Contribution ID: **359**   Type: **Poster**

Classification and Ranking of Fermi LAT gamma-ray sources from the 4FGL Catalog using Machine Learning Techniques

Wednesday 14 April 2021 07:49 (7 minutes)

The Fermi LAT Fourth Source Catalog (4FGL) contains over 5000 gamma-ray sources detected using 8 years of LAT data. Among these sources, over 3000 are associated with known blazars, 239 are associated with pulsars, and over 1300 are classified as 'unassociated' sources, meaning they have no known plausible counterpart at any other wavelength. Following on our previous work on the 3FGL Catalog (Saz Parkinson et al. 2016), we use the information from the known classes of gamma-ray sources to infer the nature of the unassociated sources from 4FGL using machine learning techniques. We will present the results of our predictions, as well as examples of the follow-up multiwavelength observations and pulsar searches on some the top candidates identified in our studies.

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Session Classification: Dark Matter/CR/Catalogs-2

Track Classification: Catalogs