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Selection techniques of neutrino-induced cascades in the Baikal-GVD neutrino telescope

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The Baikal Gigaton Volume Detector (Baikal-GVD) is a 3-dimensional array of optical modules located 1366 metres deep in Lake Baikal. It is designed to detect high-energy neutrinos coming from galactic and extragalactic sources. Currently (year 2023) the detector consists of 3456 optical modules grouped into clusters. Each cluster is connected to shore with individual optoelectric cable (~ 6 km) and thus its operation is independent of other clusters in the detector.

The Cherenkov radiation produced by secondary charged particles originated from neutrino interactions creates in the water different kinds of light signatures. According to the event topology, it is possible to distinguish between types of the neutrino interactions. Cascade events are produced in charged current electron and tau neutrino interactions and neutral current interactions of all-flavour neutrinos. The most abundant background in the cascade channel is produced by discrete stochastic energy losses along the atmospheric muon track. In this presentation, the results on the suppression techniques of these background cascades will be presented.

Submitted on behalf of a Collaboration?

Yes

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