

Real-Time Follow-Up of Multimessenger Alerts at the Baikal-GVD Telescope

The Baikal-GVD Telescope, situated in Lake Baikal, is designed primarily for neutrino astronomy and also contributes to multi-messenger astrophysics through the real-time follow-up of General Coordinates Network alerts. This capability allows for comprehensive detection and understanding of astrophysical phenomena by correlating neutrino signals with emissions across the electromagnetic spectrum and gravitational waves. At the beginning of 2021, Baikal-GVD initiated an automatic data processing and alert generation system, categorizing neutrino alerts into ‘muon neutrinos’ (extended upward-going track events) and ‘all-flavor neutrinos’ (high-energy cascades). The system can generate a preliminary response to incoming alerts within a time delay of 3 – 10 minutes. A notable outcome from this follow-up includes the temporal and spatial correlation of the Baikal-GVD cascade event GVD211208CA with an energy of 43 TeV and the muon neutrino alert IceCube211208A, potentially associated with the blazar PKS0735+178.

Section

Nuclear physics (Section 1)

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