PROCEEDINGS OF SCIENCE

Design and Detection Mechanism for Gamma Rays and Antimatter Particles by a LArTPC Detector Towards Future GRAMS Mission

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The upcoming GRAMS (Gamma-Ray and AntiMatter Survey) experiment aims to provide unprecedented sensitivity to a poorly explored region of the cosmic gamma-ray spectrum from 0.1-100 MeV, often referred to as the "MeV gap". In addition to gamma rays, the ability to detect cosmic antimatter makes GRAMS an excellent candidate for a nearly 'background free' indirect dark matter search. Utilizing Liquid Argon Time Projection Chamber (LArTPC) technology to detect MeV gamma rays and antimatter, GRAMS has the potential to uncover crucial details behind a variety of processes in multi-messenger astrophysics. In this poster session, the design and detection mechanism for a proof-of-concept detector called MicroGRAMS will be covered. This detector's primary use is to evaluate the performance of the GRAMS charge and light collection systems and demonstrate the detection concept for gamma rays and antimatter particles.

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