Simulation of the Nonlinear Wave Particle Interaction for Motions of the Picked-up Ions in the Comet-Coma Regions.

Yuto Katoh[1], Hiroshi Oya[2]

[1] Electromagnetism of Space and Earth Group,Tohoku Univ, [2] Geophysical Ist. Tohoku Univ.

Nonlinear evolution of electromagnetic waves has been studied by one-dimensional hybrid code computer simulations. In the early period of the simulation run, linear plasma waves whose wavelength is 4 Ri are excited; Ri is 15500km, in this case, given as the Larmor radius of oxygen ions of cometary origin. The processes grow further into the nonlinear stage where large scale nonlinear waves whose wavelength is 40 Ri are excited. Cometary ion motion directed in parallel to the magnetic field line has been found to be effectively broken being deeply influenced by these growing nonlinear waves.