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HEAT : Enhancement Telescopes for the Pierre Auger Southern Observatory in Argentina

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Abstract content

The southern part of the Pierre Auger Observatory is nearing completion in the province of Mendoza, Argentina. The instrument has been used to take air shower data at the highest energies since 2004. The energy threshold for high quality shower data is about 3×10^{18} eV for the surface array of particle detectors (SD). The data of the Auger fluorescence telescopes (FD) enable precise event reconstruction even below 10^{18} eV. After the completion of the southern observatory the Pierre Auger Collaboration intends to further expand its energy range down to nearly 10^{17} eV by three additional fluorescence telescopes (HEAT) with an elevated field of view from 30 to nearly 60 degree. It is planned to use these telescopes in the hybrid mode in combination with an infilled detector array with fourfold sampling density and additional muon detection capabilities (AMIGA). These enhancements will enable the southern Pierre Auger Observatory to cover the energy range of interest for the transition from galactic to extragalactic cosmic rays as well as the highest energy domain in a common experiment with good energy and mass resolution. The Pierre Auger Observatory in Argentina will thus be extended to have a broad overlap with the data range of the KASCADE Grande experiment. The HEAT layout and the estimated properties of the enhancement telescopes will be discussed.

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. 5 (HE part 2), pages 849-852

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