



Contribution ID : 346

Type : **Poster**

Next Generation TRD for CREAM Using Gas Straw Tubes and Foam Radiators

Wednesday, 4 July 2007 14:45 (0:00)

Abstract content

The Cosmic Ray Energetics And Mass (CREAM) experiment is designed to investigate the source, propagation and acceleration mechanism of high energy cosmic-ray nuclei, by directly measuring their energy and charge. Incorporating a transition radiation detector (TRD) provides an energy measurement complementary to the calorimeter, as well as additional track reconstruction capability. The next generation CREAM TRD is designed with 4 mm straw tubes to greatly improve tracking over the previous 20 mm tube design, thereby enhancing charge identification in the silicon charge detector (SCD). Plastic foam provides a weight-efficient radiator that doubles as a mechanical support for the straw layers. This design provides a compact, robust, reliable, low density detector to measure incident nucleus energy for $3 < Z < 30$ nuclei in the Lorentz gamma factor range of 10^2 - 10^5 . This paper discusses the new TRD design and the low power front end electronics used to achieve the large dynamic range required. Beam test results of a prototype TRD are also reported.

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

CREAM-II

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olivo, Gustavo Medina-Tanco, Lukas Nellen, Federico A. Sánchez, José F. Valdés-Galicia (eds.); Universidad Nacional Autónoma de México, Mexico City, Mexico, 2008; Vol. 2 (OG part 1), pages 345-348

Primary author(s) : Dr. MALININ, Alexander (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA)

Co-author(s) : AHN, Ho Seok (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); WALPOLE, Peter (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); WU, Jayoung (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); YOO, Joon Hyuk (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); YOON, Young Soo (Dept. of Physics, University of Maryland, College Park, MD 20742 USA); ZINN, Shun Yong (Inst. for Phys. Sci. and Tech., University of Maryland,

College Park, MD 20742 USA); FEDIN, Oleg (Petersburg Nuclear Physics Institute, Gatchina, Leningrad district 188300, Russia); GANEL, Opher (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); HAN, Ji Hye (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); KIM, Chan Ho (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); KIM, Ki Chun (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); LEE, Moo Hyun (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); LUTZ, Larry (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA); SEO, Eun Suk (1) Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA, 2) Dept. of Physics, University of Maryland, College Park, MD 20742 USA)

Presenter(s) : Dr. MALININ, Alexander (Inst. for Phys. Sci. and Tech., University of Maryland, College Park, MD 20742 USA)

Session Classification : Posters 1 + Coffee

Track Classification : OG.1.5