

Search for diffuse gamma radiation with energy $E_\gamma > 100$ TeV at the “Carpet-3” array

Monday, 10 October 2016 17:15 (15)

Studying diffuse gamma-ray emission with energies higher than 100 TeV has become especially topical due to detection of astrophysical neutrinos in the IceCube experiment. If these neutrinos are a result of decays of charged pions, neutral pions of the same energy should exist, and their decays must generate considerable flux of gamma rays with energies above 0.1 PeV. In order to confirm these expectations, one should carry out new high-precision experiments in this energy range. An experiment for measuring the flux of gamma rays with energy above 100 TeV is currently being prepared at the Baksan Neutrino Observatory (the Carpet-3 experiment). Step-by-step increase of area of the muon detector of the Carpet air shower array is planned in this experiment. We present some results of calculations of selection efficiency of air showers from primary gamma rays for different configurations of the array. It is demonstrated that by increasing the muon detector area up to 615 m^2 (the maximum possible value) one can reach with the Carpet-3 the world-best sensitivity to 100 TeV gamma rays.

Primary author(s) : Dr. KUDZHAEV, Aleksahdr (Baksan Neutrino Observatory, INR of RAS)

Co-author(s) : Dr. LIDVANSKY, Aleksandr (INR of RAS); Dr. DZHAPPUEV, Dachir (Baksan Neutrino Observatory INR of RAS); Dr. PETKOV, Valery (Baksan Neutrino Observatory)

Presenter(s) : Dr. KUDZHAEV, Aleksahdr (Baksan Neutrino Observatory, INR of RAS)

Session Classification : Cosmic rays - parallel I

Track Classification : Cosmic rays