Contribution ID: **47** Type: **Oral Contributions**

Diffuse Emission Models of the Galactic Center and the GeV Excess

Thursday 15 September 2016 14:20 (20 minutes)

Fermi-LAT observations have discovered a gamma-ray excess emanating from the Galactic center of the Milky Way. While this excess may be explained by populations of gamma-ray pulsars or by dark matter annihilation, it is worth noting that the intensity of this excess is comparable to the systematic uncertainties in the diffuse astrophysical gamma-ray emission near the Galactic plane. Thus, a detailed understanding of the intensity, spectrum, and morphology of gamma-rays from hadronic and leptonic processes in the Galactic center is necessary to determine both the existence and characteristics of the gamma-ray excess. In this talk, I will discuss significant improvements in gamma-ray diffuse emission modeling that enhance our understanding of high energy astrophysics near the Galactic center, and will describe the impact of these models on our understanding of the gamma-ray excess.

Summary

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Session Classification: Dark matter (indirect detection)

Track Classification: Dark matter (indirect detection)