



Contribution ID: 725

Type: **Oral contribution**

## The EUSO-BALLOON mission

*Wednesday 5 August 2015 15:30 (15 minutes)*

on behalf of the JEM-EUSO collaboration

EUSO-BALLOON is a pathfinder for JEM-EUSO, the Extreme Universe Space Observatory which is to be hosted on-board the International Space Station. As JEM-EUSO is designed to observe Ultra-High Energy Cosmic Rays (UHECR)-induced Extensive Air Showers (EAS) by detecting their ultraviolet light tracks “from above”, EUSO-BALLOON is a nadir-pointing UV telescope too. With its Fresnel Optics and Photo-Detector Module, the instrument monitors a 70 km<sup>2</sup> surface area in a wavelength band of 290-430 nm, collecting series of images at a rate of 400'000 frames/sec. The objectives of the balloon demonstrator are threefold : a) perform a full end-to-end test of a JEM-EUSO prototype consisting of all the main subsystems of the space experiment, b) measure the effective terrestrial UV background, with a spatial and temporal resolution relevant for JEM-EUSO. c) detect tracks of ultraviolet light “from above” for the first time. The latter is a milestone in the development of UHECR science, paving the way for any future space-based UHECR observatory.

On August 25, 2014, EUSO-BALLOON was launched from Timmins Stratospheric Balloon Base (Ontario, Canada) by the balloon division of the French Space Agency CNES. From a float altitude of 38 km, the instrument operated during the entire astronomical night, observing UV-light from a variety of ground- covers, and simulated EAS, produced by flashers and a laser during a two-hour helicopter underflight. In this paper, an overview of the instrument, its calibration and the balloon flight of August 2014 are presented.

### Collaboration

JEM-EUSO

### Registration number following ”ICRC2015-I”

637

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**Session Classification:** Parallel CR21 Future IN

**Track Classification:** CR-EX