



Contribution ID: 237

Type: Poster

## The Jem-Euso mission to explore ultra high energy cosmic rays from space

*Friday, 25 May 2012 13:31 (0 minutes)*

The JEM-EUSO (Extreme Universe Space Observatory on-board of the Japanese Experiment Module on the ISS) mission has the primary scientific objective of doing astronomy and astrophysics detecting extreme energy cosmic rays (EECRs), above  $10^{20}$  eV, measuring particle arrival directions and energies. This will extend the knowledge of the sources, spectra and composition of the cosmic rays beyond the so called Greisen-Zatsepin-Kusmin (GZK) cut-off, constraining the acceleration and emission models in that energy range.

JEM-EUSO apparatus has been designed to detect the UV photons (330-400 nm) emitted in the shower produced by the EECR interaction with the atmosphere. Using the Earth as a target, JEM-EUSO is designed to detect, during the five year of the planned lifetime, more than 1000 events having an energy greater than  $7 \times 10^{19}$  eV. This will be possible thanks to a super-wide-field of view (60 degree) telescope of about 2.5 m looking downward from the ISS to the night sky. Three fresnel lenses will compose the optics block that will focus the UV photons onto a focal surface, housing 4932 multi anode photomultipliers.

The JEM-EUSO mission is the joint effort of institutions from 13 countries; it is planned to be launched in the 2017, using an H2B rocket, transferred to ISS by means of an H2 Transfer Vehicle (HTV) and attached to the Exposure Facility of the Japanese Experiment Module (JEM).

The detector description and design performances will be presented.

### for the collaboration

Jem-Euso Collaboration

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**Session Classification:** Experimental Systems without Accelerators - Poster Session

**Track Classification:** P7 - Experimental Systems without Accelerators