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Multigap Resistive Plate Chambers for EAS study in the EEE Project

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Abstract content

The EEE (Extreme Energy Event) Project is an extensive air shower experiment devoted to the study of very high energy events through the detection at ground of the muon component of the shower. The detectors are installed inside many Italian High Schools, involving students in the experiment. The detector used is a tracking telescope made of 3 planes of Multi-gap Resistive Plate Chambers (MRPCs), a simplified, large and cheap version of the detector designed for the time of flight measurements (TOF) of the ALICE experiment at LHC. Exploiting the concept of the multiple small gas gaps combined with the use of high gain and fast gas mixture (Freon and SF₆ based), the MRPCs show an overall time resolution of 100 ps. The particle tracking is performed equipping MRPCs with 24 copper strips read at both ends by front end electronics based on NINO ASIC and using commercial multi-hit TDCs. The MRPCs for the EEE experiment are built at CERN by Italian High School students and teachers under the supervision of INFN and Centro "E. Fermi" experts. After construction they are shipped to Italy and after preliminary tests they are installed inside the schools. Here we present the status and first results of the already operating stations.

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

EEE Extreme Energy Events

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olive, 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 1565-1568

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