Contribution ID: **217** Type: **Parallel Flash talk**

Overview of the Planned Surface Enhancement of IceCube

Wednesday, 24 February 2021 11:45 (5 minutes)

The IceCube Neutrino Observatory with its surface array IceTop enables multi-messenger astrophysics, detecting cosmic rays and neutrinos and searching for PeV gamma rays at a single location. IceTop will be upgraded in the coming years in order to improve its sensitivity and resolution. This surface enhancement will consist of 32 stations comprised of 8 scintillation panels and 3 radio antennas each. This array is designed to lower the detection threshold of IceTop and improve systematic uncertainties. In addition, with the radio antennas, it will reach maximum accuracy for the measurement of air showers of energies around the second knee of the cosmic-ray spectrum where a transition from galactic to extra-galactic sources is expected. A complete prototype station has been operating at the South Pole since 2020. In this talk, I will present the plan for this enhanced surface array and describe how it will function.

Collaboration name

IceCube

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Session Classification: New Facilities