



Contribution ID: 658

Type: **Poster contribution**

The TUS orbital detector simulation

Thursday 30 July 2015 15:30 (1 hour)

The TUS space experiment is aimed to study energy spectrum and arrival distribution of UHECR at energy range above 1020 eV by the measurement of the EAS fluorescent radiation in atmosphere. The TUS mission is planned for launch at the end of 2015 at the dedicated “Lomonosov” satellite. TUSSIM program package was developed to simulate the TUS detector performance including the Fresnel mirror optical parameters, the light concentrator of the photo detector and the front end and trigger electronics. In order to investigate the detector response, we employ the software package ESAF of JEM-EUSO experiment for the fluorescent radiation of EAS. Trigger efficiency is crucially dependent on the background level that is changed from ~ 0.2106 to ~ 15106 ph/(m²microsecsr) at moonless and full moon nights respectively. The TUSSIM algorithms is described and the expected TUS statistics is presented for 5 years of data collection from 500 km solar-synchronized orbit taking into account the background light intensity change during the space flight.

Collaboration

– not specified –

Registration number following ”ICRC2015-I”

0436

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