Adopted Levels, Gammas

History			
Type	Author	Citation	Literature Cutoff Date
Full Evaluation	Ninel Nica, John Cameron and Balraj Singh	NDS 113,1 (2012)	31-Dec-2011

Q(β^-)=−1142.11 *19*; S(n)=9889.22 *19*; S(p)=13095.3 *19*; Q(α)=−9011.3 *4* 2012Wa38
Note: Current evaluation has used the following Q record −1142.14 19 *9889*.2719 *13095*.319-9011.3635 2011AuZZ.
S(2n)=16875.10 *19*, S(2p)=25285 *14* (2011AuZZ).
Values in 2003Au03: Q(β^-)=−1142.22 *19*, S(n)=9889.04 *21*, Q(α)=−9008.08 *22*, S(2n)=16874.92 *22*. S(p) and S(2p) are the same as in 2011AuZZ.
Identification of ^{36}S in mass spectrometer studies by A.O. Nier: Phys. Rev. 53, 282 (1938); measured ratio of ^{36}S to ^{32}S.
1971Ar32: production of ^{36}S in ^{232}Th(^{40}Ar,X) at 290 MeV fragmentation reaction.
1983Ry04: ^{36}S(e,e) E=120, 240, 320 MeV. Measured $\sigma(\theta)$, deduced charge radius.
1985Gy02, 1985GyZZ: ^{36}S(π-,π-) E=48.4 MeV, measured $\sigma(\theta)$.
1985Ko43: ^{20}Ne(^{16}O,^{16}O′) E(c.m.)=24.5-35.5 MeV, deduced resonances.
1985Sc05: measured muonic atom x rays, deduced rms charge radii. Observed muonic x-ray energies: 515.985 *14* (2p -> 1s), 616.28 *8* (3p -> 1s), 651.30 *10* (4p -> 1s), 667.63 *12* (5p -> 1s).
1997Is02: ^{37}Cl(γ,p) E≤32 MeV, measured Eγ, Iγ. GDR features deduced.
1999Ai02: Si(^{36}S,X) E=46.17 MeV/nucleon, measured energy integrated cross sections, deduced radius.
Additional information 1.

^{36}S Levels

Cross Reference (XREF) Flags

A	^{36}P β^- decay (5.6 s)	G	Coulomb excitation	M	^{115}In(^{34}S,Xγ)
B	^{36}Cl ε decay (3.01×10^5 y)	H	^{37}Cl(n,d)	N	^{160}Gd(^{36}S,^{36}S′γ),(^{34}S,^{36}S′γ)
C	^{34}S(t,p)	I	^{37}Cl(d,^{3}He)	O	^{160}Gd(^{37}Cl,Xγ)
D	^{34}S(t,pγ)	J	^{37}Cl(^{36}S,^{36}S′)	P	^{176}Yb(^{36}S,X):tentative
E	^{36}S(p,p′),(α,α′)	K	^{40}Ar(γ,α)		
F	^{36}S(pol d,d′)	L	^{40}Ar(^{3}He,^{7}Be)		

E(level)†	J$^\pi$‡	T$_{1/2}$#	XREF	Comments
0	0$^+$	stable	ABCDEFGHIJKLMNOP	J$^\pi$: spin measurement by microwave spectroscopy (1949Lo21). Nuclear rms charge radius=3.2982 fm *21* (2004An14 evaluation); 3.2985 fm *24* from 2008 update of 2004An14. Mean radius r$_0^2$=1.26 fm^2 *10* from measured integrated σ_R=2.44 b *19* at 46.17 MeV/nucleon in Si(^{36}S,X) reaction (1999Ai02).
3290.9 *3*	2$^+$	83 fs *7*	A CDEFG IJk MNOP	μ=+2.6 *10* (2008Sp01) T$_{1/2}$: from DSA in Coul. Ex. (2008Sp01). Other: 76 fs *21* (1972Sa09), also given in 2001Ra27 evaluation. J$^\pi$: E2 γ to 0$^+$. μ: transient field technique in Coulomb excitation in inverse kinematic reaction, g factor=+1.3 *5* (2008Sp01).
3346 *4*	0$^+$	8.8 ns *2*	CDE G I k	J$^\pi$: E0 transition to 0$^+$.
4192.7 *5*	3$^-$	0.62 ps *7*	A CDEFG J MNOP	μ=+2.4 *15* (2008Sp01) B(E3)=0.008 *3* (2002Ki06 evaluation), from β_3 in (p,p′) (1990Ho19). T$_{1/2}$: from DSA in Coul. Ex. (2008Sp01). Other: 0.8 ps *+4−3* (DSA in (t,pγ) (1972Sa09). μ: transient field technique in Coulomb excitation in inverse kinematic reaction, g factor=+0.8 *5* (2008Sp01).
4523.0 *6*	1$^+$	0.017 ps *8*	CDE G I k	
4575.2 *7*	2$^+$	55 fs *10*	A CDE G I k	
5021.5 *3*	4$^-$		A E MNOP	XREF: P(?).
5206.1 *3*	5$^-$		A E M OP	XREF: P(?).
5251.2 *10*	3$^-$	70 fs *30*	A CDE N	J$^\pi$: log *ft*=5.57 from 4$^-$; γ to 2$^+$.

