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Clustering analysis of Fermi-LAT unidentified point sources

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In this work we study clustering of unassociated Fermi-LAT sources and check for counterpart extended sources in TeV catalogues. The goal is to determine whether an extended source model is preferred compared to a cluster of point-like sources. The work is motivated by prior observations of extended TeV gamma-ray sources, such as HESS J1813-178, and their GeV counterparts. In the case of HESS J1813-178, two unidentified Fermi-LAT point sources were detected in the region. Subsequent multiwavelength analysis combining TeV and GeV data showed that a single extended source is a better description of the emission in this region than two point-like sources. In this talk I will present the first results from a systematic study of clusters of unassociated Fermi LAT sources, where we test whether a single extended source has a better description than several point-like sources.

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