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Heliospheric and Magnetospheric Physics with the CSES/LIMADOU mission

CSES (China Seismo-Electromagnetic Satellite) is a space scientific mission dedicated to monitoring electromagnetic field, plasma and particles perturbations in the atmosphere, ionosphere and magnetosphere induced by natural sources and anthropocentric emitters.
CSES, made by a Chinese-Italian collaboration, is scheduled to be launched in the first half of 2017 and has an expected lifetime of 5 years. The satellite will have a circular Sun-synchronous orbit with 98 degrees inclination and 500 km altitude.

The Italian participation to the CSES mission is called LIMADOU. The Italian contribution to the project is the realization of the High Energy Particle Detector (HEPD). The HEPD will detect low energy cosmic rays in the magnetosphere and study solar-terrestrial interactions and phenomena of solar physics, like Coronal Mass Ejections (CMEs) and solar flares. For its specific nature, the HEPD will be a powerful instrument for the Space Weather in the incoming solar cycle.

The HEPD detector consists of two layers of plastic scintillators (one segmented for the trigger) and a calorimeter constituted by a tower of scintillator counters and a LYSO plane. The direction of the incident particle is provided by two planes of double-side silicon microstrip detectors placed in front of the trigger. HEPD will measure electrons (3 - 100 MeV) and protons (30 - 300 MeV) along CSES orbit.

Topic of this talk is the description of the LIMADOU mission, together with the details of the HEPD and results coming from the first beam test.

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