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Cosmic positron spectrum measurement from 1 to 50 GeV with AMS-01

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Abstract content

As a prototype for the AMS-02 experiment, the AMS-01 particle spectrometer was flown on the Space Shuttle Discovery in near earth orbit for a ten day mission in June 1998. Concerning the identification of positrons, AMS-01 was limited to energies below 3 GeV due to the vast proton background and the characteristics of the subdetectors. In order to extend the sensitivity towards higher energies, positrons can be identified through the conversion of bremsstrahlung photons. Using the inverse quadratical proportionality of the bremsstrahlung cross section to the particle mass, a proton rejection in the order of 10^6 can be reached. This allows for the measurement of the positron fraction and the positron flux up to energies of 50 GeV.

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

AMS 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. 4 (HE part 1), pages 753-756

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