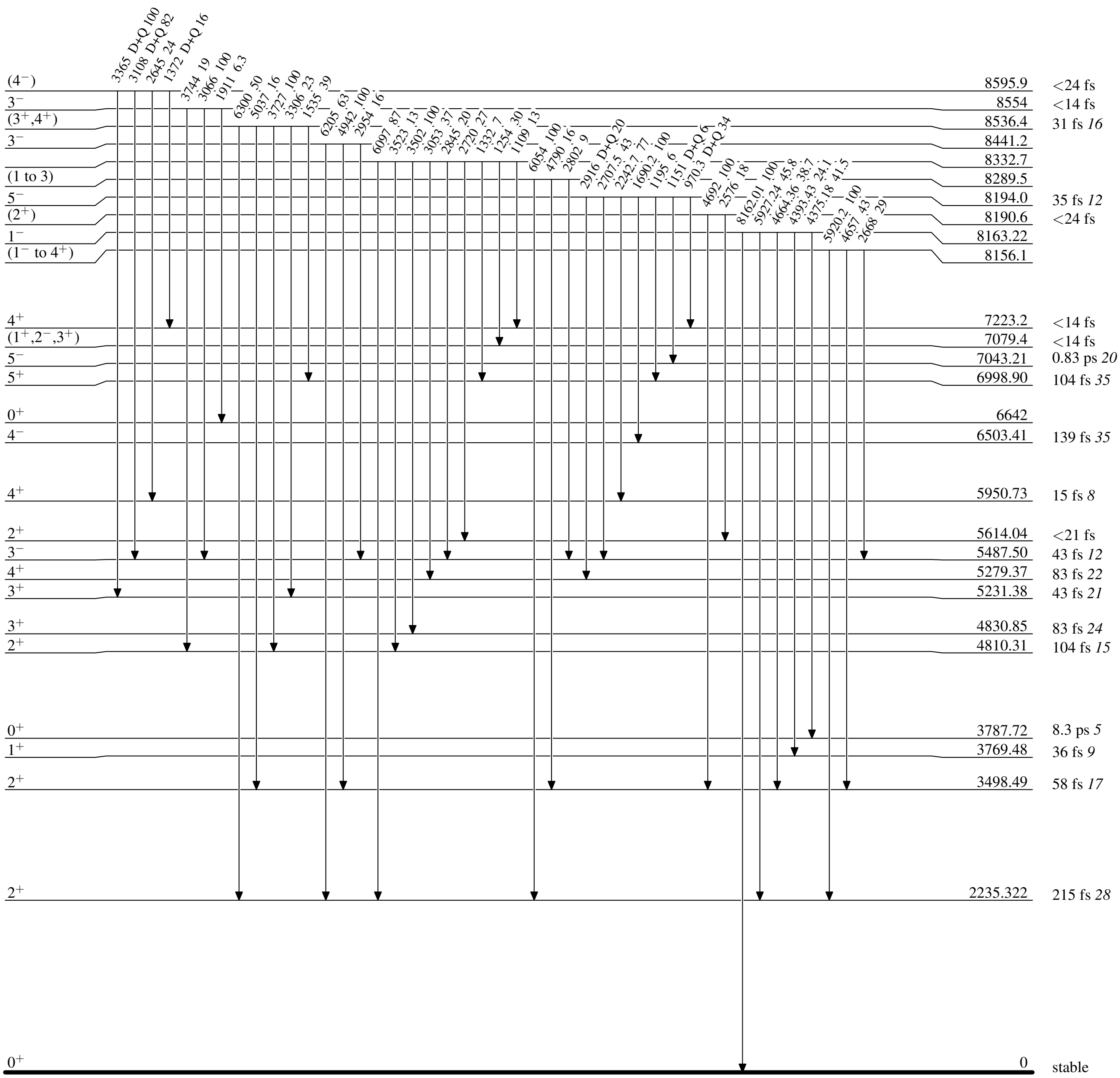


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

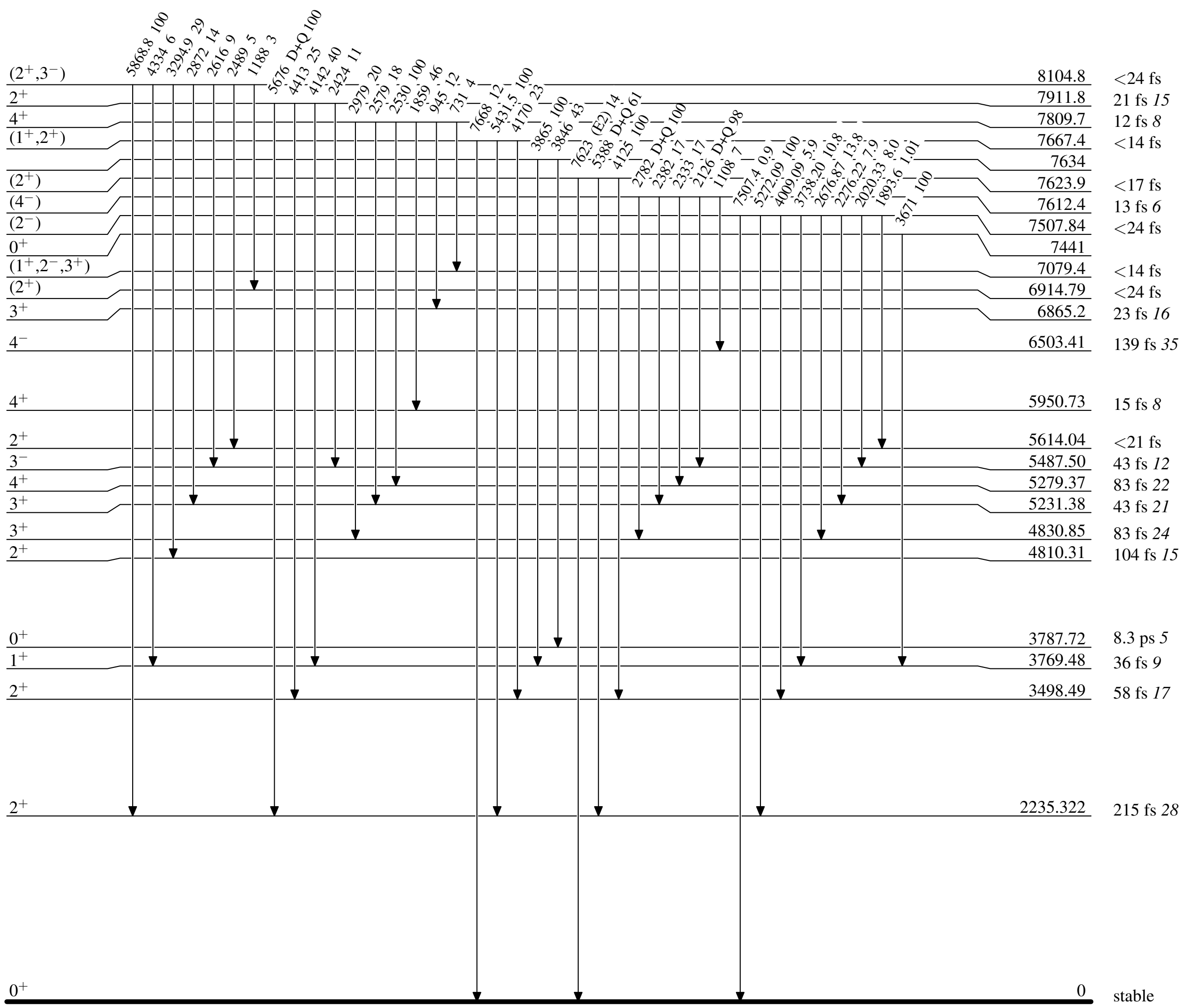


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

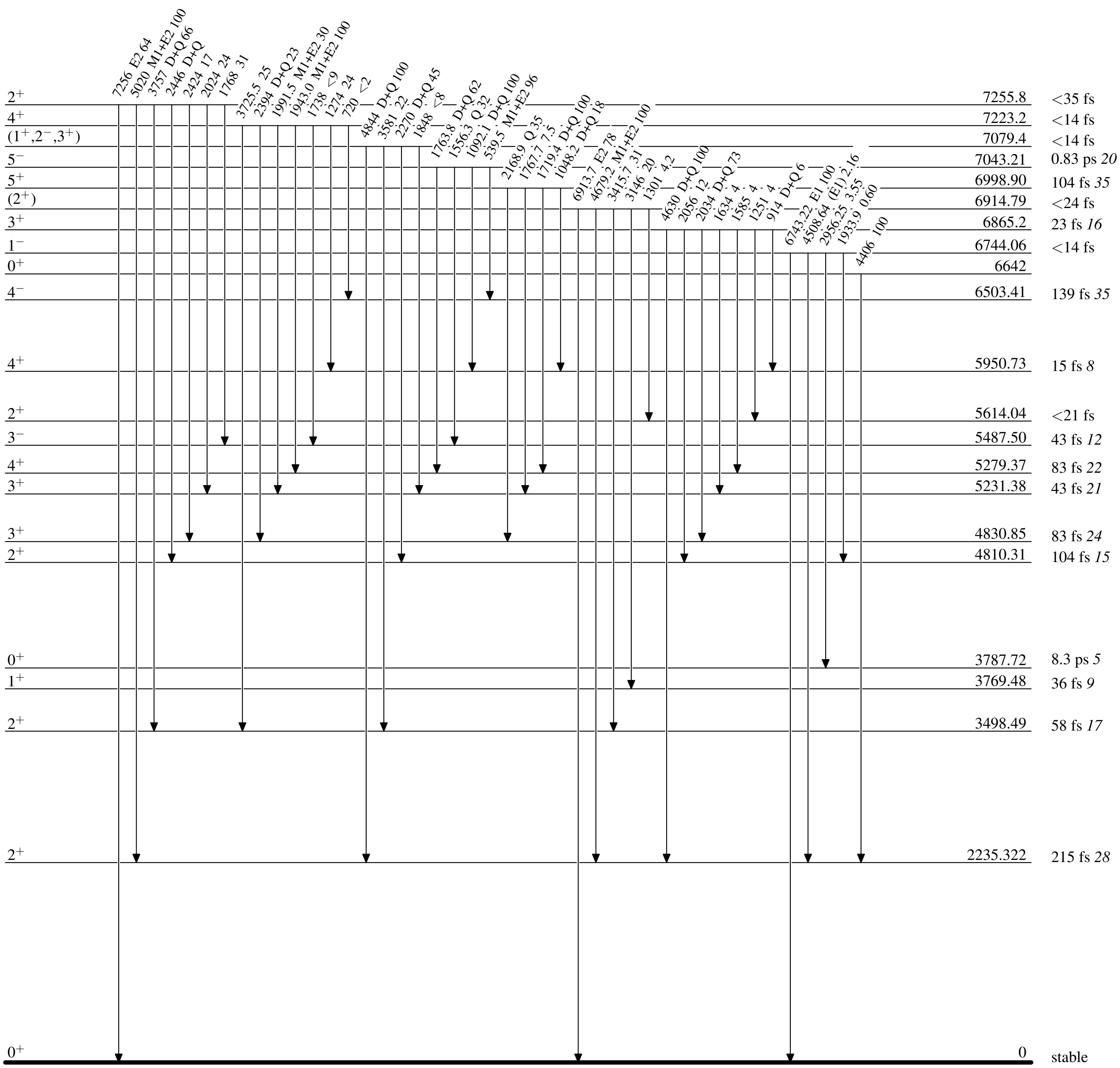


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level

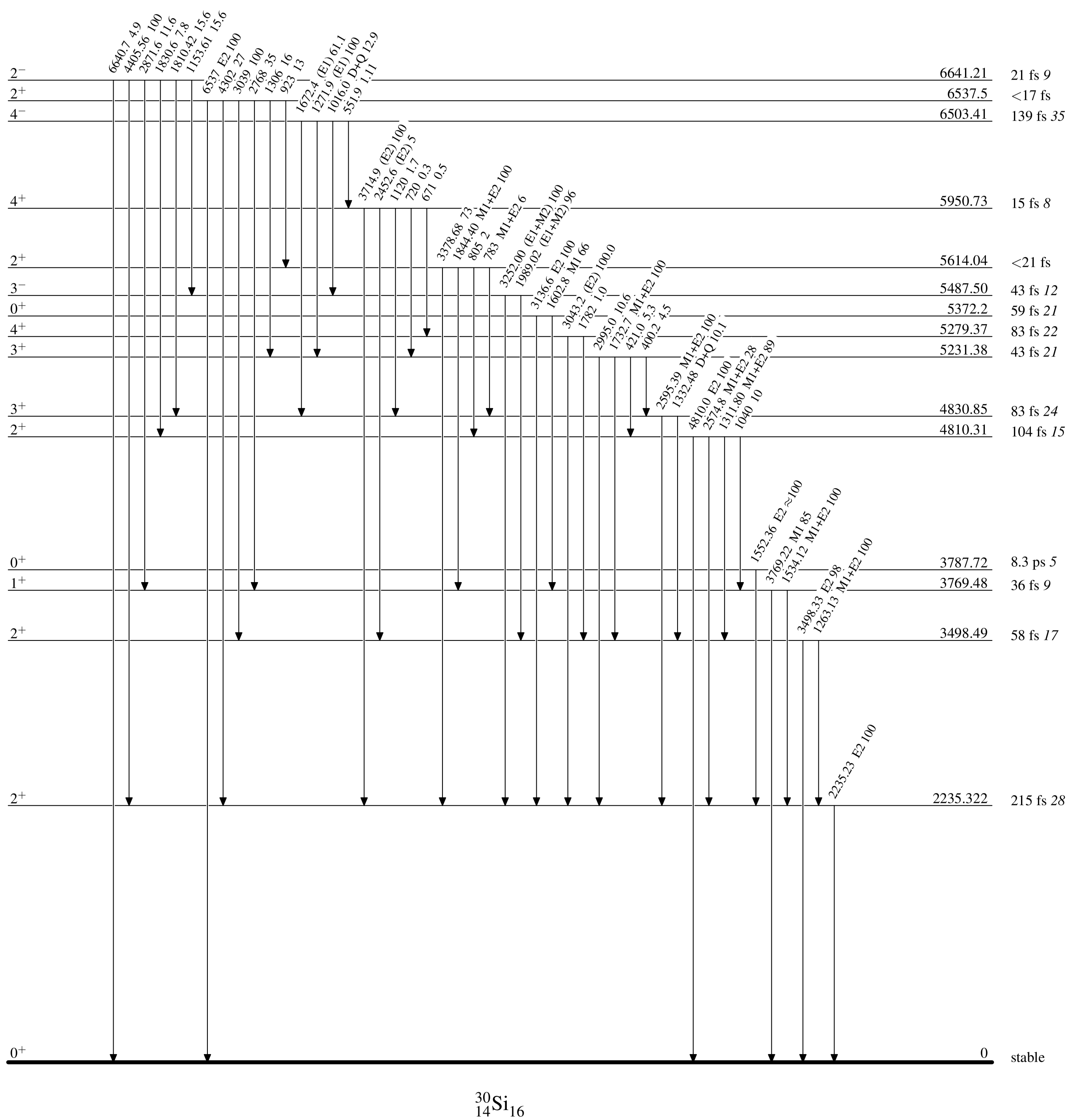


$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

Level Scheme (continued)

Intensities: Relative photon branching from each level



$^{30}_{14}Si_{16}$

Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Balraj Singh	ENSDF	15-Jan-2020

Q(β^-)=227.2 *3*; S(n)=9200.0 *3*; S(p)=16416.0 *23*; Q(α)=−11483.8 *20* 2017Wa10
S(2n)=15787.36 *30*, S(2p)=29772 *3* (2017Wa10).
Note that S(n)=9203.218 keV *5* deduced by 2001Pa15 from ^{31}S(n,γ) is in disagreement with value from 2017Wa10, who had considered this measurement in their global AME analysis.
Mass measurements: 2003Bl17, 2009Kw02, 2009Sc09.
Mass deduced from IMME analysis: 2010Ka30.
Strong absorption radius measurement: 1999Ai02:
Theoretical nuclear structure calculations: consult Nuclear Science References database at www.nndc.bnl.gov/nsr/ for 65 primary references.
Additional information 1.

