

# AtmoHEAD: Atmospheric Monitoring for High-Energy Astroparticle Detectors



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## The Atmospheric Monitoring system of the JEM-EUSO telescope

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The JEM-EUSO observatory on board of the International Space Station (ISS) is a new concept of Space mission devoted to the investigation of Ultra High Energy Cosmic Rays (UHECRs). Looking downward to the Earth atmosphere the JEM-EUSO telescope will detect the fluorescence and Cherenkov UV emission from UHECRs induced Extensive Air Showers (EAS) penetrating in the atmosphere within a 60° Field of View (FoV). The capability to reconstruct the properties of the primary cosmic ray depends on the accurate measurement of the atmospheric conditions in the region of EAS development. The Atmospheric Monitoring system of JEM-EUSO will continuously monitor the atmosphere at the location of the EAS and between the EAS and the JEM-EUSO telescope with an UV LIDAR and an Infrared (IR) Camera. The system will be able to monitor the cloud coverage and to retrieve the cloud top altitude with an accuracy of approx. 500 m and the optical depth profile of the atmosphere with accuracy of  $\Delta\tau \leq 0.15$  and a resolution of 500 m.

In this contribution the Atmospheric Monitoring system of JEM-EUSO, mainly focusing on the LIDAR, will be presented. After a brief description of the system, the capabilities in recovering cloud optical depth and shower profile based on simulation studies will be shown.

**Auteur principal:** Dr TOSCANO, Simona (University of Geneva)

**Co-auteurs:** Prof. NERONOV, Andrii (University of Geneva); Prof. RODRIGUEZ FRIAS, Maria Dolores (Space & Astroparticle (SPAS) Group, UAH); Prof. WADA, Satoshi (RIKEN)

**Orateur:** Dr TOSCANO, Simona (University of Geneva)

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