



Contribution ID: 1035

Type: **Poster contribution**

Blazars identification among the unidentified sources of the 3FGL gamma-ray catalog

Tuesday, 4 August 2015 16:00 (1 hour)

The LAT telescope on board of the Fermi satellite provides the deepest survey of the gamma-ray sky in the 100 MeV to 300 GeV energy range. Recently published, the 3FGL catalog contains 3033 sources obtained from the analysis of 4 years of data. While 2043 of these sources are associated with objects identified at other wavelengths, the most numerous populations corresponding to blazars (1145) and pulsars (166), the nature of a significant fraction (992; 33%) of the 3FGL catalog objects is still unknown. In order to investigate their nature, and in particular to find blazar candidates among the unidentified sources, we have developed a multivariate analysis based on the blazar/non-blazar discriminant power contained in the spectral and temporal information provided by the 3FGL catalog. In addition, considering the specificities of blazars in the infrared colors space, we have developed an other multivariate analysis to identify blazars with astrometric precision among the tens and sometimes hundreds of sources detected by the infrared WISE space telescope in spatial coincidence with each Fermi unidentified source. We have applied these two analyses on the set of 3FGL unidentified sources and provide a list of blazar candidates.

Collaboration

– not specified –

Registration number following "ICRC2015-I"

816

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