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High precision mass measurement of sulfur near $N = 28$ ¹
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SEY, G.K. PANG, R. RINGLE, J. SAVORY, P. SCHURY, S. SCHWARZ — High-
precision mass measurements have been performed on the neutron-rich sulfur iso-
topes 40-44S using the Low Energy Beam and Ion Trap (LEBIT) 9.4 T Penning trap
at the NSCL. Produced via projectile fragmentation with a 48Ca primary beam, the
ions were converted into a low-energy beam via gas stopping and then transferred
into a 9.4 T Penning trap mass spectrometer. Mass uncertainties as low as 20 keV
have been achieved in a mass region with important nuclear structure effects like
the disappearance of the $N=28$ shell closure and the appearance of a strong subshell
closure in neighboring $Z=14$. The experiments were of further technical interest
because of the type of beams that can be extracted from gas stoppers. Not only
atomic sulfur ions but also several different radio-molecules were used for the mass
determination.

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