

Three messenger studies of the high energy Universe in Siberia

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One of the biggest mysteries in astroparticle physics has remained the origins of ultrahigh-energy cosmic rays, very high-energy neutrinos, and high-energy gamma rays. All information we can learn from these different types of cosmic messengers is important for revealing new knowledge about the physics of extreme-energy cosmic particles and a deeper understanding about our universe. There are two different experiments in Siberia doing three messenger studies of the high energy Universe. The first is the neutrino telescope Baikal-GVD. Baikal-GVD is a next generation, kilometer-scale neutrino telescope under construction in Lake Baikal. It is designed to detect astrophysical neutrino fluxes at energies from a few TeV up to 100 PeV. The second experiment is the gamma-observatory TAIGA (Tunka Advanced Instrument for cosmic ray physics and Gamma Astronomy), which is being constructed in the Tunka Valley 50 km from Lake Baikal . The new TAIGA project is proposed to solve a number of fundamental problems of high-energy gamma astronomy, cosmic-ray and particle physics. There will be presented the relevance and advantages of the gamma observatory TAIGA as well as the neutrino telescope Baikal-GVD. There will be also reported about scientific results achieved with current astroparticle experiments in Siberia.