

Pallantla (rpallantla3@gatech.edu) titled “An adjoint-based method for identifying invariant solutions and dynamical connections in weakly turbulent flows.”

Abstract Submitted  
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**Dynamical Connections in a Turbulent Fluid: Experiment and Simulation**<sup>1</sup> LOGAN KAGEORGE, BALACHANDRA SURI, Georgia Institute of Technology, JEFF TITHOF, University of Rochester, ROMAN GRIGORIEV, MICHAEL SCHATZ, Georgia Institute of Technology — Embedded in the state space of a turbulent flow there exist invariant solutions to the Navier-Stokes equation called Exact Coherent Structures (ECS). Recent studies have demonstrated that the geometry of the ECS locally describes the evolution of the turbulent flow<sup>2</sup>. Theory suggests that global connections may serve to guide the flow from the neighborhood of one ECS to that of another. We present here a numerical model of a Kolmogorov-like two-dimensional flow in which such connections have been calculated. Moreover, we present an experimental quasi-two-dimensional realization of this flow in which these connections prove dynamically relevant.

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<sup>2</sup>B. Suri, **Phy. Rev. Lett.** 118, 114501, 2017

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