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First detection of gamma-ray sources at TeV energies with the first imaging air Cherenkov telescope of the TAIGA installation

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TAIGA array (Tunka Advanced Instrument for cosmic ray physics and Gamma-ray Astronomy) addresses gamma-ray astronomy at energies from a few TeV to several PeV as well as cosmic ray physics from 100 TeV to several EeV. A 1 km² TAIGA setup will consist of a Cherenkov timing array TAIGA-HiSCORE with 120 wide-angle detectors, three Imaging Air Cherenkov Telescopes (IACTs) with the FoV diameter of 9.6°, and TAIGA-Muon and Tunka-Grande scintillation arrays. In this report, first experimental results of the TAIGA first operation stage are presented: signal detection from two gamma-ray sources, Crab Nebula and Markarian 421, by the first IACT in standalone mode. The detected signal is shown to be in agreement with the Monte Carlo expectation. In future, gamma-ray signal will be detected by a larger number of TAIGA telescopes as well as the TAIGA-HiSCORE array, that is, in combined operation mode.

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