



Contribution ID: 129

Type: **not specified**

The Beamforming Elevated Array for COsmic Neutrinos (BEACON): A Radio Detector for Earth-Skimming Tau Neutrinos

Wednesday 8 June 2022 09:20 (20 minutes)

When ultrahigh energy tau neutrinos skim the Earth, they can generate tau leptons that then decay in the atmosphere, forming upgoing extensive air showers. The Beamforming Elevated Array for COsmic Neutrinos (BEACON) is a novel detector concept that utilizes a mountaintop radio interferometer to search for the radio emission due to these extensive air showers. The prototype, located at the White Mountain Research Station in California, consists of 4 custom crossed-dipole antennas operating in the 30-80 MHz range and uses a directional interferometric trigger to achieve reduced thresholds and background rejection. The prototype will first be used to detect extensive air showers from down-going cosmic rays to validate the detector model. In this talk, we give an overview of the BEACON concept and the status of its prototype. We also discuss the ongoing cosmic ray search which utilizes both data analysis and simulation.

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Session Classification: Air Radio Experiments 1