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**Two-dimensional Studies of Super-Alfvenic Instabilities of Thin Current Sheets** L. NI, K. GERMASCHEWSKI, A. BHATTACHARJEE, YI-MIN HUANG, H. YANG, Center for Integrated Computation and Analysis of Reconnection and Turbulence, University of New Hampshire — In large systems such as the solar corona or the magnetotail, extended thin current sheets are formed in situations involving free or forced reconnection. These current sheets are characterized by large values of the tearing instability parameter delta- prime, which is strongly destabilizing, and shear in the outflow velocity along the current sheet, which can be stabilizing. We have carried out a systematic analytical and computational study of this problem in resistive MHD, including the effect of finite plasma compression. When the shear in the outflow velocity is weak, we obtain an entire class of super-Alfvenic instabilities in the high-S regime, predicted by Lourerio et al., and generalized recently by Bhattacharjee et al. In the presence of strong velocity shear along the current sheet, the system tends to be more stable, and the wave number of the fastest growing instability itself evolves as a function of time. In the regime of small growth rates, it is possible to define a critical length below which the system is stable. The parametric dependence of this critical length is determined by analysis and simulations.

A. Bhattacharjee
University of New Hampshire

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