GNN Monthly
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https://www.globalneutrinonetwork.org/

GNN Dissertation Prize

The deadline for submitting proposals for the GNN Dissertation Prize has been extended to February 13.

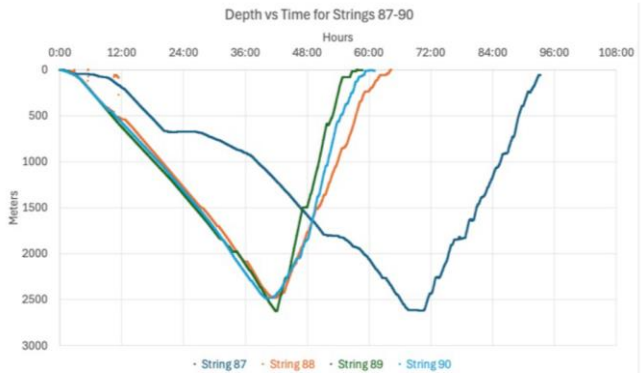
GNN Meeting

The GNN Meeting (formerly known as MANTS) will take place on May 25 and 26, 2026, at Nikhef/Amsterdam. An indico page (still empty) has been set up https://indico.nikhef.nl/event/7529/, which will soon be filled with local information and registration details. The organizing committee is also taking shape and beginning to plan the meeting content.

News from the experiments

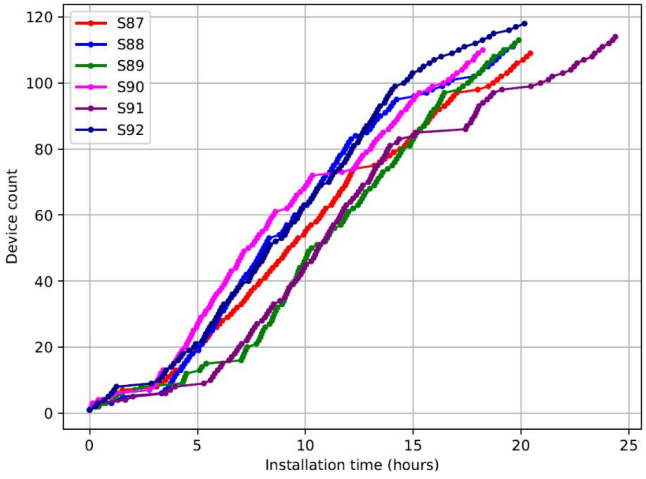
IceCube

The “Upgrade season” is over, taken all together with a great success. Six strings have been deployed. Five of the planned seven holes have been drilled very smoothly – see the next picture, which shows the depth-vs-time plot for the drill head in the first four holes. (I just haven’t yet received the plot for the remaining strings). The first, downward part of the curves represents the drilling, while during the second, upward part, the hole is “reamed,” and more heat is delivered to create a smooth, sufficiently wide hole that doesn’t freeze back too quickly.



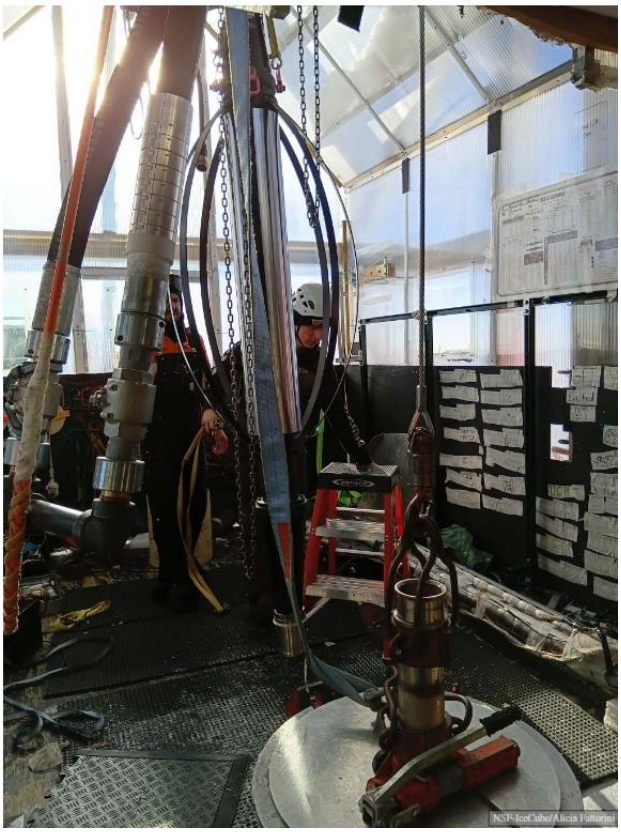
Depth vs. Time plot for the drill head in first four holes.

The next plot shows the device count vs. time. Note that 108 devices had to be fixed at a string, including optical modules, calibration devices, and cameras, compared to 60 OMs per string in IceCube. Therefore, the 20-hour installation period demonstrates the team's excellent preparation and performance.



Device count versus time for all 6 strings. (Figure by John Kelley/WIPAC).

