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A giant ultra-high-energy gamma-ray emitting region associated with a millisecond pulsar

Wednesday 27 August 2025 16:50 (20 minutes)

In this talk, I will present the discovery of a giant peanut-shaped ultra-high-energy (UHE) γ-ray emitting region using data from the Large High Altitude Air Shower Observatory (LHAASO). The emission, located in isolation below the Galactic plane at a Galactic latitude b ≈ −17.5◦, features two prominent hot spots embedded in a uniform rectangular structure covered a large region of 1°×5°, spanning an energy range from approximately 10 TeV to several hundreds TeV.
Only a very aging millisecond pulsar (MSP) J0218+4232 is found spatially associated with the emission region. This is the first time for an MSP to be possibly responsible to emission of gamma rays with such a specific energy spectral distribution measured only above 0.01 PeV with the most energetic photon at ~0.7 PeV. Other implications to this region will be also discussed which are actually mostly potential challenges.

Collaboration you are representing

Author: LI, Zhe

Presenter: LI, Zhe

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