

Abstract Submitted  
for the DPP17 Meeting of  
The American Physical Society

**Statistical study of magnetic field dynamics in a system of merging current filaments** MUNI ZHOU, PALLAVI BHAT, NUNO LOUREIRO, Massachusetts Inst of Tech-MIT — We investigate magnetic field dynamics in a system of parallel current filaments characterized by a high degree of symmetry. The system evolves through the coalescence and reconnection of the current filaments. This process does not break the symmetry, but does generate increasingly complex patterns with a degree of self-similarity. Analysis of the magnetic and kinetic energy spectra of the system as a function of time shows spectral behavior that is indistinguishable from fully developed turbulence, with the interesting difference that here the spectra show “gaps”, as may be expected of fractal-like patterns. We attempt to characterize pattern complexity by different measures borrowed from general theory of complex systems.

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Date submitted: 14 Jul 2017

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