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Effect of the improved data acquisition system of IceCube on its neutrino-detection capabilities

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Abstract content

IceCube data acquisition system is capable of recording information about all photons registered by its photomultiplier tubes for up to 13 microseconds for each sensor with high precision. The time resolution of 3 ns and charge resolution of 30% of all 1 photoelectron pulses within each sensor's event record is achieved. The first atmospheric neutrino analysis did not take full advantage of this, as it used information of only one photon per hit DOM in the event, much like the previous generation of the high-energy neutrino telescopes. The improvement in quality of the data reconstruction due to the improved design of the experiment is estimated and its effect on the IceCube capabilities as a neutrino detector is discussed.

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

IceCube

Summary

Reference

Proceedings of the 30th International Cosmic Ray Conference; Rogelio Caballero, Juan Carlos D'Olive, 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 1149-1152

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