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Detection of diffuse γ -ray emission in the vicinity of G213.0-0.6 with Fermi-LAT

We report the detection of high-energy γ -ray emission in the vicinity of G213.0-0.6, which is debated as a Supernova remnant (SNR) or an ionized hydrogen (H_{II}) region. Using 16-yr Pass 8 data from Fermi Large Area Telescope (Fermi-LAT), we found three extended sources with different photon spectra. Among them, the softer source SrcA with Log-parabola spectrum is spatially coincident with a star-forming region and several Young stellar objects. The harder Power-Law spectra source SrcB is spatially coincidence with SNR radio shell. And SrcC with softer Power-Law photon spectra is located outside of the radio shell structure. Especially, SrcA and SrcC are spatially coincident with the dense molecular cloud in the velocity range of 35 - 54 km s⁻¹. In this scenario, SrcB can be interpreted as the GeV counterpart of SNR, SrcA and SrcC are originates from the escaped CRs illuminated nearby MC. Especially, for SrcA, another possibility that the γ -ray emission originates from young stellar cluster (YSC) also discussed, however, the supporting evidence remains insufficient to draw a definitive conclusion.

Collaboration(s)

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