^{32}Si Levels

Cross Reference (XREF) Flags

A	^{32}Al β^- decay (32.3 ms)	E	^{31}Si(n,γ)
B	^{33}Al β^-n decay (41.5 ms)	F	Coulomb excitation
C	^{30}Si(t,p)	G	^{208}Pb(^{37}Cl,X)
D	^{30}Si(t,pγ)		

E(level)†	J$^\pi$	T$_{1/2}$‡	XREF	Comments
0.0	0$^+$	157 y *7*	ABCDEFG	%β^-=100 r_0^2=1.15 fm^2 *7* (1999Ai02 in Si(^{32}Si,X) at 44.78 MeV/nucleon). Also cross section measured in this work. T$_{1/2}$: weighted average (NRM) of 159.4 y *56* (2015HeZY, decay rate); 178 y *10* (1998Ni19, measurement of the decrease of activity with depth in an accurately dated varved sediment core from the Kassjon lake, North Sweden, indirect but seemingly a reliable measurement); 132 y *13* (1993Ch10, average of 128 y *20* and 134 y *16*, two different samples, accelerator mass spectroscopy (AMS) technique); 162 y *12* (1991Th06, AMS and activity); 133 y *9* (1990Ho27, average of 135 y *10*, 132 y *9* and 136 *13* from three different samples, AMS and activity, uncertainty increased to 9.9 y in NRM); 172 y *4* (1986Al10, decay rate, uncertainty increased to 7.5 y in NRM); 108 y *18* (1980El01, AMS, uncertainty increased to 20 y in NRM); and 101 y *18* (1980Ku11, AMS, uncertainty increased to 22 y in NRM). Normalized χ^2=4.4, as compared to critical χ^2=2.0. Unweighted average is 143 y *10*, while regular weighted average is 161 y *7*, with normalized χ^2=6.4. T$_{1/2}$: Direct, specific activity methods for half-life measurement: 1993Ch10: source from implantation of separated projectile (^{40}Ar beam) fragments into an inert collector, decay equilibrium technique, two independent samples. 1991Th06: source produced in ^{18}O(^{16}O,2p) reaction. ^{32}Si/^{31}Si abundance ratio using AMS (accelerator mass spectrometry), and β scintillation spectrometry. 1990Ho27: source produced in ^{37}Cl(p,X) and ^{31}P(n,p) reactions. ^{32}Si/Si abundance ratio by AMS, and β spectrometry. Three independent samples. 1980Ku11: source from ^{30}Si(t,p), AMS technique and β-scintillation spectrometry. 1980El01: source from Cl(p,X), AMS technique and β-scintillation spectrometry. T$_{1/2}$: Direct decay rate methods: 2015HeZY: used the same detector system and source as in 1986Al10. Counting for 6000 hours between June 2013 and June 2015. 1986Al10: source from ^{30}Si(t,p), β decay rate measured over four years. T$_{1/2}$: the values from indirect methods, described below, were not used in the averaging procedure because the accumulation rates of ^{32}Si in ice cores and sediments are not known well, and the cross sections in reactions are poorly known for determining yields

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{32}Si Levels (continued)

