

NUMERICAL MODELLING OF COSMIC RAY PENETRATION INTO DISTURBED MAGNETOSPHERE OF THE EARTH

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In frame of geomagnetic field model, described by the sum of fields of internal (IGRF) and external (Tsyganenko model) sources, the simulation of physical conditions of cosmic ray penetration from the interplanetary space into the magnetosphere of the Earth was carried out. Variations of geomagnetic cutoff rigidity, caused by solar flares, were numerically studied. Analysis of a change of solar particle observation conditions for experiments on the satellites located in the near-Earth orbits was fulfilled for a number of real solar-magnetospheric events. In particular, cutoff rigidity variations along the Mir station orbit during several powerful solar flares in 1991 were calculated. It was shown the sharp (about several times) decreases of cutoff rigidities for the high-latitudinal sites of Mir station orbit. Comparison of the results of modelling of cutoff rigidity (energy) variations along the orbit with experimental data on solar proton observation in the near-Earth space, obtained in Mariya-2 experiment on board the Mir station, was carried out. There is a good agreement between modelling and experimental results.