



Contribution ID: 16

Type: **not specified**

A New Network of Electric Field Mills at the Pierre Auger Observatory

Wednesday, 13 July 2022 15:30 (30 minutes)

The Pierre Auger Observatory is the largest ground-based experiment for the detection of ultra-high energy cosmic rays. In a hybrid approach, many detectors - including radio antennas - observe the extensive air showers induced by cosmic rays. As part of the AugerPrime upgrade, new antennas will be installed on each of the surface detector stations covering a total area of around 3000 km². This will allow us to study the mass composition of cosmic rays arriving with large inclination angles.

The radio emission of air showers is heavily influenced in the presence of strong atmospheric electric fields during thunderstorm conditions. In that case measured data are difficult to interpret and therefore the atmospheric electric field over the array has to be monitored. We present the design and status of a new network of electric field mills that will be used to take on this task. We show how we plan to have the measurements with an absolute calibration. In addition, the electric field data will be useful for other studies related to atmospheric electricity.

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Session Classification: TLE and atmospheric electricity monitoring