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THE ITALIAN PARTICIPATION TO THE CSES-1 AND CSES-2 MISSIONS: RECENT RESULTS AND FUTURE PERSPECTIVES

Abstract

Based on an agreement between the China National Space Administration (CNSA) and the Italian Space Agency (ASI), the Limadou Collaboration represents the Italian contribution to the China Seismo Electromagnetic Satellite (CSES) constellation. The scientific institutes participating to this space program are the Italian National Institute for Nuclear Physics (INFN), the Italian Institute for Astrophysics (INAF), the Italian Institute of Geophysics and Volcanology (INGV) and various Italian Universities. The first CSES-1 was launched on February 2, 2018 from the Jiuquan space center carrying a suite of eight advanced instruments, two of them developed with a large Italian contribution: the High-Energy Particle Detector (HEPD-01) and the Electric Field Detector (EFD-01). During the 5 years of successful operation the mission has obtained important results in the field of Cosmic Rays, Space Weather, Sun- Earth interaction, lithosphere-ionosphere-magnetosphere coupling also associated to pre-seismic and co-seismic phenomena, and more recently on the ionospheric electric field perturbances triggered by terrestrial (eruptions) and strong impulsive cosmic explosions. We will discuss the status of the mission, outline the main results obtained, and future perspectives opened by the joint operation of CSES-1 and CSES-2, the latter carrying on board the new, state of the art, Italian instruments HEPD-02 and EFD-02. The talk is presented on behalf of CSES- Limadou Collaboration.