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CSES-LIMADOU: HEPD Ground Segment at ASI-SSDC

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The CSES space mission, an international collaboration between China and Italy, aims at monitoring the perturbations originated by electromagnetic emissions in the ionosphere, magnetosphere and in the Van Allen radiation belts, and at investigating possible correlations with seismic events. The Italian collaboration, named LIMADOU, contributed to the mission with the realization of the High Energy Particle Detector (HEPD), an instrument developed on the basis of a long experience in developing advanced space detectors for charged and neutral particles and gamma rays –in a wide range of energies –for applications in solar physics as well as in extra-galactic astrophysics and cosmology.

The CSES Satellite was launched from the Jiuquan Satellite Launch Center on February 2, 2018 and the expected mission lifetime is of 5 years. Satellite data are transferred to the Institute of Crustal Dynamics (ICD) of the China Earthquake Administration (CEA) in Beijing, China. After the downlink HEPD raw data are transferred as soon as possible to the Italian Ground Segment. In the IGS, HEPD raw data are processed from level0 to level2 after calibration and equalization and are then stored in an high-availability processing server and stored in a high-resilience storage.

In this poster we present a schematic of the HEPD detector data structure and the processing pipeline that has been built at the Italian Space Agency –Space Science Data Center.

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