

The Radar Echo Telescope for Neutrinos (RET-N)

Tuesday 20 July 2021 12:48 (12 minutes)

We present the Radar Echo Telescope for Neutrinos (RET-N). RET-N focuses on the detection of the cosmic neutrino flux at $>\text{PeV}$ energies by means of the radar detection technique. This method aims to bridge the energy gap between the diffuse neutrino flux detected by IceCube up to a few PeV and the sought for cosmogenic neutrinos at EeV energies by the in-ice Askaryan detectors, as well as the air-shower radio detectors. The radar echo method is based on the detection the ionization trail in the wake of a high-energy neutrino-induced particle cascade in ice. This technique, recently validated in a beam test (T576 at SLAC) is also the basis for the RET-N pathfinder experiment, RET-CR, which is currently under development. Based on the T-576 results, we show that the radar echo method leads to very promising sensitivities to detect cosmic neutrinos in the PeV-EeV region and above. We present the RET-N project and its proposed timeline, as well as the results of our sensitivity studies.

Keywords

Neutrino ; Radar detection ; $>\text{PeV}$ flux

Collaboration

other Collaboration

Radar Echo Telescope Collaboration

Subcategory

Future projects

Primary authors: DE VRIES, Krijn (VUB/IIHE); PROHIRA, steven (The Ohio State University)

Co-author: FOR THE RADAR ECHO TELESCOPE COLLABORATION

Presenter: DE VRIES, Krijn (VUB/IIHE)

Session Classification: Discussion

Track Classification: Scientific Field: NU | Neutrinos & Muons