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Observation of TeV Gamma Rays from the Jet Interaction Regions of SS 433 with HAWC

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Astrophysical sources of high-energy radiation such as AGN and microquasars produce relativistic jets. Particle acceleration in jets is theoretically well-motivated, but direct evidence of acceleration in jets has not been observed above a few TeV. Using 33 months of data from HAWC, we present evidence for the production of gamma rays >10 TeV in the jets of SS 433, one of the most powerful microquasars in the galaxy. The very high-energy gamma rays imply the presence of a population of charged particles with energies extending to hundreds of TeV, and possibly to PeV. The gamma-ray measurements also allow us to address several open questions about this system, such as the composition of the jets, the origin of the high-energy radiation, and the strength of the magnetic field.

Primary author: Mr RHO, Chang Dong (University of Rochester)

Co-authors: Dr DINGUS, Brenda (Los Alamos National Laboratory); Dr ZHOU, Hao (Los Alamos National Laboratory); Dr ZHANG, Haocheng (Purdue University); Dr FANG, Ke (University of Maryland); Dr BENZVI, Segev (University of Rochester)

Presenter: Mr RHO, Chang Dong (University of Rochester)

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