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Results of CR energy spectrum and mass composition study with EAS Arrays in the Tunka Valley

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There are three extensive air showers (EAS) arrays aimed to the study of Cosmic Rays (CR) in the different energy ranges in the Tunka Valley. The first of them is Atmospheric Cherenkov Light Array Tunka-133, containing 175 single PMT detectors at the area of about 3 km2. It ‘s operating since 2009 and has the energy range 5•1015 –1018 eV. The second one is a low threshold observatory TAIGA-HiSCORE. It currently comprises 28 wide-angle stations (at the area of about 0.25 km2) for registration of Cherenkov light from EAS in the range of 2•1014 –5•1016 eV. The most energetic CR are planned to be studied with the scintillation array Tunka-Grande. It consists of 19 stations now, recording electromagnetic and muon components of EAS at the area of about 1 km2. The differential energy spectrum collected by Tunka-133 during 5 winter seasons from 2009 to 2014 as well as the very preliminary spectra of two new arrays are presented. The methods of mass composition analysis for different arrays and some results of the analysis are presented.

Presentation type

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Primary author: Prof. PROSIN, Vasily (Skobeltsyn Inst. of Nucl.Phys. of Lomonosov Moscow Statte Univ.)

Presenter: Prof. PROSIN, Vasily (Skobeltsyn Inst. of Nucl.Phys. of Lomonosov Moscow Statte Univ.)

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