

Abstract Submitted
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Survey of Waves in the Ion Diffusion Region of Asymmetric Reconnection in the Dayside Magnetopause¹ EVAN YERGER, JONGSOO YOO, Princeton Plasma Phys Lab, LI-JEN CHEN, University of Maryland, College Park, EUN-HWA KIM, MASA AKI YAMADA, HANTAO JI, WILL FOX, Princeton Plasma Phys Lab — Wave modes in the ion diffusion region of an active dayside reconnection site are characterized using high time-resolution data from NASA’s Magnetospheric Multiscale (MMS) mission. We observe high-amplitude, low-frequency ($\leq \omega_{LH}$) electrostatic fluctuations near the magnetospheric-side separatrices, which are most likely a result of the lower hybrid drift instability (LHDI). In the magnetospheric upstream region we find whistler waves with $\omega \approx \Omega_e/2$ and phase velocity near 5×10^7 m/s propagating toward the X-line. In the exhaust region we find a largely different set of electromagnetic waves, including an obliquely-propagating, high-frequency ($\omega > \omega_{LH}$), left-hand-polarized waves with phase velocities around 1×10^6 m/s. Possible relationships between these waves and local distribution functions will be investigated through analysis of data from the fast plasma instrument (FPI). We will also discuss the possibility of mode conversion from electrostatic lower hybrid waves to the electromagnetic waves we observe.

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Evan Yerger
Princeton Plasma Phys Lab

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