

# Vertex and energy reconstruction of UHE particles using in-ice radar for the RET experiment

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The Radar Echo Telescope (RET) experiment plans to use the radar technique to detect Ultra-High Energy (UHE) cosmic rays and neutrinos in the polar ice sheets. When a UHE particle collides with an ice molecule, it produces a shower of relativistic particles, which leaves behind a trail of plasma in the ice. Radiowaves can be reflected off this plasma and be detected by receiving antennas. Vertex and energy reconstruction of the primary UHE particle is dependent upon an understanding of the radar signal properties. We will be discussing various methods to simulate the radar signal and calculate our vertex and energy reconstruction resolution.

## Keywords

Radar;Ice;Vertex;Cosmic Rays;Neutrinos;Ultra High Energy;

## Collaboration

other (fill field below)

## other Collaboration

Radar Echo Telescope

## Subcategory

Theoretical Methods

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