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Physics of the TALE Experiment

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Abstract content

The Telescope Array Low Energy Extension (TALE) Experiment consists of three detectors which will extend the sensitivity in energy of the Telescope Array (TA) experiment by two orders of magnitude, from $18.5 < \log(E) < 20.5$ (in eV) to $16.5 < \log(E) < 20.5$. In addition it will increase the aperture of the TA experiment at all energies, and double it at the highest energies. The aim of the experiment is to study the second knee, the ankle, and the galactic/extragalactic transition.

The three detectors start with a set of fluorescence detectors deployed in such a way that they are paired with TA fluorescence detectors at a separation of 6 km. These stereo pairs are designed to study the ankle of the cosmic ray spectrum in an optimal way. The second of the three is a "tower" detector, which is a fluorescence detector designed to have increased coverage in elevation angle, up to 71 degrees. This detector is designed to study the second knee of the spectrum. The third detector is an infill array to be added to TA within the aperture of the tower detector. This will make possible hybrid observation with the tower detector, and provide greatly improved reconstruction of lower energy events in purely surface detector mode.

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

TALE 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. 5 (HE part 2), pages 1593-1596

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