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Feasibility study for acoustic neutrino detection in ice: The South Pole Acoustic Test Setup.

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Abstract content

The South Pole Acoustic Test Setup (SPATS) has been built to evaluate the acoustic characteristics of the Antarctic ice in the 10 to 100 kHz frequency range so that the feasibility and specific design of an acoustic neutrino detection array at South Pole can be evaluated. SPATS consists of three vertical strings that have been deployed in the upper 400 meter of the Antarctic ice cap in January 2007, using the upper part of IceCube holes. The strings form a triangular array with a longest baseline of 422 meters. Each of them has 7 stages with one transmitter and one sensor module. Both are equipped with piezoelectric ceramic elements in order to produce or detect sound. Analog signals are brought to the surface on electric cables where they are digitized by a PCbased data acquisition system. Connected through dedicated wire pairs in the IceCube surface cables, the data from all three strings is then collected on a MasterPC in a central facility, from which they are sent to the northern hemisphere via a satellite link or locally stored on tape. A full technical overview of the SPATS detector and its performance will be presented.

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'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 1597-1600

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