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# Harmonic Interference of Earth's Orbital Velocity and the Sidereal Cosmic Ray Anisotropy

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When cosmic-ray arrival directions are observed in celestial coordinates, they appear to have a small anisotropy whose origin is still largely unknown. In addition to this celestial anisotropy, the Earth's revolution around the Sun produces a faint Compton-Getting dipole anisotropy with an excess oriented towards the direction of motion in solar coordinates. The relative rotation of the celestial and solar reference frames over a calendar year causes interference between the two sources of anisotropy. It is possible to characterize the resulting yearly modulations by studying the side-bands to the diurnal and sidereal frequencies in anti- and extended-sidereal time frames. This work provides a numerical simulation of the interference between anisotropies in sidereal and solar reference frames to predict the anti-sidereal and extended-sidereal frames' distributions.

## Keywords

Cosmic Ray Anisotropy; Monte Carlo; Integration; Systematics

## Collaboration

## other Collaboration

## Subcategory

Experimental Methods & Instrumentation

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