

The positioning system for Baikal-GVD

In large-scale underwater neutrino telescopes, the geometry of the photomultiplier array constantly changes due to water currents, with individual optical modules drifting tens of meters from their initial positions. Accurate monitoring of the photomultiplier positions is indispensable to ensure stable telescope performance and maintain its angular resolution. In Baikal-GVD, the positioning of individual photomultipliers is achieved using a hybrid system comprising a hydroacoustic network of acoustic modems installed sparsely along the vertical detector structures (strings) and an independently operated inertial positioning system, relying on integrated inertial sensors installed near the photomultipliers. We present the current state of the Baikal-GVD positioning system and demonstrate a positioning accuracy of 20 cm.

Primary author: AVRORIN, Alexander (Institute for Nuclear Research of the Russian Academy of Sciences)

Presenter: AVRORIN, Alexander (Institute for Nuclear Research of the Russian Academy of Sciences)

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