

# Measurement of the re-entrant lepton spectrum with the High-Energy Particle Detector on board CSES-01

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The High-Energy Particle Detector (HEPD-01) is one of the two particle detectors installed on board the China Seismo-Electromagnetic Satellite (CSES-01). The instrument consists of different subdetectors, including two planes of double-sided silicon microstrip sensors, a calorimeter constituted by 16 plastic scintillators and a layer of LYSO crystals, and a scintillator veto system surrounding the calorimeter.

The detector is dedicated to the measurement of proton (30-250 MeV) and electron (3-100 MeV) fluxes, and their variations induced by short-time perturbations of the radiation belts due to solar, terrestrial, or anthropic phenomena. Although the detector is capable to measure particles with a galactic origin, due to its energy range and to the CSES-01 polar orbit, HEPD collects particles below the local geomagnetic cutoff for a large fraction of its total live time.

In this work, the differential spectrum of re-entrant leptons (the downward-moving component of secondary electrons and positrons produced in the interactions of cosmic ray protons with the atmosphere) is measured in the near-equatorial region (altitude about 500 km) in the energy interval between 5 and 100 MeV where there is a lack of recent experimental data.

## Keywords

## Collaboration

## other Collaboration

Limadou

## Subcategory

Experimental Results

**Primary author:** SOTGIU, Alessandro (INFN - section of Rome "Tor Vergata")

**Presenter:** SOTGIU, Alessandro (INFN - section of Rome "Tor Vergata")

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