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Ring Imaging Cherenkov detector (RICH) for the AMS experiment

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Abstract content

The Alpha Magnetic Spectrometer (AMS) experiment to be installed on the International Space Station (ISS) will be equipped with a proximity focusing Ring Imaging Cherenkov (RICH) detector for measuring the charge and velocity of incoming cosmic-ray nuclei. From top to bottom, the detector consists of a radiator plane made of 1.05 aerogel and sodium fluoride (NaF) materials, an expansion volume enveloped by a high reflectivity conical shaped mirror, and a matrix of 680 16-anode photomultipliers coupled to light guides. A RICH prototype consisting of 96 photomultiplier units was tested in a secondary beam of ion fragments from a 158 GeV/c per nucleon primary beam of Indium ions (CERN SPS). The results of this prototype beam test, which confirmed the RICH design goals, will be presented. Charge separation of elements from protons to iron nuclei was observed. Velocity resolution on the order of 0.1% was obtained for singly charged particles. Recent results from the RICH physics performance analysis, integration status, and preflight tests will be reported.

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'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 461-464

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