



Contribution ID : 256

Type : Oral

Implication of the sidereal anisotropy of ~ 10 TeV cosmic ray intensity observed with the Tibet III air shower array

Tuesday, 10 July 2007 08:30 (0:12)

Abstract content

This paper presents the sidereal anisotropy of ~ 10 TeV galactic cosmic ray (GCR) intensity observed by the Tibet Air Shower experiment. The observed sky- map of the directional anisotropy clearly shows the large-scale feature consisting of excess and deficit of the relative intensity. We note that the observed angular separation between the excess and the deficit is ~ 120 deg, which is much smaller than 180 deg expected from the uni-directional flow but significantly larger than 90 deg expected from the bi-directional counter streaming. According to our preliminary least-square analysis, the large-scale feature can be reproduced by a combination of the uni-directional and bi- directional flows with reference axes perpendicular to each other. We suggest that such two streams can be expected if the GCR population is lower at the location of the heliosphere in the local interstellar cloud (LIC) than that outside LIC. If this is the case, the orientation of the local interstellar magnetic field can be inferred from the reference axis of the bi-directional streaming.

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

The Tibet ASgamma Collaboration

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. 1 (SH), pages 593-596

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Session Classification : SH 3.4, SH 3.5

Track Classification : SH.3.4