



On the solar wind and Saturn moons signatures in modulations of SKR and near Saturn magnetic field

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Long-periodic modulations of intensity of SKR recorded by RPWS instrument on-board Cassini spacecraft were studied by means of a combined data analysis algorithm based on a "sliding window" Fourier procedure and the nonlinear Wigner-Ville method. Comparison with the results of the similar analysis of the near Saturn magnetic field modulations is performed. The analyzed SKR data record covers the years 2004-2005, whereas magnetic field data are available for the second half of 2004 and the beginning of 2005. It has been found that SKR has well pronounced impulsive modulation, with quasi-periodic pulses appeared approximately each 10.74 hours. The period of SKR pulses, in spite of the overall stability, has sometimes the disturbances within the interval of 10.74 - 10.76 hours. By this, the whole impulsive modulation of SKR appears in a form of regularly repeated (each 8-13 days) modulation activity storms. Specific 10.76 hour modulation is also detected in the magnetic field. It becomes especially strong in the periods when the spacecraft appears inside the Saturn magnetosphere. Besides of the 10.7 hour pulses, the intensity of SKR has several more long periodic modulations. Well pronounced 7-8 days, 9-10 days, 12-13 days and 25-27 days components, associated probably with the appearance of quasi-periodic storms of the 10.7 hour pulses are very likely to be connected with the known similar modulations of the solar surface magnetic activity and rotating streams of high speed solar wind originating in the solar coronal holes. Similar modulations are also detected in the magnetic field records. The nature of 10.7 hour SKR pulses and analogous magnetic field variations are believed to be related to the rotation of Saturn. Performed analysis shows also that some Saturnian moons may also have influence on intensity of SKR and produce some signatures in the magnetic field record. In par-

ticular, specific modulations of SKR with periods corresponding to orbital motions of close moons (Enceladus, Tethys, Dione, Rhea) as well as Titan and Hyperion were detected. By this, the line of Titan is also well pronounced in the magnetic field fluctuation spectrum.