



Contribution ID : 1067

Type : **Poster**

The Sensitivity of KM3NeT to Potential Neutrino Signals from Extra-Galactic Gamma-Ray Sources

Monday, 9 July 2007 14:45 (0:00)

Abstract content

The proposed northern-hemisphere cubic-kilometre under water neutrino detector, KM3NeT, promises unprecedented sensitivity to potential fluxes of neutrinos from southern hemisphere gamma-ray counterparts. KM3NeT is briefly outlined before gamma-ray observations of AGN are used to set upper-limits on the neutrino production rate in these potential extragalactic cosmic ray engines. Absorption of gamma-rays by the extragalactic background light is taken into account and estimates of both signal and background neutrino fluxes within KM3NeT over 5 years of observing are presented. Both the integral and differential sensitivity of the detector are discussed. It is found that the brightest, most distant gamma-ray sources may produce neutrinos detectable above the atmospheric background in KM3NeT at energies greater than 1 TeV. The feasibility of a differential detection, resulting in a measurement of the neutrino spectrum is less likely, but not ruled out.

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

KM3NeT

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 1433-1436

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Session Classification : Posters 3 + Coffee

Track Classification : HE.2.3