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Reconstruction accuracy of the surface detector of the Pierre Auger Observatory

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Abstract content

The reconstruction of extensive air showers (arrival direction, core position and energy estimation) by the surface detector (SD) of the Pierre Auger Observatory is discussed together with the corresponding accuracy. We determine the angular reconstruction accuracy as a function of the station multiplicity: the resolution obtained by the SD only is in agreement with the one obtained from hybrid events, i.e., showers observed simultaneously by the fluorescence and the surface detectors. We discuss statistical and systematical uncertainties in the determination of the core location and the signal at 1000 m from the core, S(1000), which is used to estimate the primary energy. The reconstruction method takes into account the signals of the fired stations with their uncertainties and the thresholds for the "zero" signal stations. We use the lateral distribution function that is fitted to the data.

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

The Pierre Auger 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 307-310

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