

Instability and formation of coherent structures

K. Liu(1), **X.H. Deng**(1), Z.G. Yuan(1), J.F. Wang(1), Y. Chen(1), Y.H. Hu(1), M. Zhou(1), Y. Pan(1), K. Yuan(1) and R.X. Tang(1)

(1)Department of Space Physics, Wuhan University, Wuhan, 430079, P.R. China

The coherent electrostatic structures that have been encountered in various space plasmas. These structures, called electrostatic solitary waves, electrostatic shocks or double layers have been observed in the solar wind, the Earth bow shock, the auroral zones, dayside magnetopause and the magnetotail. Most of these structures can be interpreted in terms of electron or ion phase space holes. Their structure, their emergence from plasma instabilities, their mutual interactions and ability to create large scale electric fields are discussed, and compared with computer simulations and observations.