

$^2\text{H}(^{36}\text{S},^3\text{He})$ 2020Sa44

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

2020Sa44: $E(^{36}\text{S})=15.3$ MeV/nucleon was provided by the Argonne Tandem Linear Accelerator System. Targets were 81, 127, 529- $\mu\text{g}/\text{cm}^2$ deuterated plastic. The reaction was studied in inverse kinematics with the HELical Orbit Spectrometer (HELIOS). The ^3He ions spiralled in a 2.85-T magnetic field and were detected by a position-sensitive silicon array. The heavy-ion products were measured with a 65- μm thick silicon detector installed between the target and the silicon array. Measured $\sigma(E(^3\text{He}),\theta)$. Deduced relative spectroscopic factors for 6 levels from the PTOLEMY-DWBA analysis of the angular distributions. A potential $1/2^+$ neutron 2p2h excitation bandhead in 2.5-3.6 MeV was investigated, and an upper limit for the transfer reaction cross section to populate such an intruder configuration was deduced.

 ^{35}P Levels

2020Sa44 states that the measurement of the beam current was not made with sufficient accuracy to calculate absolute spectroscopic factors. The C^2S values are relative spectroscopic factors normalized such that the ground-state value is 2.

$E(\text{level})^\dagger$	J^π^\ddagger	$C^2S^\#$
0 1	$1/2^+$	2.0
2388 13	$3/2^+$	0.33 9
3860 2	$5/2^+$	2.9 10
4666 9	$5/2^+$	0.71 34
5202 8	$5/2^+$	1.1 6
5706 38	$(1/2^-)$	0.23 5

† From 2020Sa44.

‡ Assumed by 2020Sa44 for deducing C^2S , consistent with the Adopted Levels.

$^\#$ Uncertainties are dominated by systematic components.