

SOLAR INFLUENCE ON THE MAGNETOSPHERE: INFORMATION BY COSMIC RAYS

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The state of the magnetosphere is influenced by the effects driven from the solar surface. The models of geomagnetic field are parametrized by the magnetosphere activity indices which are related to IMF and solar wind characteristics. Cosmic rays could serve as a tool for „remote sensing“ of the redistribution of IMF structure in interplanetary space and for checking validity of geomagnetic field models with external current systems. The anisotropy of cosmic rays observed on the ground is influenced by superposition of (a) interplanetary anisotropy due to transitional effects and by (b) variable transmissivity of magnetosphere itself. The possibilities to deconvolute the two dependences is discussed. Anisotropy observed at neutron monitors and muon telescopes just before the onset of some geomagnetic storms is reviewed. The changes of geomagnetic cut-off, structure of the transmissivity function and asymptotic directions for various geomagnetic field models during strong geomagnetic storms are discussed. Low altitude polar orbiting satellites with large geometric factors for high energy particles (e.g. CORONAS-F) are suitable for (a) study of solar proton capture into radiation belts and future dynamics during magnetic storms and for (b) checking how the different geomagnetic field models are fitting the observed trapped particle profiles in different local time sectors. Independently on the state of magnetosphere, the measurements of energetic „neutral emissions“ (gammas and neutrons) near the Earth or on the ground, serve as indicator of acceleration processes on solar surface. The work is supported by VEGA grant agency project No 2/7063/27

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