Contribution ID : **834** Type : **Oral talk**

TAIGA – an innovative hybrid array for and high energy gamma astronomy, cosmic ray physics and astroparticle physics

Friday, 9 October 2020 18:25 (15)

The physics motivations and advantages of the TAIGA (Tunka Advanced Instrument for cosmic ray physics and Gamma Astronomy) array are presented. TAIGA aims to 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 and astoparticle physics problems. For the energy range 30 – 200 TeV the sensitivity of 10 kmˆ2 area TAIGA detector for the detection of local sources is expected to be 10ˆ{−13} erg cmˆ{−2} secˆ{−1} for 300 h of observations. Combination of the wide angle Cherenkov timing detector TAIGA-HiSCORE with the 4-m class Imaging Atmospheric Cherenkov Telescopes (TAIGA-IACT) of FoV of 10x10 degrees offers a cost effective-way to construct a 10 kmˆ2 array. Reconstruction of a given EAS energy, incoming direction and its core position, based on the TAIGA-HiSCORE data allow one to increase a distance between the IACTs up to 600-1000 m. The low investments together with the high sensitivity for energies ≥ 30-50 TeV make this pioneering technique very attractive for exploring the galactic PeVatrons and cosmic rays. In addition to the Cherenkov light detectors we intend to deploy an array of muon detectors (TAIGA-Muon array) spread over an area of 1 kmˆ2 with a total area of about 2000 mˆ2. The TAIGA-IACT together with the TAIGA-Muon array will be used for selection of gamma-ray induced EAS. At present the TAIGA first stage has been constructed in Tunka valley, ˜50 km West from the Lake Baikal. Now it consists of 120 TAIGA-HiSCORE Cherenkov stations distributed over an area of 1 kmˆ2 and two IACT of the TAIGA-IACT array. The first experimental results with the TAIGA first stage will be reported.

Primary author(s) : Prof. BUDNEV, Nikolay (Irkutsk State University); TAIGA COLLABORATION

Presenter(s) : Prof. BUDNEV, Nikolay (Irkutsk State University)

Session Classification : Astroparticle Physics

Track Classification : Astroparticle physics