Commission H (Waves in Plasmas) Activity Report

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Topics

<Cluster and Themis>

Bow Shock: Hobara et al. (2010) reported the width of the terrestrial collisionless shock front, which is one of the key shock parameters. The width of the main shock transition layer is related to the nature of the collisionless process that balances nonlinearity and therefore leads to the formation of the shock itself. The shock width determines how the incoming plasma particles interact with the macroscopic fields within the front and, therefore, the processes that result in the energy redistribution at the front.

Cluster and Themis measurements at the quasi perpendicular part of the terrestrial bow shock are used to study the spatial scale of the magnetic ramp. It is shown that statistically the ramp spatial scale decreases with the increase of the shock Mach number (Fig. 1). This decrease of the shock scale together with previously observed whistler packets in the foot of supercritical quasi perpendicular shock indicates that it is the dispersion that determines the size of magnetic ramp even for supercritical shocks
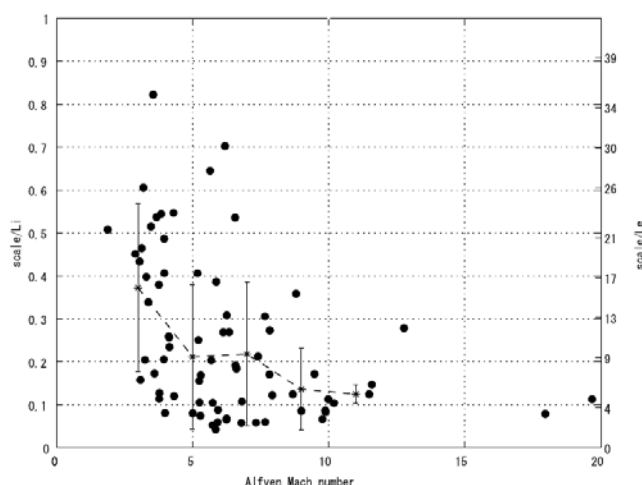

Fig. 1. Scatterplot of experimentally derived shock spatial scale normalized on the ion inertial length Li (left axis) and electron inertial length Le (right axis) inertial lengths as a function of Alfven Mach number. The dashed line represents the values of the shock spatial scale averaged over shocks with Alfven Mach number in the ranges from 2 to 12 by a step of 2. The vertical lines represent the corresponding statistical error bars.

Reference:
Hobara, Y., M. Balikhin, V. Krasnoselskikh, M. Gedalin, and H. Yamagishi (2010), Statistical study of the quasi perpendicular shock ramp widths, J. Geophys. Res., 115, A11106, doi:10.1029/2010JA015659.

Conferences and Meetings

1) 2010 Asia-Pacific radio Science Conference (AP-RASC'10), Toyama, September 22-26
2) The 128th Meeting of Society of Geomagnetism and Earth, Planetary and Space Science, Okinawa, November, 2010
3) Second Remote Sensing of the Inner Heliosphere Workshop - Aberystwyth University, Wales, UK - 06-10 June 2011
4) XXV IUGG General Assembly 28 June - 7 July 2011, Melbourne, Australia
   http://www.iugg2011.com/
   The IUGG GA brings the 8 member Associations, including IAGA, together every four years. Much of the IAGA program is relevant to URSI scientists. The IAGA program at

IUGG consists of 16 IAGA Symposia, 5 Joint Symposia with other Associations led by IAGA, plus other Symposia co-sponsored by IAGA.

5) AGU Chapman Conference on Dynamics of the Earth's Radiation Belts and Inner Magnetosphere 17 - 22 July 2011, St. John's, Newfoundland and Labrador, Canada http://www.agu.org/meetings/chapman/2011/ecall/index.php

6) ISSS-10 The 10th International School / Symposium for Space Simulations 24 - 31 July 2011, Banff, Alberta, Canada http://www.ualberta.ca/~isss10/

7) AOGS 2011 Asia Oceania Geosciences Society Meeting 8 - 12 August 2011, Taipei, Taiwan http://www.asiaoceania.org/aogs2011/

8) XXX URSI General Assembly and Scientific Symposium of International Union of Radio Science, 13 - 20 August 2011, Istanbul, Turkey http://www.ursigass2011.org/
   Commission H Sessions:
   H1: Nonlinear Waves and Turbulence in Plasmas
   H2: Micro/macro-scale Kinetic Processes at Boundary Layers in Terrestrial and Planetary Environments
   H3&4: Wave-particle Interactions and Their Effects on Planetary Radiation Belts
   HG1&2: Radio Sounding in Ionospheres and Magnetospheres and Associated Plasma Phenomena
   HG3&4: Active Experiments in the Ionosphere and Magnetosphere
   H9: Laboratory Simulation of Space and Dust-related Phenomena
   H10: Waves as Signatures of Inflowing Plasma Interaction with Solar System Bodies
   H11: Open session on all aspects of waves in space and laboratory plasmas on all aspects of waves in space and laboratory plasmas

9) AGU Fall Meeting, 5-9 December 2011