Contribution ID: **368** Type: **Parallel talk**

Semi-annual Galactic helium spectra measured by the High Energy Particle Detector 01 (HEPD-01) on board the CSES-01 Satellite

Monday 28 August 2023 16:45 (15 minutes)

The High Energy Particle Detector 01 (HEPD-01) is one of the payloads on board of CSES-01, the China Seismo-Electromagnetic Satellite dedicated to monitoring perturbations of electromagnetic fields, plasma and charged particle fluxes induced by natural sources and artificial emitters in the near-Earth space.
It is designed to measure electrons, protons and light nuclei (up to a few hundreds of MeV) with a high energy resolution and a wide angular acceptance. It has been launched in February 2018 on a Low-Earth Orbit and an altitude of about 507 km.

In this work, the analysis on galactic helium nuclei spectra with energy >60 MeV in the period August 2018 - January 2020 will be presented. The clear particle separation of different nuclei inside the detector allows to select a pure sample of helium. This analysis technique is shown for the first time, together with the calculated flux on a semi-annual basis of HEPD-01 data and the comparison with the theoretical spectra.

Below 5 GeV, the ratio proton/helium strongly depends on the solar modulation. As the mass-to-charge ratio for these two species is different, the determination of this quantity is fundamental for the cosmic-ray propagation model in the Galaxy. The HEPD-01 galactic proton and helium spectra are compared and the result will be shown, allowing to explore an energy range where there are no recent direct measurements.

Submitted on behalf of a Collaboration?

Yes

Primary author: Dr PANICO, Beatrice (University of Naples Federico II - INFN Sez. Napoli)

Co-author: Dr SOTGIU, Alessandro (INFN Rome Tor Vergata)

Presenter: Dr PANICO, Beatrice (University of Naples Federico II - INFN Sez. Napoli)

Session Classification: High-energy astrophysics and cosmic rays

Track Classification: High-energy astrophysics and cosmic rays