

Contribution ID: 747

Type: Talk

## Gamma-ray emission from the young massive star cluster NGC 6611 in the Eagle nebula

Thursday 17 July 2025 16:20 (15 minutes)

Massive Star Clusters (SCs) have been proposed as important CR sources, with the potential of explaining the high-energy end of the Galactic cosmic-ray (CR) spectrum, that Supernova Remnants (SNRs) seem unable to account for. Thanks to fast mass losses due to the collective stellar winds, the environment around SCs is potentially suitable for particle acceleration up to PeV energies and the energetics is enough to account for a large fraction of the Galactic CRs, if the system is efficient enough. A handful of star clusters have been detected in gamma-rays confirming the idea that particle acceleration is taking place in this environment, but clear constraints on the acceleration efficiency are often lacking.

Here we present the new analysis of Fermi-LAT data collected from the region of M16 (known as the Eagle Nebula), a HII region hosting the young massive star cluster NGC 6611. The young age (~1 Myr) of the cluster guarantees that no SN has exploded in the region, allowing us to constraints the acceleration efficiency contributed by the winds of NGC 6611. The clear correlation with a dense gas clouds helps in the interpretation and modeling of the emission as due to hadronic interactions.

## **Collaboration(s)**

Author: PERON, Giada (Inaf Osservatorio Astrofisico di Arcetri)
Co-authors: MENCHIARI, Stefano (IAA - CSIC); MORLINO, Giovanni (INAF); AMATO, Elena
Presenter: PERON, Giada (Inaf Osservatorio Astrofisico di Arcetri)
Session Classification: GA

Track Classification: Gamma-Ray Astrophysics