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Detection of Very-high-energy Gamma-Ray Emission from a Gamma-Ray Binary LS5039

Binary systems are potential very-high-energy (VHE) gamma-ray emitters, however, the VHE gamma-ray emission mechanism of these systems remains poorly understood. Recent observational results from HAWC on V4641 Sgr and from H.E.S.S. on SS 433 suggest that shocks present on both sides of binary systems can efficiently accelerate particles. In this study, we search for VHE gamma-ray above ˜10TeV from the gamma-ray binary LS5039, which consists of a massive star with a mass of 23 M⊠ and an unknown compact object. Previous observations of LS5039 by HAWC did not detect significant VHE gamma-ray emission. With the high sensitivity of LHAASO for VHE gamma-ray observation, we aim to identify the gamma-ray emission above ˜10 TeV from LS5039 and investigate its spectral and orbital variability.

Collaboration(s)

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