

Analysis of the counting rate of non-trigger signals at the Baikal-GVD neutrino telescope

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The main goal of the Baikal-GVD project is to detect high-energy astrophysical neutrinos. In particular, the telescope's aim is to register the Cherenkov radiation emitted during the passage of secondary charged particles formed as a result of neutrino reactions with the environment through the deep waters of Lake Baikal. In addition to Cherenkov radiation, ambient background noise and non-trigger signals are also recorded. The procedure of the selection of the astrophysical signal from a noise background is a non-trivial task, which includes a thorough study of the background itself. This work presents the results of the analysis of the counting rate of non-trigger and noise signals for the year 2021. Images of the optical activity level for 6 PMT of one telescope string were obtained, as well as the level of optical activity on all 36 PMT of one string for the year of the data set. Two optically inactive periods and one long period with high optical activity were identified. The resulting images were compared with data for 2020 published by V.A. Allakhverdyan et al. "The Baikal-GVD neutrino telescope as an instrument for studying Baikal water luminescence".

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