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Future plan for observation of cosmic gamma rays in the 100 TeV energy region with the Tibet air shower array : physics goal and overview

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Abstract content

Although SNRs are theoretically considered to be the most plausible candidates for the acceleration of cosmic-ray hadrons up to PeV energies, no observations have succeeded in definitely specifying those objects so far. Since accelerated electrons have difficulty producing very high-energy gamma rays with energies above 100 TeV via bremsstrahlung or inverse Compton scattering, it can be an effective way of obtaining clear evidence for hadronic acceleration to detect such high-energy gamma rays generated via the decay of neutral pions produced in interactions of accelerated hadrons with ambient material. The Tibet air shower array has been observing air showers induced by cosmic rays with energies above a few TeV. We are planning to add a large muon detector array to it and to improve its sensitivity to cosmic gamma rays with energies around 100 TeV by discriminating them from background cosmic-ray hadrons. The possibility of detection of gamma rays in the 100 TeV energy region in our field of view is discussed, based on the improved sensitivity of our air shower array.

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

Tibet AS-gamma 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. 2 (OG part 1), pages 353-356

Primary author(s) : Mr. SAKO, Takashi (Institute for Cosmic Ray Research, University of Tokyo)

Presenter(s) : Mr. SAKO, Takashi (Institute for Cosmic Ray Research, University of Tokyo)

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