Contribution ID: **728** Type: **Parallel session talk**

Cosmic ray detection with the IceTop Enhancement

Monday 21 August 2023 09:54 (18 minutes)

The IceCube Neutrino Observatory has detected neutrinos from various astrophysical sources with its 1km³ detector volume in Antarctic ice. IceTop, the cosmic-ray detector on the surface of IceCube, consists of 81 pairs of ice-Cherenkov tanks. The rise in threshold of measurements due to accumulating snow inspired the next generation of South Pole detectors comprising of elevated scintillator panels and radio antennas controlled by a central DAQ system referred to as the Surface Array Enhancement (SAE). The planned IceCube Gen-2 Surface Array is expected be built on the same design. An initial study with the SAE prototype station was already conducted. We briefly review the Enhancement and the deployment as well as calibration status of the upcoming stations of the planned array of 32 stations. The focus of this contribution is on the radio detection of extensive air showers. A preliminary proof of concept for the X_{max} estimation with the data from the 3 antennas of the prototype station was carried out. An extension of the method from previous analyses is also briefly discussed.

Collaboration / Activity

IceCube

Primary author: VENUGOPAL, Megha (Karlsruhe Institute of Technology)

Presenter: VENUGOPAL, Megha (Karlsruhe Institute of Technology)

Session Classification: T01 Astroparticle Physics and Gravitational Waves

Track Classification: Astroparticle Physics and Gravitational Waves