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On the origin of the very-high energy gamma-ray emission of the Galactic Center region

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The Galactic Centre region has been observed by the H.E.S.S. I array of ground-based Cherenkov telescopes since 2004 leading to the detection of the very-high-energy (VHE, $E > 100$ GeV) gamma-ray source HESS J1745-290 spatially coincident with the supermassive black hole Sgr A*. Diffuse TeV gamma-ray emission has been detected along the Galactic ridge, most likely due to cosmic-ray interactions with dense gas of the Central Molecular Zone. We report here the results of a detailed spectral study of the inner 50 pc of the Galactic Centre region based on the full data set of 2004-2013 observations. The new results allow us to make a strong statement regarding the location and origin of the accelerator of the parent ultrarelativistic particles. We will discuss possible implications of the observed emission, in particular, in the context of the origin of Galactic cosmic-rays.

Collaboration

H.E.S.S.

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