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DETECTION OF PERSISTENT SUB-GEV GAMMA-RAY EMISSION TOWARDS SS433/W50

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SS433 features the most energetic jets known in our Galaxy. A large fraction of the jet kinetic power is delivered to the surrounding W50 nebula at the jet termination shock, from which high-energy emission and cosmic-ray production have been anticipated. Here we report on the possible detection of a persistent gamma-ray signal from a source located within the 99.9 % confidence level contours around SS433/W50 obtained with the Fermi Large Area Telescope. The spectral energy distribution displays a maximum at ~ 250 MeV and a sharp cutoff thereafter, strongly resembling the gamma-ray spectrum of solar flares, and suggesting that gamma-rays are rendered through proton-proton interactions. If the observed gamma-ray emission is produced in the SS433/W50 interaction regions and the same mechanism is operating in other baryon-loaded microquasar jets, their collective contribution could represent a significant fraction of the total galactic cosmic-ray flux at GeV energies.

Collaboration

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