E(level)†	J$^{\pi}$	T$_{1/2}$‡	XREF	Comments
				that were used to determine the half-life in the pre-1970 measurements. T$_{1/2}$: indirect methods (accumulation rates of the naturally occurring ^{32}Si in different environments): T$_{1/2}$: 178 y *10* (1998Ni19, measurement of the decrease of activity with depth in an accurately dated varved sediment core from the Kassjon lake, North Sweden, note that this value is close to the values from direct measurements, thus included in averaging); 276 y *32* (1980De46, natural source from varved core of Gulf of California, later corrected to 217 y *29* by J.B. Cumming, Radiochem. Radioanaly. Lett. 58, 297 (1983)); 330 y *40* (H.B. Clausen: Journal of Glaciology 12, 411 (1973), natural source from Greenland ice cores, later corrected to 250 y in 1980De46). T$_{1/2}$: indirect methods (reaction yields, mainly in successive neutron captures in ^{30}Si): T$_{1/2}$: ≈280 y (Jantsch, Kernenergie 10, 89 (1967)); ≈500 y (1964Ho31); ≈ 650 y (1962Ge16); ≈ 42 y (Roy: Can. Jour. Chem. 35, 176 (1957), 600 y/barn for ^{31}Si(n,γ) reaction, and σ=0.07 for E=thermal); ≈60 y (Turkevich: Phys. Rev. 94, 364 (1954)); ≈710 y (1953Li21). T$_{1/2}$: see 1991Ku26 for a review of ^{32}Si half-life measurements, 2009Se07 for discussion of possible oscillations in exponential decay of ^{32}Si in the measurement by 1986Al10; and 2010Ja03 and 2010St07 for power-spectrum analyses and discussion of variation of decay constant from solar influence. Using the BNL counting system and the ^{32}Si and ^{36}Cl sources (as used by 1986Al10), 2018Fi04 investigated correlation between the two decays in a 5-hour time interval immediately following the GW170817 binary neutron star inspiral on August 17, 2017; claiming observation of a correlation of the two decay rated on August 17, 2017, with an upward fluctuation peaking at 93 min following the arrival of the gravity wave detected by the LIGO apparatus.
1941.4 *3*	2^{+}	0.78 ps *22*	ABCD FG	B(E2)↑=0.0113 *33* (1998Ib01) J$^{\pi}$: E2 γ to 0^{+}; L(t,p)=2. T$_{1/2}$: weighted average of 0.91 ps *+37−21* from B(E2)(↑)=0.0113 *33* (1998Ib01), and 0.64 ps *22* from DSAM in (t,pγ) (1972Pr18). Other: 0.33 ps *5* from DSAM in (t,pγ) (1974Gu11) seems discrepant. $2016Pr01 evaluation gives T$_{1/2}$=0.84 ps *+17−19*.
4230.8 *8*	2^{+}	0.26 ps *9*	A CD	J$^{\pi}$: L(t,p)=2.
4983.9 *11*	0^{+}	<0.30 ps	A CD	J$^{\pi}$: L(t,p)=0.
5220 *3*	(1^{+})	<80 fs	CD	J$^{\pi}$: possible unnatural-parity state from (p,t).
5288.8 *8*	3^{-}	152 fs *35*	CD	J$^{\pi}$: L(t,p)=3.
5412.4 *9*	1	<50 fs	D	E(level): see comment for 5427 level. J$^{\pi}$: 1 from $\gamma\gamma(\theta)$ in (t,pγ); dipole γ to 0^{+}.
5427 *14*	2^{+}		C	E(level): this level is different from the 5412 level in (t,pγ), as the spin assignments in (t,p) and (t,pγ) are different. J$^{\pi}$: L(t,p)=2.
5502 *4*	(5^{-},4^{+})		CD G	J$^{\pi}$: 5^{-} or 4^{+} from L(p,t)=5,4 with some preference for L=5. In (p,t), 1982Fo02 support 5^{-} on the basis that observed cross section is three times as large as predicted for a 4^{+} state from theoretical calculations. T$_{1/2}$: 2002AsZY assign isomer of T$_{1/2}$=33.4 ns *5* to this state. See 5581 level.
5581 *4*	(5^{-})	27 ns *2*	G	E(level): level proposed by 1997Fo01 (also 1998Fo07). But 2002AsZY using ^{198}Pt(^{37}Cl,X) at 9 MeV/nucleon did not confirm this level since they did not observe a 79-keV γ ray. J$^{\pi}$: from systematics of (5^{-}) to (4^{+}) transitions in N=18 isotones e.g. ^{34}S and ^{36}Ar, as assigned and discussed by 1997Fo01. T$_{1/2}$: from γ(t) in ^{208}Pb(^{37}Cl,X) (1997Fo01). 2002AsZY report an isomer with T$_{1/2}$=33.1 ns *5* but assign this isomer to 5502 state.
5773 *2*	(1,2,3)	<139 fs	cD	J$^{\pi}$: D+Q γ to 2^{+}.
5785.7 *16*	(0,1,2)$^{+}$	≥0.8 ps	A cD	J$^{\pi}$: allowed β feeding (log *ft*=4.8) from 1^{+} parent; L(t,p=(0) for one component of a doublet from L(t,p)=(0), other component could be 5773

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{32}Si Levels (continued)

E(level)†	J^π	$T_{1/2}$‡	XREF	Comments
				level.
5893 *8*	(3^+)		C	E(level): possible doublet in (p,t). J^π: possible unnatural-parity state from (p,t).
5954 *2*	2^+	≤55 fs	D	J^π: see comment for 5967 level. J^π: 2 from p$\gamma(\theta)$ in (t,pγ); E2 γ to 0^+.
5967 *4*	3^-		C	E(level): this level is different from the 5954 in (t,pγ), as the spins from the two studies are different. J^π: L(t,p)=3.
6170 *5*	(2^+)	≤55 fs	cD	E(level),J^π: 6208 *9* with L=1+2 in (t,p) is a doublet.
6195 *4*	1^-	≤38 fs	cD	E(level),J^π: 6208 *9* with L=1+2 in (t,p) is a doublet; dipole γ to 0^+.
6242 *5*	0^+	≤55 fs	CD	J^π: L(t,p)=0.
6388 *3*	2^+	<42 fs	CD	J^π: L(t,p)=2.
6477 *6*	3^-		C	J^π: L(t,p)=3.
6705 *6*	1^-		CD	XREF: C(6734). J^π: L(t,p)=1; dipole γ to 0^+.
6860 *5*	3^-		C	J^π: L(t,p)=3.
7083 *5*	2^+		C	J^π: L(t,p)=2.
7482 *9*			C	
7743 *6*			C	
7793 *9*	$3^-,4^+$		C	J^π: L(t,p)=3.
7887 *18*			C	
7978 *14*	3^-		C	J^π: L(t,p)=3.
8066 *9*	2^+		C	J^π: L(t,p)=2.
8321 *8*	5^-		C	J^π: L(t,p)=5.
8361 *10*	2^+		C	J^π: L(t,p)=2.
8422 *10*			C	
8567 *8*	3^-		C	J^π: L(t,p)=3.
8650 *15*	2^+		C	J^π: L(t,p)=2.
8758 *9*	$3^-,4^+$		C	J^π: L(t,p)=3,4.
8842 *13*			C	
8877 *8*			C	
8971 *9*			C	
9003 *7*			C	
9192 *12*			C	
(9203.218 *5*)	$1^+,2^+$		E	E(level): this value is in diasgreement with S(n)=9200.0 *3* in 2017Wa10. J^π: s-wave capture in $3/2^+$ g.s. of ^{31}S.
9543 *6*			C	
9701 *6*			C	
9782 *12*			C	
9934 *29*			C	
9975 *25*			C	
10052 *5*			C	
10237 *5*			C	
10279 *6*			C	
10317 *5*			C	
10461 *9*			C	
10603 *15*			C	
10664 *14*			C	
10725 *9*			C	
10778 *13*			C	
10846 *13*			C	
10888 *12*			C	
10971 *9*			C	
11398 *7*			C	
11454 *8*			C	

