Abstract Submitted
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Tearing and Reconnection in a Mirror-infested Current Sheet HIMAWAN WINARTO, MATTHEW KUNZ, Princeton University — We study the time-dependent formation and evolution of a current sheet (CS) in magnetized, collisionless, high-beta plasma using hybrid-kinetic particle-in-cell simulations. The CS is thinned using a persistently driven incompressible shear flow, which makes the CS increasingly unstable to tearing. This thinning also increases the strength of the magnetic field seen by inflowing fluid elements, which by adiabatic invariance produces a field-biased pressure anisotropy in the plasma. At large values of the plasma beta, this pressure anisotropy is large enough to excite the mirror instability, which deforms the reconnecting field on ion-Larmor scales. The effect of this instability on the structure of the CS and on the onset of magnetic reconnection is studied, making contact with the theory proposed by Alt Kunz (2019, J. Plasma Phys. 85, 764850101).

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