Current sheets and waves inside magnetosheath jets

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Magnetosheath jets were first discovered by Nemeček et al., 1998 and were defined as events in the magnetosheath that exhibit ion fluxes at least 50% higher than those in the surrounding plasma. Later authors used different physical quantities in order to study these phenomena, such as velocity, density and dynamic pressure. Magnetosheath jets are usually found in the parts of the magnetosheath that are magnetically connected to the quasi-parallel sections of the Earth’s bow-shock, although jets in the so called quasi-perpendicular magnetosheath have also been observed. There are several proposed mechanisms for their formation, the most accepted ones being the formation due to the rippled surface of quasi-parallel shocks, and the transmission of upstream large-amplitude magnetic structures (SLAMS) across the bow-shock. Here we make use of the Magnetospheric Multiscale Mission burst mode data in order to present observations of waves and current sheets inside magnetosheath jets. We show that these phenomena occur commonly and provide additional mechanisms that dissipate the solar wind kinetic energy downstream of the bow-shock.