

Investigation of turbulence in the magnetosheath with observations from Magnetospheric Multiscale's Fast Plasma Instrumentation

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The Fast Plasma Instrumentation for the Magnetospheric Multiscale mission measures the velocity distributions of electrons and ions with energies several eV to 30 keV. In its fast survey mode of operation, velocity distributions are acquired every 30 ms for the electrons and every 150 ms for the ions. Due to telemetry limitations, only a small subset of these high time resolution distributions can be transmitted to the ground, and priority is given to potential observations of reconnection. However, a continuous and compact set of approximate plasma moments is computed onboard the spacecraft and sent to the ground at the full temporal resolution of the instrumentation. Thus it is possible to examine the power spectral densities of plasma parameters in the magnetosheath for hours at a time. Additionally, the 4-spacecraft tetrahedron provides a capability for direct observation of vorticity. In this presentation we report on the study of magnetosheath turbulence based on analysis of these measurements.