



## **Anisotropic turbulent spectra in the terrestrial magnetosheath: Cluster observations**

F. Sahraoui (1), G. Belmont (1), L. Rezeau (1), N. Cornilleau-Wehrlin (1), J.L. Pinçon (2), and A. Balogh (3)

(1) CETP-CNRS, Vélizy, France, (2) LPCE-CNRS, Orléans, France, (3) Imperial College, London, UK (fouad.sahraoui@cetp.ipsl.fr / Fax: 33 (0)1 3925 4922)

Here we report the first three-dimensional (3-D) spatial spectrum of the low frequency magnetic turbulence obtained from the four Cluster spacecraft in the terrestrial magnetosheath close to the magnetopause. We show that: the turbulence is strongly compressible, and dominated by "mirror" structures; its energy is injected at a large scale  $k \cdot \rho$  of the order of 0.3 ( $l = 2000$  km) via a mirror instability well predicted by linear theory, and cascades non linearly and unexpectedly up to  $k \cdot \rho = 3.5$  ( $l = 150$  km), revealing a new power law in the "inertial" range not predicted by any turbulence theory; its anisotropy is controlled by the static magnetic field and the magnetopause normal