While drilling the sixth hole, the drill hose failed at one of the couplings that link the 23 120-m hose segments. The failure is likely due to a manufactory cause. After provisionally fixing the problem, it was decided to continue to drill at lower pressure and temperature. The hole was successfully drilled down to 2450 meters and the string was deployed as smoothly as the other five. Since further problems for the seventh hole (while drilling again with full pressure and temperature) could not be excluded, it was decided not to deploy the seventh string.



Assembling the drill head for the fourth hole of the Upgrade.

In collaboration with the USGS (United States Geological Survey), two seismometers were successfully deployed at the bottom of two strings at a depth of 2450 meters. Both seismometers are communicating and are initially operational. Multiple calibration procedures were conducted during the descent of the strings, including pulsing calibration light sources, video camera recordings, and a dust logging run with a pulser in combination with an IceCube-Gen2 DOM (LOM).

Among the many devices for calibration and better understanding the ice properties is also the "Sweden camera", arranged in one the standard glass spheres – see the next picture. The Swedish collaborators have already delivered cameras for IceCube, nearly two decades ago.

"Bye bye, Sweden camera, behave!" This is the last of the Sweden cameras dropped during installation of the 6th string of the Upgrade.

View to the drill cap with the heaters working to warm up the water for the drill.

Taken as a whole, the season was an impressive success. The Upgrade strings are now in the commissioning phase, and we are looking forward to first results for performance of the new OMs and from the cameras and the numerous calibration devices.

Group photo at the drill tower during the installation of string 6 of the Update. *(Photo: C. Hill / TUM)*

Finally, something exotic: Antarctic Logistics and Expeditions (ALE, https://antarctic-logistics.com/) operates a seasonal tourist camp directly at the Geographic South Pole (located about 0.6 miles from the station), open from November to January. Guests stay in heated "Arctic Oven" tents and can visit the South Pole marker, with, for example, a 7-day overnight experience costing around $ 75,500. Of course, this camp is not supported by the South Pole station (tax payer's money!)

The tourist camp at a few hundred meters from the South Pole station (not supported by NSF)

Planes from the tourist camp

Gone are the days when it was a privilege to have been to the South Pole!

Baikal GVD

Preparations for the winter expeditions go smoothly. This year, the ice looks pretty good. No cracks, thickness is steadily growing, close to shore about 30 cm by now.

The next photo has been taken at January 24. Top right the outflow to the Angara river. The black spot is open water. The lake is covered by snow, the fan-like grey region on the right is just ice not covered by snow. The structure in the middle (approximately here Baikal-GVD is located) are clouds (left) and their shadows (right).

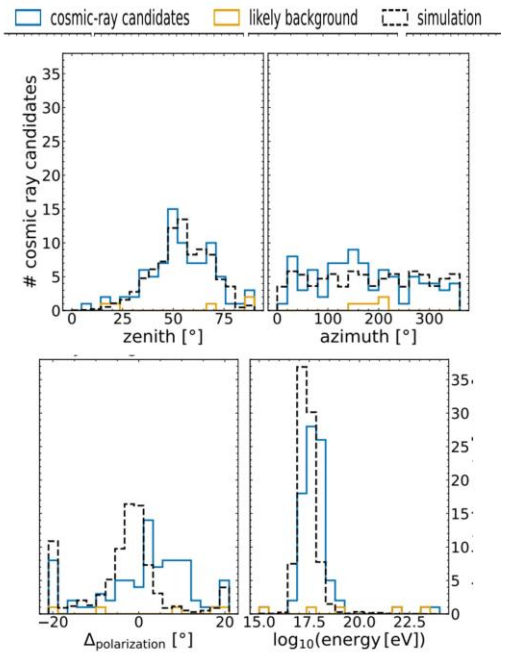
Publications

The RNO-G Collaboration has posted a paper *Validating the performance of the Radio Neutrino Observatory in Greenland using cosmic-ray air showers* at https://arxiv.org/pdf/2512.17664 and

submitted to EPJ-C. The corresponding author is Jakob Henrichs (DESY).

A critical part of early commissioning of RNO-G is the study of detector characteristics and potential backgrounds, for which cosmic rays play a crucial role. The authors analyzed the full 2022-2023 dataset. They found that the number of cosmic rays detected with RNO-G's shallow antennas is consistent with expectations. It is further verified that the observed cosmic-ray signal shape agrees with expectations from simulations after careful treatment of the detector systematics. Finally, it is found that the reconstructed arrival direction, energy, and polarization of the cosmic-ray candidates agrees with expectation from simulations (see the figure below).

This demonstrates that, despite some necessary modifications - which were identified in this analysis - the detector performs as expected and has successfully passed the commissioning aspect using direct signals from air showers. Throughout this study, the authors identified detector shortcomings that are mitigated going forward. Hardware modifications will substantially improve the situation, a lower threshold, for instance, will increase the number of coincidences with cosmic rays by an order of magnitude. Overall, the analysis presented is an essential first step towards validating the detector and high-fidelity neutrino detection with RNO-G in the future.



Reconstructed quantities for the cosmic-ray candidates (solid blue line), corresponding simulations (dashed line), which are normalized to the number of cosmic-ray candidate events, and likely backgrounds (solid orange line). Shown are from left to right the zenith angle, azimuth angle, difference to expected polarization angles assuming a purely geomagnetic emission (with the first and last bins being overflow bins), and energy. See the paper for details.

Impressum
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