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{32}Si Levels (continued)

[†] From Eγ data, when uncertainties in Eγ are known, otherwise from (t,p) and/or (t,pγ).
[‡] For excited states above 4 MeV, values are from DSAM in (t,pγ), unless otherwise stated.

γ(^{32}Si)

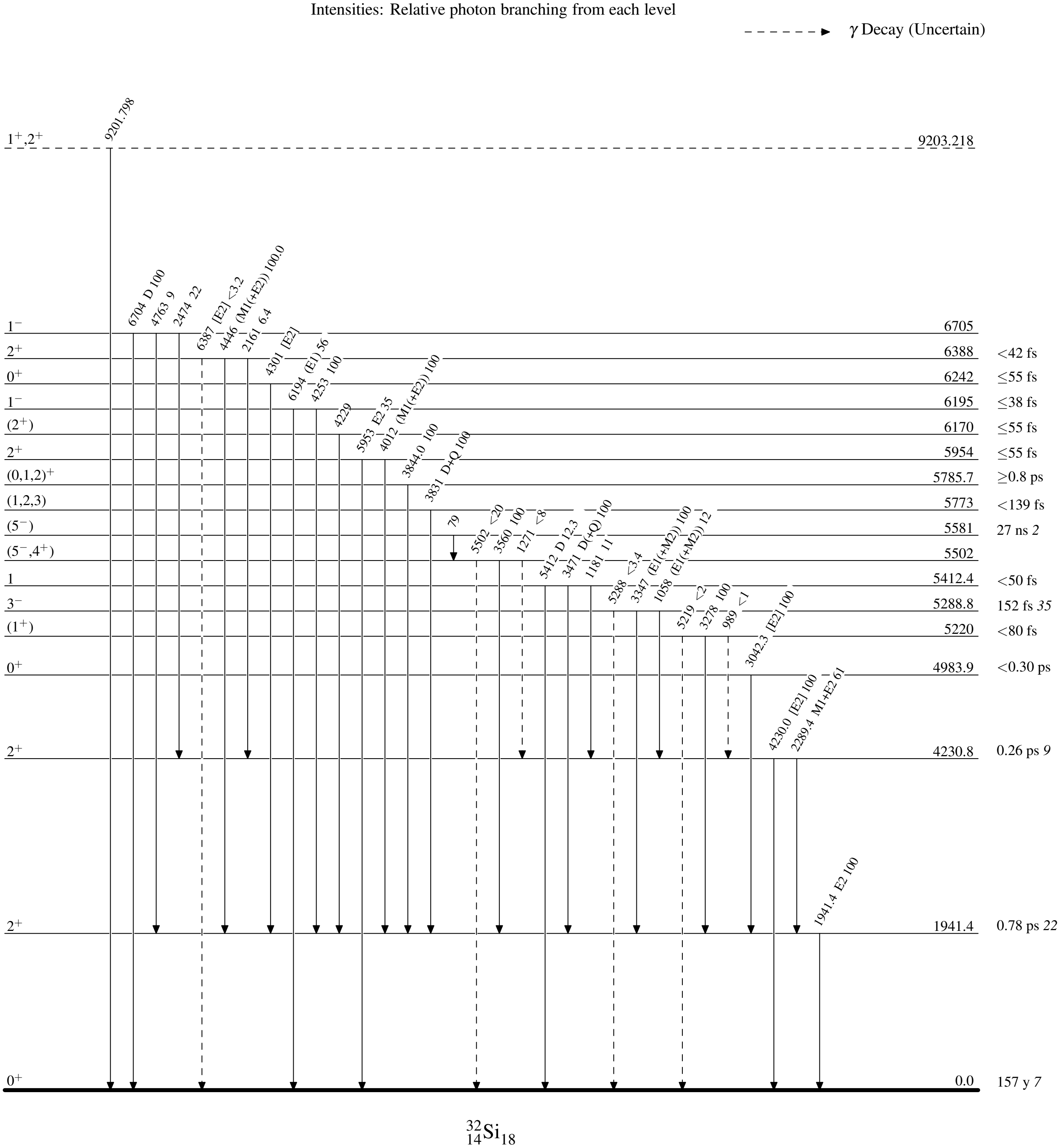
E_i(level)	J_i^π	E_γ[†]	I_γ[‡]	E_f	J_f^π	Mult.[@]	δ[@]	Comments
1941.4	2^+	1941.4[#] *3*	100[#]	0.0	0^+	E2		B(E2)(W.u.)=4.4 *13*
4230.8	2^+	2289.4[#] *8*	61[#] *5*	1941.4	2^+	M1+E2	−0.8 *4*	B(M1)(W.u.)=0.0016 *9*; B(E2)(W.u.)=0.8 *6*
		4230.0[#] *15*	100[#] *5*	0.0	0^+	[E2]		B(E2)(W.u.)=0.17 *6*
4983.9	0^+	3042.3[#] *10*	100[#]	1941.4	2^+	[E2]		B(E2)(W.u.)>1.2
5220	(1^+)	989[&]	<1	4230.8	2^+			
		3278	100	1941.4	2^+			
		5219[&]	<2	0.0	0^+			
5288.8	3^-	1058	12 *4*	4230.8	2^+	(E1(+M2))	0.0 *2*	B(E1)(W.u.)=0.00039 *16*
		3347	100 *4*	1941.4	2^+	(E1(+M2))	+0.02 *5*	B(E1)(W.u.)=0.000104 *25*
		5288[&]	<3.4	0.0	0^+			
5412.4	1	1181	11 *3*	4230.8	2^+			
		3471	100 *3*	1941.4	2^+	D(+Q)	−0.13 *33*	
		5412	12.3 *24*	0.0	0^+	D		
5502	$(5^-,4^+)$	1271[&]	<8	4230.8	2^+			
		3560	100	1941.4	2^+			E3 assigned in 2002AsZY, based on (5^-) assignment for 5502 level, but E2 in 1997Fo01 based on 4^+ assignment for 5502 level.
		5502[&]	<20	0.0	0^+			
5581	(5^-)	79 *1*		5502	$(5^-,4^+)$			E$_\gamma$: from 1997Fo01, not confirmed by 2002AsZY.
5773	(1,2,3)	3831	100	1941.4	2^+	D+Q		
5785.7	$(0,1,2)^+$	3844.0[#] *15*	100[#]	1941.4	2^+			
5954	2^+	4012	100 *4*	1941.4	2^+	(M1(+E2))	−0.01 *6*	B(M1)(W.u.)>0.0046
		5953	35 *4*	0.0	0^+	E2		B(E2)(W.u.)>0.059
6170	(2^+)	4229		1941.4	2^+			
6195	1^-	4253	100 *10*	1941.4	2^+			
		6194	56 *10*	0.0	0^+	(E1)		B(E1)(W.u.)>2.7×10^{-5}
6242	0^+	4301		1941.4	2^+	[E2]		B(E2)(W.u.)>1.2
6388	2^+	2161	6.4 *11*	4230.8	2^+			
		4446	100.0 *11*	1941.4	2^+	(M1(+E2))	+0.04 *4*	B(M1)(W.u.)>0.0055
		6387[&]	<3.2	0.0	0^+	[E2]		B(E2)(W.u.)>0.0031
6705	1^-	2474	22 *6*	4230.8	2^+			
		4763	9 *7*	1941.4	2^+			
		6704	100 *7*	0.0	0^+	D		
(9203.218)	$1^+,2^+$	9201.798 *5*		0.0	0^+			E$_\gamma$: from (n,γ).

