ICRC2015

ICRC
The Astroparticle Physics Conference
34th International Cosmic Ray Conference
July 30 - August 6, 2015
The Hague, The Netherlands

Contribution ID: **939** Type: **Poster contribution**

Expected acceptance of the KLYPVE/K-EUSO space-based mission for the observation of ultra-high energy cosmic rays

Tuesday, August 4, 2015 4:00 PM (1 hour)

The energy spectrum of ultra-high energy cosmic rays (UHECRs) extends up to ~10^{20} eV, but their sources have not been identified yet.
One of the reasons is the small statistics of UHECRs observed with the present ground based experiments, Pierre Auger Observatory and Telescope Array Project.
Several projects with larger acceptance are planned to find the sources, among them JEM-EUSO and KLYPVE. Both projects are space based missions under development. The idea is to launch onto the International Space Station a telescope to observe tracks of fluorescence and Cherenkov light in near ultra-violet band from extensive air showers of UHECRs with large acceptance.
The optics of KLYPVE consists of a mirror with 3.6 m diameter. However, it became clear that the performance of the KLYPVE optics would have improved considerably by utilizing the Fresnel lens technology developed for JEM-EUSO. A collaborative work between KLYPVE and JEM-EUSO has started in 2013.
The baseline optics of the KLYPVE/K-EUSO consists of a mirror of 3.4 m diameter, and a double-sided Fresnel lens with a diffractive surface. The focal surface consists of ~1800 multi-anode photomultiplier tubes with 64 pixels each.
The total number of pixels are ~100,000. The data acquisition system works in photon counting mode with intelligent trigger to discriminate shower tracks.
A dedicated raytracing code of the KLYPVE/K-EUSO has been developed and has been implemented into the Euso Simulation and Analysis Framework (ESAF).
The performance of the optics and trigger aperture for UHECR observation of KLYPVE/K-EUSO will be reported in this paper.

Collaboration

JEM-EUSO

Registration number following ”ICRC2015-I/”

450

Primary author: SAKAKI, Naoto (Osaka City University)

Co-authors: Dr FENU, Francesco (University of Torino, INFN Torino); Prof. PANASHYUK, MIKHAIL I. (SINP, MSU); Dr BERTAINA, Mario E. (University of Torino, INFN Torino); Dr KLIMOV, PAVEL (SINP, MSU); Dr SHARAKIN, SERGEI (SINP, MSU); Prof. OGIO, Shoichi (Osaka City University); Dr EBISUZAKI, Toshikazu (RIKEN); Dr TAKIZAWA, Yoshiyuki (RIKEN)

Presenters: Dr FENU, Francesco (University of Torino, INFN Torino); SAKAKI, Naoto (Osaka City University); Dr TAKIZAWA, Yoshiyuki (RIKEN)

Session Classification: Poster 3 CR

Track Classification: CR-IN