



Cosmic ray detector for diagnostics of the Earth's atmosphere and magnetosphere (the URAGAN project)

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The method of muon diagnostics opens a possibility for continuous monitoring of atmosphere and magnetosphere and to forecast such phenomena as storms, tornados, etc. as well as geomagnetic disturbances. Since such investigations are based on the analysis of variations of the cosmic ray muon flux generated in the upper atmosphere, the detectors which can register cosmic ray particles simultaneously from various directions are required.

A wide aperture large area coordinate detector URAGAN, constructed above the water Cherenkov calorimeter NEVOD in Moscow Engineering Physics Institute, is described. The detector is aimed at investigations of muon flux variations at the ground level. Total area of one URAGAN supermodule is about 11 m². The setup provides particle detection in a wide range of zenith angles (from 0 to 80°) with spatial and angular accuracy about 1 cm and 1°. Description of the structure of the coordinate detector and its data acquisition and triggering systems is also given. During 2005, the first experimental runs with the first part of URAGAN setup have been conducted. Some preliminary results on dynamics of muon variations are presented. These investigations are supported by the Government of Moscow and Moscow Committee for Science and Technologies (the URAGAN project).