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Correlation length of the magnetosheath fluctuations and their relation to upstream parameters

Jiri Simunek (1), Olga Gutynska (2), Jana Safrankova (2), and Zdenek Nemecek (2)

(1) Institute of Atmospheric Physics, Upper Atmosphere, Prague, Czech Republic (sim@ufa.cas.cz), (2) Charles University, Faculty of Mathematics and Physics, Prague, Czech Republic

The magnetosheath is characterized by a variety of low-frequency fluctuations from different sources. In our previous studies, we analyzed magnetic field fluctuations of multipoint Cluster spacecraft observations near dusk/dawn meridian and we have found that the correlation length of these fluctuations depends on the solar wind speed, on a correlation between IMF and magnetosheath magnetic field fluctuations, and on the amplitude of fluctuations. To determine the correlation length in different magnetosheath places and degree of penetration of solar wind fluctuations into the magnetosheath, we use different solar wind monitors and different separations between the magnetosheath spacecraft (Cluster, Themis) and correlation and wavelet techniques. We discuss the influence of foreshock fluctuations on the correlation between the magnetosheath spacecraft.