

Method and device for tests of the laser optical calibration system for the Baikal-GVD underwater neutrino Cherenkov telescope

On behalf of the Baikal-GVD Collaboration

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What is this contribution about?

The subject of the presentation is a method enabling a quick check of the influence of the applied light source and optical diffusers on the light propagation in medium for optical calibration systems for underwater neutrino Cherenkov telescopes.

Why is it relevant / interesting?

The proposed method, through the use of a portable test bench and efficient simulation, operating on most of the available personal computers, allows for a quick examination of the suitability of the tested light source for optical calibration systems of underwater neutrino Cherenkov telescopes. It also allows to quickly test the existing calibration system components and long-term performance evaluation (in the case of laser systems).

What have we done?

The fully automatic scanning bench and a dedicated, efficient simulation of photon propagation in water were developed. Both, the scanning bench and the simulation can work fully independently.

What is the result?

The tests of several light emission methods for the optical calibration system of the Baikal-GVD water neutrino telescope were performed. The specially developed test bench scanned the diffusers used so far in the experiment and prepared the data for dedicated simulation which is still in the testing phase. The simulation visualized the effect of a given light emission method to the effect registered by the telescope.