Prospects for Air Shower Measurements with RNO-G

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In 2021 the first three stations of the Radio Neutrino Observatory Greenland (RNO-G) have been deployed, consisting of in-ice strings of antennas down to 100 meters and antennas just below the surface. Apart from measuring ultra high energy neutrinos, RNO-G will be able to detect cosmic rays with a total effective area of close to ~100km2 above 0.1 EeV. Air showers are an important verification measurement and source for in-situ calibration of the detector. Prospects for in-ice signal of air shower are developing further: Simulations suggest energy dense cores which propagate though the ice and are visible to deep antennas. In addition, stochastic energy losses from high energy muons in an air shower penetrating the ice may mimic the interaction of a neutrino. An efficient surface trigger will provide a veto mechanism for both types of events. The collected data of shallow and deep antennas can be used to verify simulations for in ice development of air showers.

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