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Reconstruction of double cascades in the Baikal-GVD neutrino telescope

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Baikal Gigaton Volume Detector (Baikal-GVD) is a neutrino telescope being constructed in the deepest freshwater lake in the world –Lake Baikal. It is designed to observe astrophysical neutrinos through detection of Cherenkov radiation emitted by the products of neutrino interactions. The Baikal-GVD is a three-dimensional array of photomultiplier tubes (contained in optical modules) arranged on vertical strings. Currently (2023), it consists of 3456 optical modules.

One of the Cherenkov light topologies that can be created in the charged current interaction of tau neutrino is called double cascade. This signature is produced if tau lepton originating in charged current tau neutrino interaction decays into electron or hadrons. Detection of high-energy tau neutrinos is of crucial importance because it provides a direct method for identification of astrophysical neutrinos, since the production rate of high-energy tau neutrinos in the atmosphere is negligible. In this contribution a technique for the reconstruction of double cascades will be presented.

Submitted on behalf of a Collaboration?

Yes

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