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**Phillip Walker\*** ([phillip.walker@asu.edu](mailto:phillip.walker@asu.edu)) and **Wenbo Tang**. *Finite-time statistics of scalar diffusion in Lagrangian coherent structures.*

When investigating chaotic mixing in nonlinear aperiodic dynamic systems, the domain can be frame-independently partitioned into different regions identified by Lagrangian coherent structures (LCS). We consider stochastic scalar dispersion associated with LCS and find that the statistics of various moments exhibit strong coherence in separate flow partitions. The probability density of dispersion approach self-similar profiles with anomalous exponents at intermediate time scales. Such coherence in statistics indicate that the Lagrangian topology highlight variability of diffusion. In this talk we explore such correlation between Lagrangian topology, as identified by LCS, and effective mixing. (Received September 10, 2012)