Contribution ID: **754** Type: **Poster**

A performance study of the K-EUSO space based observatory

Friday 16 July 2021 19:18 (12 minutes)

K-EUSO is a planned mission of the JEM-EUSO program for the study of Ultra High Energy Cosmic Rays (UHECR) from space. The K-EUSO observatory consists of a UV telescope, to be deployed on the International Space Station, with a wide field of view, that aims at the detection of the fluorescence light emitted by Extensive Air Showers (EAS) in the atmosphere. The EAS events will be sampled with a time resolution of 1μs to reconstruct the entire shower profile with high precision. The detector, consisting of ~ 10^5 independent pixels, will allow a spatial resolution of ~500 m on ground. From 400 km altitude, K-EUSO will achieve an enormous exposure to sample the highest energy range of the UHECR spectrum. In this contribution, we present the performance of the observatory. We will first of all, present an estimation of the expected exposure and triggered event rate as a function of energy. The event reconstruction technique will be then described in detail. The triggered events will be reconstructed and we will present a summary of the event reconstruction performance. The resolution of the arrival direction and of the energy reconstruction, as well as the reconstruction efficiency as a function of the true shower parameters will be presented.

Keywords

K-EUSO, Simulations, JEM-EUSO

Collaboration

other (fill field below)

other Collaboration

JEM-EUSO

Subcategory

Future projects

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Session Classification: Discussion

Track Classification: Scientific Field: CRI | Cosmic Ray Indirect