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The gamma-ray galactic center excess with multi-messenger observations

Wednesday, June 28, 2023 10:00 AM (45 minutes)

The Galactic center excess (GCE) remains one of the most intriguing discoveries from the Fermi Large Area Telescope (LAT) observations. I will revisit characteristics of the GCE tested under an updated set of high-resolution galactic diffuse gamma-ray emission templates. This diffuse emission, which accounts for the bulk of the observed gamma rays, is ultimately due to cosmic-ray interactions with the interstellar medium. Using recent high-precision cosmic-ray observations, in addition to the continuing Fermi-LAT observations and observations from lower energy photons. I will discuss improvements on modeling of the galactic diffuse emission. A large set of diffuse gamma-ray emission templates has been used which account for a very wide range of initial assumptions on the physical conditions in the inner galaxy. I will give an update on the spectral and morphological properties of the GCE and their physical implications.

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