

Hunting the gamma-ray emission from Fast Radio Bursts with Fermi-LAT

Wednesday 12 October 2022 17:30 (15 minutes)

Fast radio bursts (FRBs) are one of the most exciting new mysteries of astrophysics. Their origin is still unknown, but recent observations seem to link them to soft gamma repeaters and, in particular, to magnetar giant flares (MGFs). The recent detection of a MGF at GeV energies by the Fermi Large Area Telescope (LAT) motivated the search for GeV counterparts to the >1000 currently known FRBs. To date, none of these has a known gamma-ray counterpart.

Taking advantage of more than 12 years of Fermi-LAT data, we perform a search for gamma-ray emission from almost all the reported repeating and non-repeating FRBs. We analyze on different time scales the Fermi-LAT data for each individual source separately and perform a cumulative analysis on the repeating ones. In addition, we perform the first stacking analysis at GeV energies of this class of sources in order to constrain the gamma-ray properties of the FRBs. The stacking analysis is a powerful method that allows for a possible detection from below-threshold FRBs providing important information on these objects. In this talk we present the results of our study and we discuss their implications for the predictions of gamma-ray emission from this class of sources.

Track

GRBs

Primary author: DI LALLA, Niccolò (Stanford University)

Co-authors: LONGO, Francesco (University and INFN Trieste); PRINCIPE, Giacomo (University and INFN Trieste); DI VENERE, Leonardo (Politecnico and INFN Bari); NEGRO, Michela (CRESTII/NASA-GSFC/UMBC); OMODEL, Nicola (Stanford University)

Presenter: LONGO, Francesco (University and INFN Trieste)

Session Classification: Parallel 10