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The ANTARES detector: background sources and effects on detector performance

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Abstract content

The ANTARES Collaboration is deploying a large neutrino detector at a depth of 2500 m in the Mediterranean Sea, 40 km off shore from La Seyne-sur-Mer in South France. The construction of this 12-line detector with 75 phototubes per line will be completed by the end of 2007. Data taking has begun since April 2005 with an instrumentation line also equipped with optical modules. The first 5 detector lines are operational since January 2007. The telescope is aimed to observe high energy cosmic neutrinos through the detection of the Cerenkov light produced by up-going induced muons. Background sources are due to atmospheric neutrinos as well as misreconstructed atmospheric muons. Additional backgrounds inherent to the sea water environment come from 40K decay and marine organisms luminescence. While the contribution of the former is expected to be constant at a level of about 45 kHz, the bioluminescence has shown large time variations, with periods of very high activity, up to several hundred kHz. Description of these background sources will be reported, and effects on detector performance will be described. Methods recently developed to improve the detection efficiency in high background periods will be described, together with some of the results obtained.

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

ANTARES

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 1349-1352

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