[†] From level-energy differences in (t,pγ), unless otherwise stated.
[‡] From (t,pγ), unless otherwise stated.
[#] From ^{32}Al β^- decay.
[@] From (t,pγ), based on p$\gamma(\theta)$ data, and RUL when level half-lives are known.
[&] Placement of transition in the level scheme is uncertain.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level



Adopted Levels, Gammas

History

Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, Balraj Singh	NDS 113,1563 (2012)	28-May-2012

Q(β^-)=4592 *15*; S(n)=7514 *15*; S(p)=1.878×10^4 *8*; Q(α)=−13498 *15* 2012Wa38
Note: Current evaluation has used the following Q record 4592 14 *7514* 14 *18809* 70-13490 *19* 2011AuZZ.
S(2n)=12022 *14*, S(2p)=33623 *23* (2011AuZZ).
Values in 2003Au03: Q(β^-)=4601 *15*, S(n)=7535 *21*, S(p)=18720 *70*, Q(α)=−13471 *16*, S(2n)=12018 *14*, S(2p)=33580 *23*.
Identifications and production of ^{34}Si: 1971Ar32 in ^{232}Th(^{40}Ar,X) at E=290 MeV. Later study: 1977Na05.
2008Wi09: ^{208}Pb(^{36}S,X) E=230 MeV. Measured Eγ using GAMMASPHERE array and CHICO arrays at ANL. The known γ rays of 125, 591, 930, 3326 and 4255 keV were observed in this work. Main study was for ^{35}P structure.
Measurement of strong absorption radius: 2006Kh08, 1999Ai02.
Additional information 1.
Structure calculations: 2009Bo16 (negative-parity intruders, shell model); 2009Gr04 (binding energy, charge radius, neutron density, shell model); 2007Co22 (binding energy, single proton transfer reactions); 2002St30 (shell closure effects); 2002Ut02 (levels, spins, shell model); 2001Ca49 (levels, spins, B(E2), shell model); 2000Pe27 (shell closure features); 2000Ro08 (2$^+$ levels, B(E2)); 1994Po05 (intruder levels);
1999Ai02: measurement of strong absorption radius; Si(^{34}P,X) reaction at 38-80 MeV/nucleon, NSCL facility. The ^{34}P beam was obtained from fragmentation of ^{55}Mn beam with ^{9}Be target at 50-90 MeV/nucleon.
1986Sm05, 1985Wo07: ^{64}Ni(^{36}S,^{34}Si) E=198 MeV. Measured σ, deduced mass excess.
Nuclear structure theoretical calculations:
1992Fu07: *pf*-shell occupation numbers, vanishing of N=20 shell gap.
1991He06: intruder states.
1988Wa04: levels, decay scheme parameters, shell model.

