

Muonography method and the prospects of its further development

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Muonography is an analog of other concepts as x-ray graphy, electronography, neutronography etc. based on the registration of penetrating radiation, the interaction of which with investigated objects causes some changes in the initial flux of used particles. Unlike all other particles, the fluxes of which are formed artificially, muons are of natural origin, because they are formed as a result of the interactions of primary cosmic rays with the nuclei of atoms in the atmosphere. Since muons with a good accuracy preserve the direction of motion of primary particles, this opens up the possibility of studying by means of the muon flux of perturbations in the heliosphere and magnetosphere of the Earth, the perturbations in which lead to variations in the flux of primary cosmic rays. Disturbances in the atmosphere directly affect the muon flux. The report considers examples of the use of muonography for the study of various processes and phenomena in the heliosphere, magnetosphere and atmosphere, as well as some results of the search for predictors of dangerous disturbances in these three regions. As a part of the further development of muonography, the expediency of creating a network of muon hodoscopes in the Russian Federation is considered to solve the problem of early detection of dangerous processes and phenomena over its territory.

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