

Abstract Submitted
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Fast **magnetic**
reconnection in the strong guide-field regime ADAM STANIER, ANDREI
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To explain many magnetised plasma phenomena in nature and the laboratory, it is
important to understand how the rates of magnetic reconnection behave in large and
weakly collisional systems. Here we show for the large guide field regime, which is
pertinent to tokamaks and the solar corona, that reconnection can be fast and inde-
pendent of both collisional dissipation and system-size regardless of the relative sizes
of the ratio of plasma pressure to magnetic pressure and the electron-to-ion mass
ratio. We present results from a discrete analysis of the dissipation region, which
illustrates how this region adjusts to permit rates independent of the magnitude of
dissipation. Finally, we compare a reduced two-field reconnection model with fully
kinetic Particle-In-Cell simulations to demonstrate that this model is adequate to
reproduce the rates and evolution of the equivalent fully kinetic system in the strong
guide-field regime.

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