

# Development of the Double Cascade Reconstruction Techniques in the Baikal-GVD Neutrino Telescope

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Baikal-GVD is a cubic-kilometer scale neutrino telescope installed in Lake Baikal. The main goal of this telescope is the neutrino detection via detecting the Cherenkov radiation of the secondary charged particles originating in the interactions of neutrinos. The basic detection unit of this telescope is a photo-multiplier tube enclosed in a pressure resistant glass sphere –optical module. The optical modules are arranged in independently working units called clusters.

One of the methods for astrophysical neutrino detection is an observation of high energy tau neutrinos ( $E \gtrsim 100$  TeV), which create double cascade signature in charged current interaction.

In this contribution, three independent techniques for search and reconstruction of double cascades will be introduced. The first technique is based on study of pulse shapes, the second method is based on identification of two distinct cascades created in a cluster, and the third one combines single cascade reconstruction technique with multi-cluster events studies. The very first steps in the development of these techniques will be presented.

## Subcategory

Experimental Results

## Keywords

double cascades; tau neutrino; double pulses; reconstruction techniques

## Collaboration

other (fill field below)

## other Collaboration

Baikal-GVD

**Primary authors:** Ms ECKEROVÁ, Eliška (Comenius University in Bratislava); FOR THE BAIKAL-GVD COLLABORATION

**Presenter:** Ms ECKEROVÁ, Eliška (Comenius University in Bratislava)

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