



## **The influence of VLF transmitters on the magnetospheric particles detected by the HEPD experiment**

Claudio Fornaro (1,2), Livio Conti (1,2), Alexandra Parmentier (2), Xiuying Wang (3), and the CSES-Limadou Collaboration

(1) Uninettuno University, C.so V. Emanuele II, 39, I-00186, Rome, Italy, (2) INFN - Sezione Roma Tor Vergata, V. della Ricerca Scientifica, 1, I-00133, Rome, Italy, (3) Institute of Crustal Dynamics, China Earthquake Administration, Anningzhuang Road No. 7, Haidian District, Beijing, PRC

The ELF and VLF transmitters used for telecommunication and network positioning represent a powerful source of disturbances of the lower boundary of the radiation belt. Data collected by many missions have pointed out the existence of local, thin, belt-like structures in the population of charged magnetospheric particles around the transmitters, as well as their geomagnetic conjugated points. The study of the effects of artificial transmitters is important for the calibration of space borne experiments, the discrimination of anthropogenic electromagnetic disturbances from natural phenomena, and the analysis of the response of upper ionosphere to active electromagnetic signals with well-known power, frequencies and polarization. To this purpose, we have analyzed data from the HEPD detector and other electromagnetic instruments on board the CSES satellite. HEPD allows for detecting electrons and other particles in an extended energy range with good resolution and large acceptance. This energy range is wider than those spanned in similar experiments, such as DEMETER or NOAA missions, thus offering new information on the VLF impact on larger particle populations.