

# **The daily variations of Doppler shift frequency of ionospheric signal on middle-latitude radiolines**

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One of the major known methods of ionospheric research is the analysis of Doppler frequency shift of a radio signal at oblique sounding. Doppler frequency shift variations (dF) are the sensitive indicator of ionospheric parameter changes in time. Research of the influence of different parameters of ionospheric plasma on Doppler frequency shift of an oblique sounding radio signal is important both for finding the reasons of dF variations and for solving an inverse problem- definitions of ionospheric disturbance parameters according to Doppler measurements data.

In the report we give the results of the analysis of daily variations features of Doppler frequency shift of ionospheric signal. For the analysis the experimental data received on oblique sounding ionospheric complex in Kazan University are used.

Doppler frequency shift of ionospheric signal in the daytime with quiet geomagnetic conditions makes, as a rule, the tenth parts of Hz. However, very fast variations of signal frequency are observed during the sunrise and sunset. It is connected with regular changes of electronic concentration during transitive period of day and it essentially changes conditions of radio wave propagations. At oblique propagation of radio waves the obviously expressed effect is observed at sunrise when the increase of ionization results in positive frequency shift up to 1-2 Hz. Before the sunset the number of fluctuations increases, and their amplitude grows. The fluctuation spectrum is usually much wider at the night than in the afternoon.

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