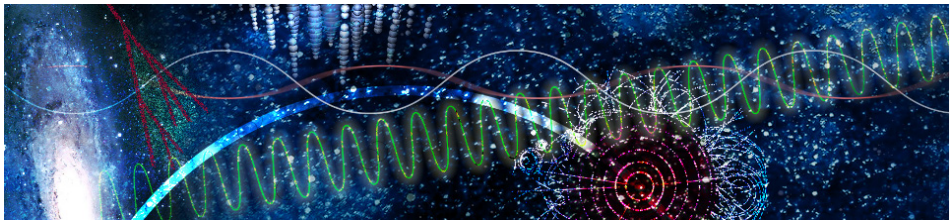

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Xmax estimation using radio detection with the IceCube Surface Array Enhancement

The IceCube Neutrino Observatory with its deep in-ice detectors, has effectively contributed to neutrino astronomy. IceTop, located on the surface, is a cosmic ray detector measuring particles produced as a result of extensive air showers. A planned elevated Surface Array, consisting of 8 scintillators and 3 antennas per station, is expected to further the cosmic-ray detection capabilities of this detector. The use of radio for the detection of cosmic rays has gained momentum in the last decade for its ability to determine the X_{max} of an air shower which describes the distance where the maximum number of charged particles are produced. The data taken by the antennas deployed with the prototype station of the Surface Array Enhancement over two years was used to estimate X_{max} and the energy of the primary cosmic rays. The reconstruction follows the use of arrival directions from IceTop and using simulations generated through CoREAS.

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