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Observation of an astrophysical gamma-ray source HESS J1843-033 with the Tibet air shower array and its muon detector array

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Gamma-ray observation in the sub-PeV range provides a method of investigating accelerators of the Galactic PeV cosmic rays, so-called PeVatrons. However, the detection of PeVatrons has not been established yet, and a large fraction of sub-PeV gamma-ray sources still has an unknown origin, which requires detailed studies for individual gamma-ray sources. A TeV gamma-ray source HESS J1843-033 is such a source. LHAASO and HAWC have detected nearby gamma-ray sources above 56 TeV and 100 TeV, respectively, but the relations between these gamma-ray sources and their origin are still to be elucidated due to the lack of detailed studies. This study discusses the origin of gamma rays coming from HESS J1843-033 and the nearby gamma-ray sources based on the analysis of data taken by the Tibet air shower array and its underground muon detector array. The presentation gives the results of our data analysis and the discussion of the origin of the gamma rays.

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