

# Proton fluxes inside the South Atlantic Anomaly measured by the High-Energy Particle Detector (HEPD) on board the CSES-01 satellite during the 2018-2021 period

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Despite notable improvements made in the last decades, the characterization of the near-Earth proton radiation environment is incomplete, with major uncertainties affecting the description of high-energy particles (>50 MeV) in the South Atlantic Anomaly (SAA) region.

The High-Energy Particle Detector (HEPD) on board the China Seismo-Electromagnetic Satellite (CSES-01), launched on February 2018 on a Low-Earth Orbit and with an altitude of about 507 km, is a light and compact payload suitable for measuring electrons (3-100 MeV), protons (30-300 MeV), and light nuclei (up to a few hundreds of MeV) with a high energy resolution and a wide angular acceptance. Thanks to its good identification performance, it can carry out precise and comprehensive measurement of particle fluxes, including angular information. The observations of HEPD could be fundamental not only for space weather purposes, but because they could help set important constraints on trapping and interaction processes in the Earth's atmosphere and magnetosphere. Furthermore, they enable the testing and validation of current theoretical and empirical models of the inner radiation belt, like the NASA AP9. In this contribution, we report a preliminary analysis of >30 MeV protons detected inside the SAA region between 2018 and 2021.

## Keywords

Trapped Protons, SAA, HEPD

## Collaboration

other (fill field below)

## other Collaboration

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## Subcategory

Experimental Results

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