Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

**Viscous-enstrophy scaling law for Navier-Stokes reconnection**

ROBERT M. KERR, University of Warwick — Simulations of perturbed, helical trefoil vortex knots and anti-parallel vortices find $\nu$-independent collapse of temporally scaled $(\sqrt{\nu}Z)^{-1/2}$, $Z$ enstrophy, between when the loops first touch at $t_\Gamma$, and when reconnection ends at $t_x$ for the viscosity $\nu$ varying by 256. Due to mathematical bounds upon higher-order norms, this collapse requires that the domain increase as $\nu$ decreases, possibly to allow large-scale negative helicity to grow as compensation for small-scale positive helicity and enstrophy growth. This mechanism could be a step towards explaining how smooth solutions of the Navier-Stokes can generate finite-energy dissipation in a finite time as $\nu \to 0$.

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Date submitted: 25 Jul 2017

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