^{34}Si Levels

A 2133, (0$^+$) level proposed in 2001Nu01 but not confirmed by 2002Mi44 and 2003Iw02 is omitted here. The 1193 transition feeding from 3326 level to a 2133 level is placed from a 4519 level to 3326 level according to 2003Iw02.

Cross Reference (XREF) Flags

A	^{34}Al β^- decay (56.3 ms)	E	^{9}Be(^{35}Si,^{34}SiXγ)	I	^{160}Gd(^{36}S,Xγ)
B	^{35}Al β^-n decay (37.7 ms)	F	Si(^{34}Si,^{34}Si′γ)	J	Coulomb excitation
C	^{2}H(^{34}Si,^{34}Si′γ)	G	^{36}S(^{11}B,^{13}N)		
D	^{7}Li(^{34}P,^{7}Beγ)	H	^{36}S(^{14}C,^{16}O)		

E(level)	J$^\pi$	T$_{1/2}$	XREF	Comments
0.0	0$^+$	2.77 s *20*	ABCDEFGHIJ	%β^-=100 Measured r_0^2=1.23 fm^2 *4* (2006Kh08) in Si(^{34}Si,X) reaction at 51.5 MeV/nucleon and 58.9 MeV/nucleon. Integral cross sections were also measured. r_0^2 (strong absorption)=1.20 fm^2 *8* (1999Ai02). T$_{1/2}$: from 1977Na05.
3327.14 *20*	2$^+$	82 fs *32*	ABCDEF IJ	J$^\pi$: level excited in Coulomb excitation, inelastic scattering, systematics, and shell-model predictions. T$_{1/2}$: from B(E2)=0.0085 *33* in Coul. ex. (1998Ib01).
3590 *25*			H	
4256.1 *4*	(3$^-$)	<210 ns	ABCDEF I	J$^\pi$: level excited in inelastic scattering, possible allowed β decay from (4$^-$), systematics, and shell-model predictions. T$_{1/2}$: estimated from $\beta\gamma$(t) (1989Ba50) in ^{34}Al β^- decay.
4380.2 *4*	(3$^-$)		ABCDE I	XREF: E(?). J$^\pi$: β transition from (4$^-$) is possibly allowed; gammas to 2$^+$ and (3$^-$).

Continued on next page (footnotes at end of table)

Adopted Levels, Gammas (continued)

^{34}Si Levels (continued)

E(level)	J$^{\pi}$	XREF	Comments
4520.2? *11*		A CDE	
4971.1 *5*	(3$^-$,4$^-$,5$^-$)	A CDE	XREF: E(?). J$^{\pi}$: log *ft*=5.7 from (4$^-$).
5042.2? *11*		A CDE	
5330.4 *10*	2$^+$	D G	Measured angular distribution compared with theoretical predictions for ΔL=0 transition (^{7}Li(^{34}P,^{7}Beγ)). Deduced B(>)=0.74 *18*(stat) +00−14(syst) (^{7}Li(^{34}P,^{7}Beγ)).
6023.3? *11*		A CDE	

γ(^{34}Si)

E$_i$(level)	J$^{\pi}_i$	E$_γ$†	I$_γ$†	E$_f$	J$^{\pi}_f$	Mult.	α‡	Comments
3327.14	2$^+$	3326.96 *20*	100	0.0	0$^+$	[E2]		B(E2)(W.u.)=2.6 *10*
4256.1	(3$^-$)	929.0 *3*	100 *10*	3327.14	2$^+$			
		4257 *3*	22 *3*	0.0	0$^+$	[E3]		I$_γ$: other: Iγ(4257)/Iγ(929)=0.53 *4* in ^{2}H(^{34}Si,^{34}Si′γ) is too high by a factor of ≈2.
4380.2	(3$^-$)	124.2 *3*	100 *8*	4256.1	(3$^-$)	[M1+E2]	0.025 *23*	α(K)=0.023 *22*; α(L)=0.0017 *16*
		1052.8 *4*	7.5 *12*	3327.14	2$^+$			
4520.2?		1193.34 *20*	100	3327.14	2$^+$			
4971.1	(3$^-$,4$^-$,5$^-$)	590.9 *3*	100	4380.2	(3$^-$)			
5042.2?		1715.4 *8*	100	3327.14	2$^+$			
5330.4	2$^+$	2000#	59 *9*	3327.14	2$^+$			E$_γ$,I$_γ$: from ^{7}Li(^{34}P,^{7}Beγ).
		5330	100	0.0	0$^+$			E$_γ$,I$_γ$: from ^{7}Li(^{34}P,^{7}Beγ).
6023.3?		2696.4 *12*	100	3327.14	2$^+$			

† From ^{34}Al $β^-$ decay, unless otherwise stated.
‡ 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.

Adopted Levels, Gammas

Level Scheme

Intensities: Relative photon branching from each level