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Gamma-Ray Observations with CALET: Exposure Map, Response Functions, and Simulated Results

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The CALorimetric Electron Telescope (CALET) is a space-borne cosmic ray calorimeter system planned for installation on the JEM-EF platform on the International Space Station (ISS) in 2015. The CALET collaboration is a Japan-led team collaborating with researchers in Italy and the U.S. In addition to precise measurement of the cosmic ray electron and nuclei spectra, the CALET calorimeter will be capable of gamma-ray observations in the energy range 10 GeV – 10 TeV. This paper presents a study of the expected gamma-ray signal measured by CALET in the first year on orbit. The ISS zenith pointing is simulated at a time resolution of 1 second in order to precisely estimate the exposure map on the sky. The instrument response functions and simulated results of gamma-ray/electron separation for the calorimeter are discussed and used to estimate the point source and galactic diffuse signals in the energy range 10 GeV - 500 GeV based on known positional fluxes measured by Fermi-LAT.

Collaboration

CALET

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