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DISENTANGLING GAMMA RAY SOURCES FROM THE GALACTIC PLANE REGION USING HAWC

Abstract

The High –Altitude Water Cherenkov Gamma-Ray Observatory (HAWC), located on Pico de Orizaba at 4100 m over the see level, is designed to indirectly detect gamma ray emissions arriving from high energy objects such as pulsars, nebulae and distant galaxies. Gamma ray measured by HAWC must be directed right to the place where they were produced, which allows to identify sources which were never observed with any other instrument before. In addition gamma ray are related to phenomena of interactions of high energy particles, such as possible dark matter candidates. They can also serve as a tool to study another phenomena involving modifications of their dipersion when traveling through the universe, such as Lorentz invariance violation for instance. The galactic plane is a region which has been studied by several instruments in different wavelengths, nevertheless due to the characteristics of HAWC, now it is possible to detect new sources in detail. With the goal of disentangling the flux of gamma rays arriving from possible new sources, from the already known ones, in the galactic plane region, algorithms based on likelihood tools, which are aim to be included in the software of data analysis of HAWC, are being developed. The status of the work is going to be presented.

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