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Sigma-Delta compensation of pedestals in the First Level SD Trigger of the Pierre Auger Observatory

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Abstract content

Daily temperature variation in the electronic box of the surface detector in the Pierre Auger Observatory may reach more than 40°C, which causes a significant variation of the pedestal of FADC traces. Pedestal variation, more than 5 ADC– counts in full temperature range, could significantly affect the trigger conditions especially for the Time-over-Threshold Trigger working at very low thresholds above the pedestals. In the currently used algorithm, the thresholds are being adjusted by the calibration channel in order to keep required trigger conditions. However, keeping a stable pedestal seems to be better approach than thresholds tuning via the slow calibration loop. The algorithm, implementation and preliminary results from the climate chamber for the compensation of the pedestal drift in the First Level SD Trigger are presented. Results are satisfactory. The algorithm will be activated for testing in the real environment in a full hexagon of test tanks equipped with the Cyclone Front-End.

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

Pierre Auger Observatory

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 865-868

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