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Possibilities of the Tunka-Grande and TAIGA-Muon scintillation arrays with the TAIGA-HiSCORE Cherenkov array joint operation in the research of cosmic and gamma rays.

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The Tunka-Grande scintillation array is part of the TAIGA Gamma Observatory. It is intended for investigation of energy spectrum and mass composition of primary cosmic rays in the energy range 10PeV–10EeV and the search for diffuse cosmic gamma rays. The TAIGA-HiSCORE Cherenkov array aims at observing gamma-rays wiht the energy from 1 TeV. TAIGA-Muon low-threshold scintillation detector array is a network of surface and underground detectors for registration charge particles of EAS. Currently, 3 clusters have been deployed. The first cluster is running in test mode. It is assumed that in the future the total area of the TAIGA-Muon will be about 2000 sq. m. and it will search astrophysical gamma-rays in the energy range from 100 TeV together with the Tunka-Grande scintillation array and the Cherenkov experiments of the TAIGA Gamma Observatory. To evaluate the possibility of collaboration between Tunka-Grande, TAIGA-Muon and TAIGA-HiSCORE, a simulation was performed using the CORSIKA and Geant4 software packages. The current status of model-based studies is presented and assessed the prospects for joint operation of the arrays.

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