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The AMS-RICH velocity and charge reconstruction

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Abstract content

The AMS detector, to be installed on the International Space Station, includes a Ring Imaging Cerenkov detector with two different radiators, silica aerogel ($n=1.05$) and sodium fluoride ($n=1.334$). This detector is designed to provide very precise measurements of velocity and electric charge in a wide range of cosmic nuclei energies and atomic numbers.

The detector geometry, in particular the presence of a reflector for acceptance purposes, leads to complex Cerenkov patterns detected in a pixelized photomultiplier matrix. The results of different reconstruction methods applied to test beam data as well as to simulated samples are presented.

The velocity and charge measurements provided by the RICH detector endow the AMS spectrometer with precise particle identification capabilities in a wide energy range. The expected performances on light isotope separation are discussed.

To ensure nominal performances throughout the flight, several detector parameters have to be carefully monitored. The algorithms developed to fulfill these requirements are presented.

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

AMS-RICH 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 457-460

Primary author(s) : AGUAYO, P. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); AGUILAR-BENITEZ, M. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); ARRUDA, L. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal); BARAO, F. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal); BARREIRA, G. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal); BARRAU, A. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); BARET, B. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); BELMONT, E. (Instituto de Fisica, UNAM, AP 20-364 Mexico DF, Mexico); BERDUGO, J. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); BOUDOUL, G. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); BORGES, J. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal); BUENERD, M. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); CASADEI, D. (University of Bologna

and INFN, Via Irnerio 46, I-40126 Bologna, Italy); CASAUS, J. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); DELGADO, C. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); DEROME, L. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); DIAZ, C. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); ERAUD, L. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); GALLIN-MARTEL, L. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); GIOVACCHINI, F. (University of Bologna and INFN, Via Irnerio 46, I-40126 Bologna, Italy); GONCALVES, P. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal); LANCIOTTI, E. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); LAURENTI, G. (University of Bologna and INFN, Via Irnerio 46, I-40126 Bologna, Italy); MALININE, A. (University of Maryland, College Park, MD 20742, USA); MANA, C. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); MARIN, J. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); MARTINEZ, G. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); MENCHACA-ROCHA, A. (Instituto de Fisica, UNAM, AP 20-364 Mexico DF, Mexico); PALOMARES, C. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); PEREIRA, R. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal); PIMENTA, M. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal); PROTASOV, K. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); SANCHEZ, E. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); SEO, E.-S. (University of Maryland, College Park, MD 20742, USA); SEVILLA, I. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); TORRENTO, A. (CIEMAT, Avenida Complutense 22, E-28040 Madrid, Spain); VARGAS-TREVINO, M. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France); VEZIAN, O. (LPSC, IN2P3/CNRS, 53 av. des Martyrs, 38026 Grenoble cedex, France)

Presenter(s) : BARAO, F. (LIP, Avenida Elias Garcia 14-1, P-1000 Lisboa, Portugal)

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