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The Radio Neutrino Observatory in Greenland: Status and Perspectives

Thursday 18 July 2024 09:05 (15 minutes)

High-energy neutrinos propagating over cosmological distances are the ideal messenger particles for astrophysical phenomena, but the neutrino landscape above 10 PeV is currently completely uncharted. At these extreme energies and the frugal flux expected, the dominant experimental strategy is to detect radiofrequency emissions from particle cascades produced by neutrinos interacting in the vast polar ice sheets.

The Radio Neutrino Observatory in Greenland (RNO-G) is an array of radio antennas embedded in the ice near Summit Station, currently being deployed. At completion, RNO-G will consist of 35 autonomous antenna stations interspaced by 1.25 km on a rectangular grid, making it the largest and most sensitive in-ice neutrino telescope with unique access to the northern sky.

In this talk, I will describe the design of RNO-G, outline calibration and analysis strategies developed on the way to first physics, and share a look at the data collected by the first seven operating stations.

Alternate track

1. Neutrino Physics

I read the instructions above

Yes

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