

Search for gamma-ray emission from Jupiter with 15 years of Fermi-LAT data

Monday, 26 May 2025 12:30 (15 minutes)

Fermi-LAT is one of the major gamma-ray observatories in the hundreds of MeV to few TeV energies. In this work, we searched for gamma-ray emission from Jupiter using 15 years of Fermi-LAT data in the energy range from 100 MeV to 2 TeV.

Jupiter's path on the sky was partitioned into 1202 steps, each one corresponding to a 0.5 deg displacement and a likelihood analysis was performed at each step. Afterwards all steps were stacked. No gamma-ray signal was detected and flux upper limits were derived.

Finally, under the assumption that dark matter annihilation is happening inside Jupiter and is the only possible source of gamma-ray photons, we derived constraints on the dark matter –nucleon cross section.

Primary author: CAMPOSEO, Salvatore (Istituto Nazionale di Fisica Nucleare)

Co-authors: SERINI, Davide (Istituto Nazionale di Fisica Nucleare); Dr DI VENERE, Leonardo (INFN Bari); GIGLIETTO, Nicola (Istituto Nazionale di Fisica Nucleare)

Presenter: CAMPOSEO, Salvatore (Istituto Nazionale di Fisica Nucleare)

Session Classification: Rapid talks