^{32}S(p,p′),(pol p,p′)   1991Ke09,1989Cr02,1967Cr07

Type	Author	History Citation	Literature Cutoff Date
Full Evaluation	Jun Chen	NDS 201,1 (2025)	31-Oct-2024

1991Ke09 (also 1991Kh06): (pol p,p′) E=318 MeV polarized proton beam was from the Los Alamos Meson Facility. Target was about 17 mg/cm^2 99.89% enriched ^{32}S. Scattered particles were momentum-analyzed with the high-resolution spectrometer (HRS) and detected with the standard focal-plane array. Measured $\sigma(E_p,\theta)$ and analyzing powers. Deduced levels, transition densities. Comparison of densities with shell model. 10 groups reported.

1989Cr02: (p,p′) E=201 MeV proton beam was from the Orsay synchrocyclotron. Target was 20 mg/cm^2 ^{32}S. Measured $\sigma(E_p,\theta)$. Deduced levels, J, π, isospins from DWBA analysis.

1985Ka10: (pol p,p′) E=65 MeV polarized proton from the AVF cyclotron at RCNP. Measured $\sigma(E_p,\theta)$. Deduced levels. Coupled-channel analysis.

1981De11: (p,p′) E=20.37 MeV proton beam from Milan AVF cyclotron. Target was 1 mg/cm^2 natural sulphur. Scattered protons were detected with a solid-state detector. Measured $\sigma(E_p,\theta)$. Deduced levels, deformation parameters from coupled-channel analysis.

1973Lo12: (pol p,p′) E=24.5 MeV protons from Saclay cyclotron. Measured $\sigma(\theta)$ and analyzing power. Coupled-channel analysis.

1971Ka58: (p,p′) E=185 MeV proton. Measured $\sigma(\theta)$. PWIA calculations.

1971Wi16: (p,p′) E=17.5 MeV proton from Oregon State University cyclotron. Measured $\sigma(\theta)$.

1966Li02,1968Wi05: (p,p′) E=155 MeV proton at Orsay. Measured $\sigma(\theta)$.

1967Cr07: (p,p′) E=17.5 MeV protons from the Princeton FM cyclotron. Si detectors for angular distribution measurements. DWBA analysis. Elastic film S and CS$_2$ targets.

2001Kh17 (also 2003La13,2000Bl25): ^{1}H(^{32}S,p′) E(^{32}S)=53 MeV/nucleon at GANIL. Measured $\sigma(\theta)$. Deduced β_2 for first 2$^+$.

2015Ma48: (p,p′) E=295 MeV protons from RCNP. Measured $\sigma(E_p,\theta)$. No quenching observed for isoscalar spin-M1 transitions.

Others: 1952Ar32, 1960Od01, 1966Po01, 1972Pl06, 1976De12.

^{32}S Levels

E(level)[†]	J$^{\pi}$[†]	L[‡]	Comments
0	0$^+$		
2230	2$^+$	2	E(level): other: 2220 *30* (1971Ka58). L: from 1967Cr07. β_2=0.30 *2* (2001Kh17), 0.37 (1967Cr07). Additional information 1.
3780[#]			
4282			E(level): other: 4250 *30* (1971Ka58). β_2=0.20 (1967Cr07).
4459			E(level): other: 4430 *80* (1971Ka58).
4695			E(level): from 1985Ka10. Other: 4700 (1967Cr07).
5006			E(level): other: 4990 *40* (1971Ka58). β_2=0.41 (1967Cr07).
5410			E(level): from 1981De11 and 1967Cr07.
5549			
5798			E(level): other: 5760 *60* (1971Ka58). β_2=0.12 (1967Cr07).
6224			E(level): from 1985Ka10. Other: 6230 (1967Cr07). β_2=0.14 (1967Cr07).
6411			E(level): other: 6420 *50* (1971Ka58).
6581	(2$^+$,3$^-$)		J$^{\pi}$: proposed by 1991Ke09.
6620[#]			
6670[#]			
6762	(5$^-$)		E(level): other: 6760 *50* (1971Ka58). J$^{\pi}$: proposed by 1991Ke09.
6980	1$^+$	0	T=0
7190	1$^+$	0	T=(0)

^{32}S(p,p′),(pol p,p′)   **1991Ke09,1989Cr02,1967Cr07 (continued)**

^{32}S Levels (continued)

E(level)[†]	J^{π}[†]	L[‡]	Comments
7430[#]			E(level): other: 7400 *50* (1971Ka58).
7630	1^+	0	T=1
			E(level): other: 7580 *80* (1971Ka58).
7710[#]			
7920	1^+	0	T=1
			E(level): others: 7950 (1967Cr07), 7920 *70* (1971Ka58).
8130	1^+	0	T=1
			E(level): others: 8210 (1967Cr07), 8170 *70* (1971Ka58).
8300[#]			
8500[#]			
8750[#]			
9080?[#]			E(level): other: 9050 *90* (1971Ka58).
9280	1^+	0	T=0
			E(level): other: 9200 *100* (1971Ka58).
9660	1^+	0	T=1
9930	1^+	0	T=0
10080		1	E(level): other: 100000 *100* (1971Ka58).
10430			
10780			E(level): other: 10830 *100* (1971Ka58).
11130	1^+	0	T=1
			E(level): other: 11150 *100* (1971Ka58).
11.55×10^3 *10*			E(level): from 1971Ka58.
11630	1^+	0	T=1
			E(level): other: 12000 *200* (1971Ka58).
11880	1^+	0	T=1
12560	1^+	0	T=1
13230	1^+	0	T=(0)
13770	1^+	0	T=(0)
13900	1^+	0	T=1
14880	1^+	0	T=(1)
15040	1^+	0	T=(0)
15580	1^+	0	T=1
15700	1^+	0	T=1
15840	1^+	0	T=1

[†] From 1991Ke09 for levels up to 6762 and from 1989Cr02 above this level, unless otherwise noted. Spin-parities and isospins from 1989Cr02 are deduced based on DWIA analysis of measured $\sigma(\theta)$.

[‡] From 1989Cr02. All 1^+ assignments seem from L(p,p′)=0 based on DWIA analysis, even though L=0 is not explicitly stated for those levels in ^{32}S, while L=0 is explicitly stated for 1^+ levels with similar shapes of $\sigma(\theta)$ in ^{24}Mg also measured by 1989Cr02.

[#] From 1967Cr07.