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Alternative Methods to Finding Patterns in HiRes Stereo Data

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Abstract content

The study of the arrival direction of Ultra High Energy Cosmic Rays UHECRs potentially gives us an insight on their origin. In this poster we present a search for event structures in the sky in which the arrival direction of the events lie on a great circle (the arc structure) in High Resolution Fly?s Eye (HiRes). The arc structure is expected when charged cosmic rays get deflected while passing through the galactic magnetic field. The arcs searched for could represent a broad or a small-scale anisotropy depending on the proposed source model for the UHECRs. In this poster, we report on a search for arcs using the technique of Hough transforms, were Hough transform is a technique used to look for patterns in images. In addition, we also present the result of a search for a correlation of the arc structure found in the HiRes stereo data with some astronomical objects, in particular with BL Lac objects, which are a subclass of active galaxies.

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

High Resolution Fly's Eye

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 459-462

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