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Analysis of Attitude Sensors in the Prototype String of HUNT Project

The HUNT (High-Energy Underwater Neutrino Telescope) is a next-generation neutrino telescope project. Each string in HUNT has dozens of optical modules (OM), which house a 20-inch photomultiplier tubes (PMT) within 23-inch glass spheres. These strings extend up to approximately 1 kilometer in length. To precisely measure the real-time attitude and location of each OM, we employ 9-axis IMU attitude sensors (LSM9DS1 IMU) and an acoustic positioning system (APS). To calibrate the impact of magnetic materials within the OM, we developed a non-magnetic rotating platform in the laboratory for multi-angle calibration. In January 2025, we deployed a prototype string with four OMs in the South China Sea, followed by the planned deployment of 24 OMs in Lake Baikal in March 2025. This paper presents the attitude sensor test data and OMs positional analysis results of these two strings, and we hope this work can improve the accuracy of the data results of the prototype.

Collaboration(s)

HUNT Collaboration

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