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Adopted Levels, Gammas (continued)

^{36}S Levels (continued)

E(level)[†]	Jπ[‡]	T$_{1/2}$[#]	XREF	Comments
5338 *3*			E	
5391.4 *9*	2$^+$	>0.2 ps	CDE	XREF: E(5379). T$_{1/2}$: additional limit: <30 ns.
5462 *3*	3$^+$		E	
5509.1 *5*	(2,4)	0.19 ps *4*	CDE	XREF: E(5514). Jπ: 4$^-$ proposed in (p,p′),(α,α′).
5573.1 *7*	1$^-$	<0.14 ps	CDE	
5781.1 *10*			M	
5830.9 *7*	3$^-$		A E	XREF: E(5837). Jπ: log *ft*=4.66 from 4$^-$; γ to 2$^+$.
6186.9 *8*	3$^-$	55 fs *20*	CDE	XREF: E(6180).
6225.2 *10*	2$^+$	<20 fs	DE	XREF: E(6220).
6350 *3*			E	
6472 *3*	1$^-$		E	
6514.4 *4*	4$^+$	<0.2 ps	A CDE I	XREF: E(6510).
6553 *3*			E	
6690	(6$^+$)		N	
7120 *14*	(1,2)$^+$	<0.2 ps	CD I	
7271.9 *3*	(3$^-$,4$^-$,5$^-$)		A	Jπ: log *ft*=4.62 from 4$^-$.
7710 *25*			I	

[†] From least-squares fit to Eγ data, assuming 0.3 keV uncertainty for each Eγ.
[‡] Mainly from γγ(θ) and lin pol data in (t,pγ) and from comparison of σ(θ) data in (p,p′),(α,α′) to DWBA calculations.
[#] From DSA in (t,pγ), unless otherwise stated.

γ(^{36}S)

E$_i$(level)	Jπ$_i$	Eγ	Iγ	E$_f$	Jπ$_f$	Mult.	δ	Comments
3290.9	2$^+$	3290.8 *6*	100	0	0$^+$	E2		B(E2)(W.u.)=2.83 *24*
3346	0$^+$	3346		0	0$^+$	E0		Decay takes place by pair formation.
4192.7	3$^-$	901.5 *4*	100	3290.9	2$^+$	E1(+M2)	+0.03 *3*	B(E1)(W.u.)=0.00135 *15*
4523.0	1$^+$	1232.1 *4*	33 *13*	3290.9	2$^+$			
		4522.2 *15*	100 *13*	0	0$^+$	M1		B(M1)(W.u.)=0.010 *5*
4575.2	2$^+$	1284.2	100	3290.9	2$^+$	M1(+E2)	+0.06 *6*	B(M1)(W.u.)=0.19 *4*
5021.5	4$^-$	828.8	100 *2*	4192.7	3$^-$	M1		
		1730.6	3 *2*	3290.9	2$^+$			
5206.1	5$^-$	184.6	100.0 *23*	5021.5	4$^-$	D		
		1013.4	26.8 *18*	4192.7	3$^-$	Q		
5251.2	3$^-$	680		4575.2	2$^+$			
		1059.6 *4*	43 *11*	4192.7	3$^-$			
		1961.0 *4*	100 *11*	3290.9	2$^+$	D+Q		
5391.4	2$^+$	816.2 *4*	18 *9*	4575.2	2$^+$			
		5391.0	100 *9*	0	0$^+$			
5509.1	(2,4)	1316.8 *4*	52 *12*	4192.7	3$^-$			
		2217.7 *3*	100 *12*	3290.9	2$^+$	D+Q		
5573.1	1$^-$	2282.1 *3*	100	3290.9	2$^+$			
5781.1		760.4	100	5021.5	4$^-$			
5830.9	3$^-$	579.7	1.1 *4*	5251.2	3$^-$			
		809.4	15.2 *9*	5021.5	4$^-$			
		1255.7	12.7 *9*	4575.2	2$^+$			
		1638.2	100 *3*	4192.7	3$^-$			
		2539.9	49.3 *23*	3290.9	2$^+$			
6186.9	3$^-$	1994.8 *4*	33 *11*	4192.7	3$^-$			

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Adopted Levels, Gammas (continued)

γ(^{36}S) (continued)

