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Peculiarities of excitation of large-scale plasma density irregularities during modification of the ionospheric F2 region by high-power HF radio waves

Frolov V., Schorokhova E., Kunitsyn V., Andreeva E., Padokhin A.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2016 Springer Science+Business Media New York.We present the experimental results concerning the features of large-scale artificial plasma-density irregularities excited in the ionospheric F2 region by high-power HF radio waves. The experiments were performed in recent years using the SURA heating facility. It is shown that at the altitude of the pump-wave reflection, these irregularities are most efficiently generated in the magnetic zenith region. The effect of enhancement of the large-scale irregularity generation at the edge of the pump-wave beam is revealed. The results of studying large-scale irregularities recorded at the altitudes of the topside ionosphere are presented. Experimental results concerning the features of the internal gravity waves generated at the ionospheric altitudes during periodic heating of the ionospheric plasma by high-power HF radio waves are summarized and their possible influence on generation of artificial ionospheric irregularities at a long distance from the heater is discussed.

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