报告 ID: **76**

类型: **Oral**

COMCUBE-S : Gamma-ray burst polarimetry with a swarm of CubeSats

2025 年 5 月 15 日星期四 10:15 (25 分钟)

COMCUBE-S is a new ESA gamma-ray space mission designed for gamma-ray burst (GRB) polarimetry and all-sky monitoring of the gamma-ray sky for time-domain astronomy and multi-messenger observations.
The mission is currently in phase A at ESA. The baseline configuration consists of a swarm of 27 16U CubeSats evenly spaced in a 500 km equatorial orbit. Each CubeSat embarks a Compton polarimeter and a BGO spectrometer to perform timing, spectroscopic and polarimetric measurements in the energy range 30keV - 10MeV. The use of several satellites gives the constellation a significant effective area for both detection and polarimetry. Furthermore, comparing the polarimetric measurements obtained from different lines of sight will help to reduce the systematic uncertainties in these measurements. The Compton polarimeter consists of 2 layers of double-sided silicon strip detectors (DSSDs) to detect Compton scattering interactions, as well as GAGG and CeBr3 scintillation detectors used to absorb the scattered gamma-rays. A reduced prototype of the instrument was recently tested in the near-space environment during the CNES TRANSAT2024 transatlantic stratospheric balloon flight.
I will present our work on estimating the performance of COMCUBE-S from simulations carried out with the MEGAlib software, and using data from the Fermi/GBM catalogue supplemented by a population of synthetic GRBs. I will also present first results from the stratospheric balloon flight experiment.

Eligibility for ”Best presentation for young researcher” or ”Best poster for young researcher” prize

Yes

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分会分类: Instrumentation and missions for direct X-ray and gamma-ray measurements