

Analysis of the W 44 Supernova Remnant and its surroundings with Fermi-LAT and MAGIC

Tuesday 20 July 2021 12:48 (12 minutes)

The well-known supernova remnant (SNR) W 44 is observed in high-energy gamma-rays and widely studied to investigate cosmic ray (CR) acceleration. Several analyses of the W 44 surroundings showed the presence of gamma-ray emission offset from the radio SNR shell. This emission is thought to originate from escaped high-energy CRs.

We present a detailed analysis of the W44 region as seen by Fermi-LAT above 50 MeV, focusing on the spatial and spectral characteristics of both W 44 SNR and its surroundings. The spatial analysis was limited to energies above 1 GeV in order to exploit the improved angular resolution of the instrument, deriving a detailed description of the region morphology. Observations of the northwestern region of W44, also known as SRC-1 from previous works, were conducted with the MAGIC telescopes in the very high-energy gamma-ray band, namely above 50 GeV. We analysed MAGIC data exploiting the spatial information derived with the Fermi-LAT analysis at GeV energies. Here we show the results of both analyses and the combined Fermi-LAT and MAGIC spectra, thus obtaining constraining information on the diffusion of the escaped CRs.

Keywords

Galactic sources, Supernova Remnants, Cosmic Rays

Collaboration

Fermi-LAT

other Collaboration

MAGIC

Subcategory

Experimental Results

Primary author: DI VENERE, Leonardo (University and INFN Bari)

Co-authors: Dr GREEN, David (Max-Planck-Institut for Physics); DI TRIA, Riccardo (University of Bari); Prof. GIORDANO, Francesco (University and INFN Bari); HAHN, Alexander (Max Planck Institute for Physics); PANTALEO, Francesca Romana (University and INFN Bari); Dr STRZYS, Marcel (Institute for Cosmic Ray Research, The University of Tokyo); FOR THE FERMI-LAT AND MAGIC COLLABORATIONS

Presenter: DI VENERE, Leonardo (University and INFN Bari)

Session Classification: Discussion

Track Classification: Scientific Field: GAD | Gamma Ray Direct