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Characteristics of the HEPD-02 detector for the CSES-02 space mission

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The China Seismo-Electromagnetic Satellite (CSES) project is composed of a series of Italian-Chinese space missions, dedicated to monitoring the near-Earth environment. The High-Energy Particle Detectors (HEPD-02) is one of the scientific instruments aboard the second satellite of the CSES mission, CSES-02, which is expected to be put into sun-synchronous orbit in early 2024.

The HEPD-02 detector is composed of a high-precision tracking system followed by a calorimeter tower combining plastic scintillators and large LYSO crystals, with dimensions never used in space. It is designed to identify particles in a wide range of energies, from 3 to 100 MeV for electrons, 30 to 200 MeV/n for protons and light nuclei.

The apparatus is fully integrated and is in an intense phase of spatial qualification tests and performance characterization with cosmic rays in the laboratory and beam tests in beam facilities.

We will present the main characteristics of the apparatus and the results of the experimental tests carried out.

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