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New Insights into Turbulent Reconnection in Mesoscale Systems WILLIAM DAUGHTON, ADAM STANIER, ARI LE, FAN GUO, HUI LI, Los Alamos Natl Lab — Large-scale 3D kinetic simulations suggest that reconnection layers may fragment into a turbulent spectrum of interacting flux ropes, leading to many interacting reconnection sites. However, often the global flux changes connectivity across a single kinetic-scale layer, which may be unrealistic for very large applications. Furthermore, most simulations are initialized with highly extended kinetic-scale current sheets, which is not physically realistic, and precludes the possibility of reconnection occurring in much thicker layers. Here, we investigate several new approaches for driving turbulent reconnection in layers much thicker than the inertial scale. These simulations suggest several possible regimes, including slow turbulent diffusion within thicker layers, and the spontaneous collapse of these layers to a dominant separator at the kinetic scale.

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