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Expected performance of the High-Energy Particle Detector onboard the second China Seismo-electromagnetic Satellite

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The High Energy Particle Detector (HEPD) is one of the scientific payloads of the China Seismo-Electromagnetic Satellite (CSES). The first satellite of the constellation was launched in February 2018 and has been operational in nominal conditions since then. With the launch of the CSES-02 scheduled for mid 2022, the realisation of the HEPD-02 detector is ongoing.
The Limadou collaboration, in charge of the payload, updated the HEPD design to improve its performance and correct minor issues observed in HEPD-01.
A Monte Carlo simulation has been developed using the GEANT4 tool, in order to study the response of the new detector to protons, electrons and light nuclei and validate the new design. The comparison between simulation results and data collected during tests will also allow to calibrate the detector response and to train a specifically designed neural network for event reconstruction. We report preliminary results from the simulation and show that the updated HEPD meets the scientific requirements of the CSES-02 mission.

Keywords

Collaboration

other (fill field below)

other Collaboration

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Subcategory

Experimental Methods & Instrumentation

Primary authors: SAHNOUN, Zouleikha (INFN Bologna); FOLLEGA, Francesco Maria (University of Trento - INFN-TIFPA); IUPPA, Roberto (University of Trento); OLIVA, Alberto (Istituto Nazionale di Fisica Nucleare); Dr POZZATO, Michele (INFN Bologna); RICCI, Ester (Trento University & INFN-TIFPA)

Presenter: SAHNOUN, Zouleikha (INFN Bologna)

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