

Referee Report on the Project BAIKAL-GVD

The BAIKAL-GVD gigaton neutrino detector will be a new research infrastructure aimed primarily at studying astrophysical neutrino fluxes. The detector will use Baikal Lake water instrumented at depth with optical sensors that detect the Cherenkov radiation from secondary particles produced in interactions of high-energy neutrinos inside or near the instrumented volume. The first step to the BAIKAL-GVD was finished in 2015, when the first demonstration cluster called “Dubna” was accomplished. During 2016–2017, the BAIKAL collaboration deployed two full-scale clusters with 576 optical modules. The current production and deployment rates allow two clusters to be installed annually. Thus, at the end of 2021, the collaboration is planning to put into operation 10 clusters with 2880 optical modules. This will allow about 30 extraterrestrial events with energies above 100 TeV to be accumulated for detailed investigations of “IceCube signal”.

The BAIKAL-GVD project together with the IceCube experiment is playing an essential role in study of the high-energy neutrino flux from all directions of the sky. The project is coordinated by the strong JINR/DLNP team and is definitely one of the highlights of the JINR scientific activities.

The JINR PAC for Nuclear Physics as well as the JINR Scientific Council recommended in 2018 a continuation of the BAIKAL project in 2019–2023 and the allocation by the JINR Directorate the resources requested by the collaboration.

In addition, I recommend a more aggressive policy on publications and presentations at major international conferences of the first results and technical achievements of the collaboration.

Marek Lewitowicz



GANIL January 16, 2019