

Plasma turbulence and generation mechanism of UHR waves inside the rocket wake

Masa-yuki Yamamoto[1], Takayuki Ono[2], Hiroshi Oya[3]

[1] Astronomy and Geophys., Tohoku Univ., [2] Department of Astronomy and Geophysics, Tohoku Univ., [3] Space Commu. Fukui Univ.

Plasma turbulence and generation of UHR waves associated with the wake are reported based on the sounding rocket experiment. The frequency of UHR waves coincided with the plasma parameters inside the wake was confirmed in the quiet mid-latitude ionosphere and the detection of UHR waves is explained that the waves propagated along the plasma cavity along the wake and was detected by onboard spectrum analyzer. Electron temperature enhancement inside the wake region was derived by the analysis of sheath capacitance value by using the Impedance probe data and it showed existence of the intense plasma turbulence inside the wake. Two stream type plasma instability in the wake center was proposed as the generation mechanism of the UHR waves.

Plasma turbulence and generation of UHR waves associated with the wake are reported based on the sounding rocket experiment. The frequency of UHR waves coincided with the plasma parameters inside the wake was confirmed in the quiet mid-latitude ionosphere and the detection of UHR waves is explained that the waves propagated along the plasma cavity along the wake and was detected by onboard spectrum analyzer. Electron temperature enhancement inside the wake region was derived by the analysis of sheath capacitance value by using the Impedance probe data and it showed existence of the intense plasma turbulence inside the wake. Two stream type plasma instability in the wake center was proposed as the generation mechanism of the UHR waves.