

Dissecting the inner Galaxy with gamma-ray pixel count statistics

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What is this contribution about?

We dissect the photon emission observed by Fermi-LAT in the inner Galaxy to investigate the role of sub-threshold point sources in the interpretation of the Galactic Center excess (GCE).

What have we done?

To minimize the systematic effects inherent the modeling of the diffuse emissions, we combine adaptive template fitting (skyFACT) and pixel count statistics (by means of the 1pPDF method). We reconstruct the flux distribution of point sources well below the Fermi-LAT detection threshold, and measure their radial and longitudinal profiles in the inner Galaxy.

Why is it relevant / interesting?

The nature of the GCE is still under investigation. A major problem in the interpretation of results obtained with pixel count statistics methods comes from the mismodeling of the diffuse emission, which we address combining skyFACT with the 1pPDF.

What is the result?

We find that all point sources *and* a diffuse emission correlated with the stellar bulge each contributes $\mathcal{O}(10\%)$ of the total inner Galaxy emission, and disclose a potential non-isotropic sub-threshold point-source contribution to the GCE, corroborating its possible, at least partial, stellar origin.