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Neutrino Triggered Target of Opportunity (NToO) test run with AMANDA and MAGIC

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Abstract content

Fourth generation neutrino telescopes are now being constructed (IceCube) and designed (KM3NET). While no neutrino flux of cosmic origin has been discovered so far, the first weak signals are expected to be discerned in the next few years. Multi-messenger investigations aim at addressing the problem of extracting these signals from irreducible backgrounds. One possible application is the search for time correlations of high energy neutrinos and established signals. We show the first adaptation of a Target of Opportunity strategy to collect simultaneous data of high energy neutrinos and gamma-rays. A tentative neutrino signal is used to alert gamma-ray observations. The detection of a positive coincidence can enhance the neutrino discovery chance. More generally, this scheme of operation can increase the availability of simultaneous observations. If cosmic neutrino signals can be established, the combined observations will allow time correlation studies and therefore constraints on the source modeling. A first technical implementation of this scheme involving AMANDA and MAGIC has been realized for few pre-selected sources in a short test run (Sept. to Dec. 2006), with the aim of a feasibility study. The principles of the NToO test run and its first outcomes will be shown and the potential for IceCube will be discussed.

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

IceCube, MAGIC

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 1257-1260

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