

Neutrino Telescope Baikal-GVD

Thursday 30 August 2018 16:15 (20 minutes)

Baikal-GVD is a next generation, cubic-kilometer scale neutrino telescope which has been constructed since 2015 in the largest and deepest freshwater lake in the world, Lake Baikal. The detector itself is built from independent multi-megaton sub-arrays called clusters whose centers are 300 meters away. Every cluster consists of 8 strings each carrying 36 Optical Modules (OMs) vertically spaced by 15 meters while the uppermost and the undermost layers of OMs are located 750 and 1275 meters below the lake surface, respectively. The strings in the clusters are arranged in heptagons (1 central, 7 peripheral) and the distance between them is 60 meters. The full-scale GVD is going to be an array of ~10.000 OMs with an instrumented volume of about ~2 km³ and it is designed to detect astrophysical neutrino fluxes at energies from a few TeV up to 100 PeV. The first phase (GVD-1) is going to be completed by 2020-2021. The first phase comprises 8 clusters with 2.304 OMs in total and instrumented volume ~ 0.4 km³. The first three clusters of the GVD-1 were successfully installed in 2016, 2017, and 2018, respectively and have been taking data since then. In addition, a new R&D in OMs installation enables to install 2-3 new clusters per year. The most substantial advantages of GVD are very clean water, modularity, easy installation from the frozen surface of the lake and very low content of K40.

In this talk we describe the design of Baikal-GVD and present selected results obtained in 2016 –2017.

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Session Classification: Neutrino Astronomy

Track Classification: Neutrinos