DAWN–DUSK ASYMMETRY DYNAMICS IN THE ELECTRIC FIELDS AND CURRENTS DISTRIBUTION IN THE POLAR IONOSPHERES OF TWO HEMISPHERES – SOME RESULTS OF THE ISTP SB RAS MODIFIED MAGNETOGRAM INVERSION TECHNIQUE

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A summary of the main results of the open magnetosphere model predicting the quadrant asymmetry in the distributions of ionospheric convection and field-aligned currents under the influence of the IMF azimuthal component is given. Based on the data from the worldwide network of ground-based magnetic stations of the SuperMAG project, the dynamics of the dawn–dusk asymmetry in the distributions of electric fields and currents in the high-latitude ionosphere in two hemispheres is studied using the magnetogram inversion method during changes in geomagnetic activity during long intervals of stationary magnetospheric convection. Possible reasons for the obtained examples of non-fulfillment of quadrant asymmetry in two hemispheres are discussed. It is shown that along with the usually discussed external factors (the effects of IMF, the solar wind dynamic pressure and the illumination of the polar ionosphere), internal factors can have a significant influence - the effects of rotation of the substorm current system and the ring current amplification even during weak magnetic storms.