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Development of Gigahertz Analog Memory for Front-End Electronics of Imaging Air Cherenkov Telescopes

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Abstract content

The night sky light is one of the major components of background for imaging air Cherenkov telescopes. It disturbs images of air shower and makes both the gamma/hadron separation and the angular resolution worse. For example, The CANGAROO-III electronics consists of charge ADCs and multi-hit TDCs. In using charge ADCs, we have to delay the signal from PMTs until the trigger signal input to ADCs. After through this delay line chip, signals from PMTs are distorted, and we have to take the signal integration time longer than Cherenkov signal time constant and more night sky light is mixed to the real signal. In order to reduce this night sky light, we are planning to replace the charge ADCs to capacitor arrays called AMC (Analog Memory Cell). AMC consists of 512 capacitors and can record the waveform of the input signal for 512 ns at high sampling rate of 1 GHz. We already developed a test type of AMC chip and its dynamic range is more than 7 bits. We will report the current status of the development of AMC.

If this papers is presented for a collaboration, please specify the 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. 3 (OG part 2), pages 1345-1348

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