

$^{36}\text{S}(\text{pol d}, ^3\text{He})$  1985Kh04

Type	Author	History	Citation	Literature Cutoff Date
Full Evaluation	Lijie Sun and Jun Chen		NDS 211,1 (2026)	30-Sep-2025

$J^\pi=0^+$  for  $^{36}\text{S}$  ground state.

1985Kh04: 52-MeV unpolarized and vector-polarized deuteron beams of 100 nA were produced from the Karlsruhe cyclotron. The target was a 1 mg/cm<sup>2</sup>  $^{208}\text{Pb}$  sulfide with 81.1% enriched  $^{36}\text{S}$  on  $^{12}\text{C}$  backing. Reaction products were detected using two 300- $\mu\text{m}$  and 1500- $\mu\text{m}$  thick  $\Delta\text{E-E}$  surface-barrier detector telescopes (FWHM $\approx$ 90 keV). Measured angular distributions of differential cross sections  $\sigma(\text{E}(^3\text{He}),\theta)$  and angular distributions of analyzing powers  $i\text{T}_{11}(\text{E}(^3\text{He}),\theta)$ . Deduced mass excess, levels, J,  $\pi$ , L-transfers, and spectroscopic factors from standard local, zero-range JULIE-DWBA analysis of  $\sigma(\text{E}(^3\text{He}),\theta)$  and  $i\text{T}_{11}(\text{E}(^3\text{He}),\theta)$ .

 $^{35}\text{P}$  Levels

Spectroscopic factor  $\text{C}^2\text{S}=\sigma(\theta)_{\text{exp}}/\sigma(\theta)_{\text{DWBA}}/N$ , where  $N=2.95$  is a normalization factor adopted by 1985Kh04 from 1974Ma34, originally from 1966Ba54.

E(level) <sup>†</sup>	$J^\pi$	$L^\ddagger$	$\text{C}^2\text{S}^\ddagger$	Comments
0	1/2 <sup>+</sup>	0	1.63	
2386 6	3/2 <sup>+</sup> #	2	0.31#	
3857 2	5/2 <sup>+</sup> @	2	2.91@	
4474 21			<0.2	1d <sub>5/2</sub> proton transfer assumed in DWBA calculations, but 2016Mu03 proposed 1f <sub>7/2</sub> (L=3) based on the measured parallel momentum distribution.
4665 3	5/2 <sup>+</sup> @	2	1.06@	
5189 13	5/2 <sup>+</sup> @	2	1.38@	
7520 30			<0.4	

<sup>†</sup> From 1985Kh04.

<sup>‡</sup> From DWBA analysis of measured  $\sigma(\theta)$ .

# L-1/2 transfer from analyzing power measurements; 1d<sub>3/2</sub> proton transfer assumed in DWBA calculations.

@ L+1/2 transfer from analyzing power measurements; 1d<sub>5/2</sub> proton transfer assumed in DWBA calculations.