

GROUND-BASED THERMAL NEUTRONS OBSERVATIONS

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Observations of thermal neutrons' flux near the Earth's crust are carried out in Skobeltsyn Institute of Nuclear Physics since the beginning of 1990s, at first in a «day mode», and approximately since 2000 — in a continuous mode. At the moment we compile a large scale data array on observations not only in Moscow, but also in other geographical points (Kamchatka, Crimea), which differs in local conditions. The performed studies have shown that there are at least two sources of thermal neutrons near the Earth's surface: first of them is associated with cosmic rays, and the second — with natural radioactive gases escaped from the Earth's crust. We have studied a number of the features of thermal neutrons' flux, including their seasonal dependence, daily variations, correlations with Moon phases, etc. In consequence of such «dual» nature of thermal neutrons' flux its analysis is expected to provide an instrument for studies of both space and terrestrial processes and phenomena. The main problem occurring in this way is a method of separating variations of different origin. The presented paper gives an overview of the studied features of thermal neutrons' flux near the Earth's crust and the first results of comparative analysis of long-series neutron data and space and solar conditions and phenomena (changing of interplanetary magnetic field polarity, solar wind, etc.).

thermal neutrons, ground-based observations, space and solar phenomena

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