



Contribution ID : 686

Type : **Poster**

Study of photo-sensor candidates for the MEMSTEL project

Friday, 6 July 2007 14:45 (0:00)

Abstract content

The MEMSTEL (Micro Electro Mechanical Systems Space Telescope) is a space based experiment being designed to investigate the origin of extreme energy cosmic-ray (EECR) particles above 5×10^{19} eV. The fluorescent light generated in extensive air showers (EAS) when EECRs hit the atmosphere can be detected from low Earth orbit. MEMSTEL will implement a novel idea of a tracking mirror based on semiconductor MEMS technology. The light signal will be focused on a relatively small area of readout photo-sensors using a tracking mirror. One candidate for MEMSTEL photo-sensors is the conventional multi-anode PMT. Recently, a new type of photo-sensor was developed for particle detector readouts - the silicon photo multiplier (Si-PM). This compact photo-sensor is comprised of a large array of micro-cells operating in a limited Geiger mode, and provides high gain ($\sim 10^6$) with low operating voltage (~ 50 V). The compact design, light weight and low power consumption make this device an excellent photon-detector candidate for space-based experiments. In this paper, we report on the comparative performance of a 2×2 mm² Si-PM, a conventional PMT, and a Hybrid Photo Diode (HPD) in lab tests, reading out light generated by Light Emitting Diodes (LED) as well as by scintillating fibers excited with a radioactive source.

If this papers is presented for a collaboration, please specify the collaboration

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Oliveo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 5 (HE part 2), pages 981-984

Primary author(s) : Dr. LEE, Moo Hyun (Institute for Physical Science and Technology, University of Maryland)

Co-author(s) : LUTZ, L. (Institute for Physical Science and Technology, University of Maryland); MALININ, A. (Institute for Physical Science and Technology, University of Maryland); MOON, K. H. (Dept. of Physics, Ewha Womans University); NA, G. W. (Dept. of Physics, Ewha Womans University); NAM,

S. (Dept. of Physics, Ewha Womans University); OH, S. J. (Dept. of Physics, Ewha Womans University); PARK, I. H. (Dept. of Physics, Ewha Womans University); PARK, J. H. (Dept. of Physics, Ewha Womans University); PARK, Y. S. (School of Physics and Astronomy, Seoul National University); RYU, H. J. (School of Physics and Astronomy, Seoul National University); SEO, E. S. (Dept. of Physics and IPST, University of Maryland); WALOPLÉ, P. (Institute for Physical Science and Technology, University of Maryland); YANG, J. (Dept. of Physics, Ewha Womans University); YOO, B. W. (School of Electrical Engineering and Computer Science, Seoul National University); YOO, J. H. (Institute for Physical Science and Technology, University of Maryland); YOON, Y. S. (Dept. of Physics and IPST, University of Maryland); AHN, H. S. (Institute for Physical Science and Technology, University of Maryland); ARTIKOVA, S. (Dept. of Physics, Ewha Womans University); GANEL, O. (Institute for Physical Science and Technology, University of Maryland); GARIPPOV, G. (DV Skobeltsyn Institute of Nuclear Physics, Moscow State University); HAN, J. H. (Institute for Physical Science and Technology, University of Maryland); JEON, J. A. (Dept. of Physics, Ewha Womans University); KHRENOV, B. (DV Skobeltsyn Institute of Nuclear Physics, Moscow State University); KIM, J. E. (Dept. of Physics, Ewha Womans University); KIM, M. S. (School of Electrical Engineering and Computer Science, Seoul National University); KIM, Y. K. (School of Electrical Engineering and Computer Science, Seoul National University); KLIMOV, P. (DV Skobeltsyn Institute of Nuclear Physics, Moscow State University); LEE, J. (Dept. of Physics, Ewha Womans University)

Presenter(s) : Dr. LEE, Moo Hyun (Institute for Physical Science and Technology, University of Maryland)

Session Classification : Posters 2 + Coffee

Track Classification : HE.1.5