

Implications of Mini-EUSO measurements for a space-based observation of UHECRs

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Mini-EUSO is a telescope launched on board the International Space Station in 2019 and currently located in the Russian section of the station and viewing our planet from a nadir-facing UV-transparent window in the Zvezda module. The instrument is based on an optical system employing two Fresnel lenses and a focal surface composed of 36 Multi-Anode Photomultiplier tubes, 64 channels each, for a total of 2304 channels with single photon counting sensitivity and an overall field of view of 44° . Mini-EUSO can map the night-time Earth in the near UV range (predominantly between 290 – 430 nm), with a spatial resolution of about 6.3 km and different temporal resolutions of 2.5 μ s, 320 μ s and 41 ms. Mini-EUSO observations are extremely important to better assess the potential of a space-based detector of Ultra-High Energy Cosmic Rays (UHECRs) such as K-EUSO and POEMMA. In this contribution we focus the attention on the UV map measurements, the detection of clouds and of certain categories of events that Mini-EUSO triggers with the shortest temporal resolution and place them in the context of UHECR observations from space, namely estimation of exposure and sensitivity to EAS-like events.

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