

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

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

1985Kh04: E=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 with two 300  $\mu\text{m}$  and 1500  $\mu\text{m}$ -thick  $\Delta\text{E-E}$  surface-barrier detector telescopes (FWHM $\approx$ 90 keV). Measured  $\sigma(\text{E}(^3\text{He}), \theta)$ , analyzing powers ( $i\text{T}_{11}(\theta)$ ). Deduced mass excess, levels, J,  $\pi$ , L-transfers, spectroscopic factors from vector analyzing power data and standard local, zero-range JULIE-DWBA analysis of the angular distributions.

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

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

E(level) <sup>†</sup>	$J^\pi$	L <sup>‡</sup>	$\text{C}^2\text{S}^\ddagger$	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 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	1d <sub>5/2</sub> proton transfer assumed in DWBA calculations, but 2016Mu03 proposed 1p <sub>1/2</sub> (L=1) based the measured parallel momentum distribution.

<sup>†</sup> Deduced from  $^3\text{He}$  spectra measured with unpolarized deuteron beam.

<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.