

The Radar Echo Telescope

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High energy neutrinos (>10PeV) are integral to the multi-messenger astronomy and notoriously hard to detect. When a high energy neutrino interacts in ice, it produces a relativistic cascade of charged particles, which in turn leaves behind a plasma which can reflect radio waves. This is the concept of the Radar Echo Telescope (RET). But as a first step it's important to understand the method by detection of the continuation of cosmic ray showers in ice. Radar Echo Telescope for cosmic rays (RET-CR) is currently being deployed in the high-altitude summit station at Greenland. The primary objective is to detect the in-ice continuation of the cosmic-ray induced air showers using the radar echo method. The surface stations of RET-CR triggers and reconstructs the primary particle energies, and arrival directions. The in-ice radar system also detects the signal in compliment to the surface stations. A successful search for the in-ice cosmic ray signal with the radar echo technique would be critical to the validation and viability of the method, thus providing valuable insights into the further establishment of the radar echo telescope for neutrinos (RET-N).

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