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About the power law of SSC amplitudes distributions

N.A. Kurazhkovskaya (1), B.I. Klain(2)

(1), (2) Borok Geophysical Observatory of Schmidt Institute of Physics of the Earth of the Russian Academy of Science, 152742 Borok, Yaroslavl, Nekouz, Russia, email: knady@borok.adm.yar.ru

As is well known the passage of the high-speed plasma stream and bound with it of a shock wave to the Earth's surface leads to the sudden storm commencement (SSC). On the magnetograms of high-latitude observatories SSC are distinguished as abrupt changes in intensity of a magnetic field. The spatial and temporal characteristics of SSC's were examined in many papers. In this work we report on a study of character of SSC amplitudes distributions. For the analysis the data of recording of a magnetic field of two Antarctic observatories were used: Mirny (corrected geomagnetic latitude and longitude: -77.2, 122.6) and Molodezhnaya (corrected geomagnetic latitude and longitude:-66.7, 76.0). It was found that the distributions of SSC amplitudes have long "tails" at major amplitudes. It was shown that "tails" of SSC amplitudes distributions are enough well approximated by power functions with indices ˜ 1-3. It has allowed assuming that the impulsive regime of SSC is intermittent process. It was revealed that the quantity of an index of the power function depends on geomagnetic latitude of observation, from that on the dayside or night side there is an observatory during observation SSC and IMF orientation. The power law index of distributions was considered by us as parameter reflecting a state of medium in which one the impulses are excited. In this connection the degree of the plasma turbulence was estimated in the region of generation SSC at a qualitative level. From results of the analysis follows that the degree of the plasma turbulence: 1) in higher latitudes it is larger than in lower latitudes; 2) in the dayside magnetosphere during observation SSC it is higher than in night side; 3) during southward IMF ($Bz < 0$) it are higher than during northward IMF ($Bz > 0$) for observation of impulses SSC in the dayside as well as in the night side magnetosphere. The work was supported by the Program of Basic Researches of

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