Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

Resolvent analysis of exact coherent solutions[1] KEVIN ROSENBERG, BEVERLEY MCKEON, California Institute of Technology — Exact coherent solutions have been hypothesized to constitute the state-space skeleton of turbulent trajectories and thus are of interest as a means to better understand the underlying dynamics of turbulent flows. An asymptotic description of how these types of solutions self-sustain was provided by Hall & Sherwin (JFM, 2010). Here we offer a fully-nonlinear perspective on the self-sustainment of these solutions in terms of triadic scale interactions and use the resolvent framework of McKeon & Sharma (JFM, 2010) to interpret these results from an input/output point of view. We analyze traveling wave solutions and periodic orbits in channel flow, and demonstrate how resolvent analysis can be used to obtain low-dimensional representations of these flows.

[1]We gratefully acknowledge funding from the AFOSR (FA9550-16-1-0361) and J.S. Park, M.D. Graham, and J.F. Gibson for providing data for the ECS solutions.

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Date submitted: 28 Jul 2017 Electronic form version 1.4