

The Effect of the Electron Sound Speed on Wave Propagation in the Ionospheric Plasma

Ali YESIL and Mehmet AYDOGDU

Department of Physics, Faculty of Arts and Sciences,
Firat University, Elazig, Turkey
e-mails: ayesil@firat.edu.tr (corresponding author), maydogdu@firat.edu.tr

A b s t r a c t

In this study, the effect of the electron sound speed on the extraordinary wave propagation is calculated without an approximation for either collisional or collisionless cases in the ionospheric plasma by using the real geometry of the Earth's magnetic field for the Northern Hemisphere. It is observed that there is no remarkable effect on the propagation of the extraordinary wave, especially at reflection altitudes. But it is also observed that the magnitudes of k^2 (the square of the wave number) have changed every season, and the phase velocity of wave in warm ionospheric plasma has increased.

Key words: ionosphere, electron sound speed, wave propagation.