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First measurements of track-like events with Baikal-GVD using a χ^2 -like track fit

Baikal Gigaton Volume Detector (Baikal-GVD) is a 1 km^3 neutrino detector currently under construction in lake Baikal, Russia. The detector consists of several thousand optical sensors arranged on vertical strings. The strings are grouped into clusters of 8 strings each. Each cluster can operate as a stand-alone neutrino detector, providing an effective volume of $\sim 0.05 \text{ km}^3$. A fast χ^2 -based reconstruction algorithm has been developed to reconstruct track-like events observed with Baikal-GVD. The algorithm has been applied to data collected in 2019 from the first five operational detector clusters. Both the downgoing atmospheric muon flux and the upgoing atmospheric neutrino flux are observed. This analysis is limited to single-cluster data, favoring nearly-vertical tracks.

Related session

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