Geophysical Research Abstracts, Vol. 9, 05348, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-05348

Cluster observations of electrostatic solitary waves near the Earth's bow shock

Y. Hobara (1), S.N. Walker (1), M. Balikhin (1), O.A. Pokhotelov (1), M. Andre (2), M. Dunlop (3), and H. Reme (4)

(1) University of Sheffield, Sheffield, UK, (2) Swedish Institute of Space Physics, Uppsala, Sweden, (3) Space Sciences Division, Rutherford-Appleton Laboratory, UK, (4) CESR, CNRS, Toulouse, France (y.hobara@sheffield.ac.uk)

Electrostatic solitary waves in the foot region of earth's quasi-parallel bow shock have been studied intensivelly. Many isolated solitary structures have been identified by the electric field and wave measurement (EFW) on board the Cluster satellites. Simultaneous measurements of two sets of parallel electric fields and four independent electric potential values sampled at 9 kHz are used to derive experimentally the fundamental characteristics of the solitary waves such as a spatio-temporal dependence of amplitude, scale size, wave speed and propagation direction projected on to the satellite spin plane. Possible wave mode and local generation mechanism of solitary waves are discussed based on the observed wave characteristics.