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Multimessenger constraints on the dark matter interpretation of the Fermi-LAT Galactic center excess

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The excess of gamma rays in the data measured by the Fermi Large Area Telescope from the Galactic center region is one of the most intriguing mysteries in Astroparticle Physics. This Galactic center excess (GCE), has been measured with respect to different interstellar emission models, source catalogs, data selections and techniques. Although several proposed interpretations have appeared in the literature, there are not firm conclusions as to its origin. The main difficulty in solving this puzzle lies in modeling a region of such complexity and thus precisely measuring the characteristics of the GCE. In this presentation I will show the results obtained for the GCE by using 11 years of Fermi-LAT data, state of the art interstellar emission models, and the newest 4FGL source catalog to provide precise measurements of the energy spectrum, spatial morphology, position, and sphericity of the GCE. I will also present constraints for the interpretation as dark matter particle interactions using the GCE, a gamma-ray analysis of dwarf spheroidal galaxies with LAT data and AMS-02 cosmic-ray antiprotons and positrons flux data.

Keywords

dark matter, gamma ray, cosmic ray, Galactic center

Collaboration

other Collaboration

Subcategory

Theoretical Results

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