

Paris workshop on Bayesian Deep Learning for Cosmology and Time Domain Astrophysics



ID de Contribution: 84 Code de contribution: poster_s2_4

Type: Poster + lightning talk

Background Estimation in Fermi Gamma-ray Burst Monitor lightcurves through a Neural Network

mercredi 22 juin 2022 11:10 (2 minutes)

The aim of this work is to provide a data-driven approach to estimate a background model for the Gamma-Ray Burst Monitor (GBM) of Fermi satellite. We employ a Neural Network (NN) to estimate each detector background signal given the information of the satellite: position, velocity, direction of the detectors, etc. The estimated background can be employed into a triggering algorithm to discover significant long/weak events that are not previously detected by other approaches.

We show the potential of the model by estimating the background on GBM data for Gamma-Ray Bursts (GRBs) present in GBM cataloge, the long GRB 190320 and ultra-long GRB 091024.

The proposed approach is straightforwardly generalizable to estimate the background model of other satellites.

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Classification de Session: Lightning talks

Classification de thématique: Time Domain Astrophysics