
A Restructuring of the Entire Dayside Magnetosheath by Shock-Discontinuity Interaction

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Abstract

Recent studies suggest that magnetosheath jets can form at the boundaries of a hot flow anomaly (HFA) during shock-discontinuity interaction by solar wind's compression and less efficient deceleration from a curved bow shock. Here, based on Magnetospheric Multiscale (MMS) data and an 3D global hybrid simulation, we report two large-scale jets at the boundaries of an HFA that together with the HFA reached more than 20 Earth radii in width, thus representing a large-scale restructuring of the dayside magnetosheath. Since shock-discontinuity interaction is a universal process that can occur at all planets, we expect that magnetosheath restructuring under such mechanisms is also universal across the solar system.

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