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Revealing Cosmic-Ray acceleration in the SNR W51C

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SNR are commonly assumed to accelerate the cosmic rays of E < 1 PeV observed at Earth. SNRs that interact with molecular clouds (MCs) are very promising targets to distinguish between leptonic and hadronic-induced gamma-ray emission. One of the brightest Fermi/LAT-detected SNRs interacting with a MC is W51C. Here we present a very detailed analysis of 5 years of Fermi/LAT data revealing a very significant low-energy break in the gamma-ray spectrum associated with the production threshold of neutral pions. This unmistakable feature of CR-acceleration in W51C is further investigated and we present a detailed modelling of the source with various gamma-ray production mechanisms. We finally compare the derived properties of W51C with those of the other known CR accelerators W44 and IC443.

Collaboration

FERMI

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