E_i(level)	J_i^π	E_γ	I_γ	E_f	J_f^π	Comments
6186.9	3^-	2894.8 *5*	100 *11*	3290.9	2^+	
6225.2	2^+	1649.2 *5*	100 *13*	4575.2	2^+	
		2933.0 *10*	32 *13*	3290.9	2^+	
6514.4	4^+	2321.6†	100	4192.7	3^-	E_γ,I_γ: from ^{36}P β^- decay (1986Du07); in (t,pγ), 1971Ol02 assign 3290.9 level as final state for single transition from 6514.4 level. For this γ ray, Eγ=3223.3 and δ=−0.03 *3*.
6690	(6^+)	1485	100	5206.1	5^-	
7120	$(1,2)^+$	2550	28 *7*	4575.2	2^+	
		3830	11 *7*	3290.9	2^+	
		7120	100 *7*	0	0^+	
7271.9	$(3^-,4^-,5^-)$	757.5	32 *5*	6514.4	4^+	
		1441.0	12 *5*	5830.9	3^-	
		2020.6	100 *7*	5251.2	3^-	
		2065.7	15 *5*	5206.1	5^-	
		2250.3	32 *5*	5021.5	4^-	
		3079.1	54 *12*	4192.7	3^-	

† Placement of transition in the level scheme is uncertain.

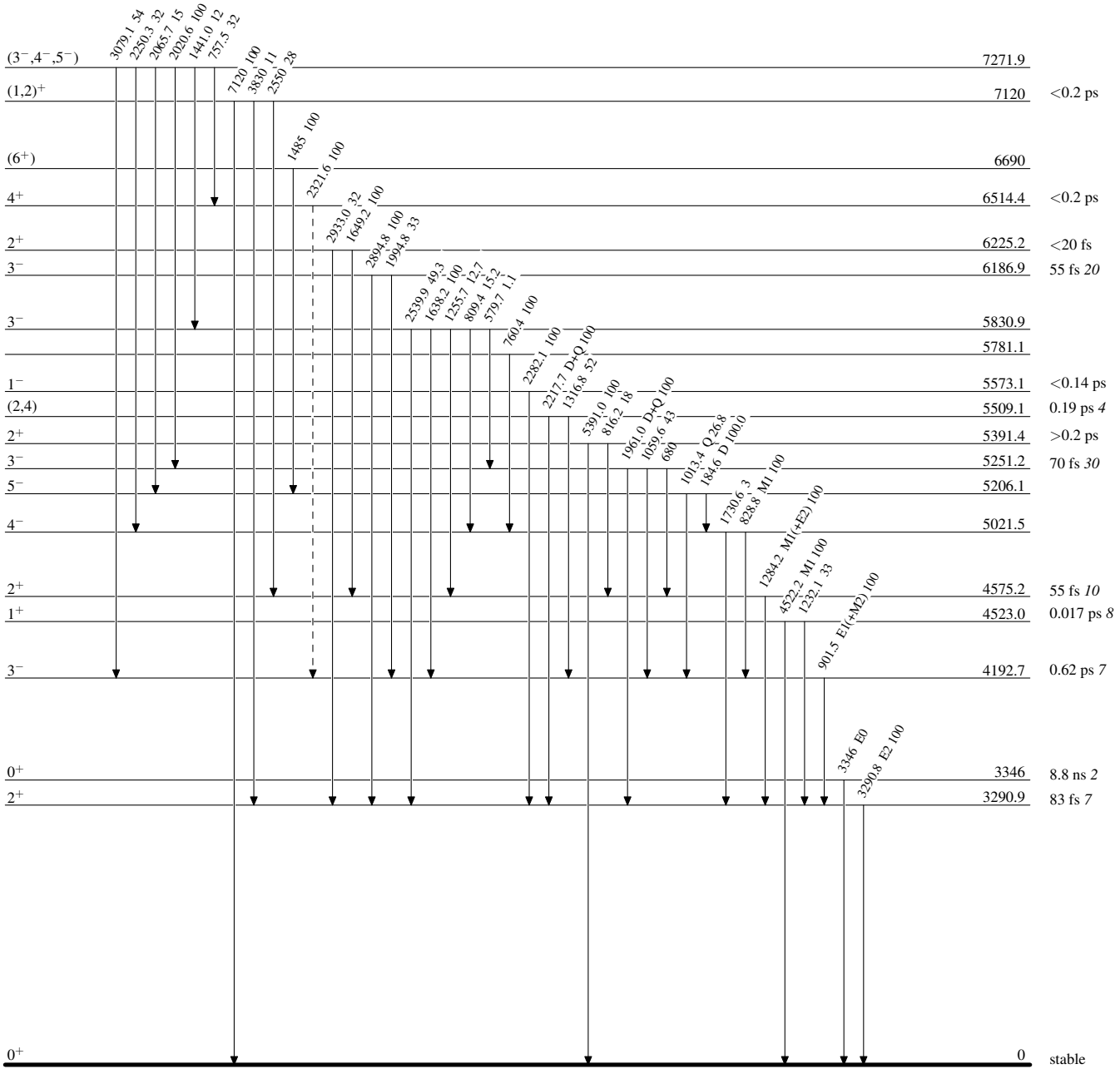
Adopted Levels, Gammas

Legend

Level Scheme

Intensities: Relative photon branching from each level

- - - - - - ► γ Decay (Uncertain)



$^{36}_{16}S_{20}$