

# Cosmic ray studies with SWGO

Thursday 15 July 2021 18:12 (12 minutes)

A number of cosmic-ray observatories have measured a change in both phase and amplitude of the dipole component in the distribution of cosmic-ray arrival directions at  $\sim 100$  TeV primary energy. We focus on probing the cosmic-ray dipole and multipole evolution in the energy region of  $\sim 1$  TeV to beyond a PeV with a future large-area gamma-ray observatory, such as the Southern Wide-field Gamma-ray Observatory (SWGO). The ability to discriminate between different mass groups is essential to understand the origin of this evolution. Through a consideration of the energy and mass resolution for cosmic-ray detection by such an observatory, we estimate its separation power for decomposing the full-particle anisotropy into mass groups. In particular, we explore the feasibility of probing the dipole evolution with rigidity with SWGO. In this way, we demonstrate the great potential that this instrument offers for providing a deeper understanding of the origin of the cosmic-ray anisotropy.

## Keywords

cosmic ray, anisotropy, TeV, PeV

## Collaboration

SWGO

## other Collaboration

## Subcategory

Experimental Methods & Instrumentation

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**Session Classification:** Discussion

**Track Classification:** Scientific Field: CRI | Cosmic Ray Indirect