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Neutrino signals from galactic TeV gamma-ray sources

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Abstract content

Hadronic interactions of cosmic protons and nuclei with the ambient gas lead to the production of both neutrinos and gamma-rays. Both types of secondary particles can be used to provide information on sites of cosmic-ray acceleration. As messengers gamma-rays have a clear advantage in that sensitive detectors can be readily constructed. However, despite the difficulty of experimental neutrino astronomy, neutrinos have the advantage that they point unambiguously to the presence of a *hadronic* component of cosmic rays. The recent progress made in galactic TeV gamma-ray astronomy using the H.E.S.S. instrument provides for the first time a population of galactic sources for which the neutrino flux can be estimated. Using new parameterisations of pion production and decay in hadronic interactions and gamma-ray spectra measured using H.E.S.S. we estimate the signal and background rates expected for these sources in the ANTARES and KM3NeT detectors. Although, generally these estimates should be considered as flux upper limits, we discuss the conditions and type of gamma-ray sources for which one can provide robust neutrino flux predictions.

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'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 1237-1240

Primary author(s) : Mr. KAPPES, Alexander (University Wisconsin-Madison); Mr. HINTON, Jim (University of Leeds); Mr. STEGMANN, Christian (University Erlangen-Nuremberg); Mr. AHARONIAN, Felix (Max-Planck-Institut fuer Kernphysik, Heidelberg)

Presenter(s) : Mr. STEGMANN, Christian (University Erlangen-Nuremberg)

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