ID de la contribución : **277** Tipo : **Talk**

Inferring the Source-Count Distributions and Spectra of the Unresolved Gamma-Ray Background with Simulation-Based Inference

jueves, 6 de noviembre de 2025 14:30 (15)

The extragalactic background (EGB) observed by Fermi-LAT provides a detailed map of the non-thermal universe. We construct a simulation-based inference framework with the goal of characterizing the full information contained in the EGB. Using a convolutional neural network method, we provide the first simultaneous inference of the energy spectrum and source-count distribution (SCD) for the underlying EGB populations. Our method has the flexibility to account for correlations introduced by the telescope's point-spread function. Our predicted EGB spectra is consistent with that found by the Fermi calibration, whereas our SCD maintains sensitivity to dimmer sources than in previous works. By simulating blazars and star-forming galaxies, we train the neural network to distinguish between populations based on their spectral shape and infer the relative abundance of each population. Validating this method in the clean high latitude region paves the way towards extending the method towards noisier environments, such as the Galactic center.

Primary author(s) : SCHOEN, Eve (UC Berkeley / LBNL, USA)

Presenter(s) : SCHOEN, Eve (UC Berkeley / LBNL, USA)

Clasificación de la sesión : Gamma Rays

Clasificación de temáticas : Gamma rays