

Analysis of wire antenna for low frequency electric field measurement

T. Imachi (1), S. Yagitani(2), K. Yamashita (2), R. Higashi (2), I. Nagano (2) and O. Nagai (2)

(1) Information media center of Kanazawa university, (2) Graduate school of natural science and technology, Kanazawa university

Many analyses about electro-magnetic field in space plasma require accurate values of the intensity of the fields. To measure the intensities accurately, the sensors should be calibrated exactly. Wire antennas, which is used to electric field measurement, have some difficulty to be calibrated exactly, due to the plasma circumstances around them. The important parameters are the antenna impedance and the effective length. In this study, we make some investigation to estimate them. We held 1) an experimental method called "Rheometry" to estimate the frequency dependence of effective length of general wire antennas at low frequencies (10Hz - 100kHz), 2) some analysis using GEOTAIL observation data of chorus emissions waveforms to investigate about the effective length of GEOTAIL spacecraft's wire antennas and the impedance due to plasma sheath around them. The detail discussions will be held on our presentation.