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Low-Energy Cosmic-ray Measurements with HEPD

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For energies below 30 GeV, the Cosmic Rays flux is modulated in intensity by the solar activity. This effect can be efficiently monitored with space-borne detectors for charged particles. The High-Energy Particle Detector (HEPD) is a space apparatus on board of the China Seismo- Electro-magnetic Satellite (CSES). It is built around a segmented calorimeter, having as upper part a tower of plastic scintillator counters and as lower part an array of LYSO large crystals. At the calorimeter top there is a versatile trigger system and a silicon tracker, while all around the calorimeter additional plastic scintillators act as an anti-coincidence system. The HEPD energy range goes from few to 100 MeV for electrons, from few tens to few hundreds of MeV/nucleon for protons and light nuclei (He,C). Because of its polar orbit, it can detect solar particles and low-energy cosmic rays at high latitudes, where the geo-magnetic cut-off is minimal. These measurements allow to perform the low-energy cosmic ray monitoring, on short time scales. A detailed overview of HEPD and its preliminary results will be given in this talk.

Collaboration name

CSES-Limadou Collaboration

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