

Abstract Submitted
for the DFD07 Meeting of
The American Physical Society

Multifractal Analysis of Taylor-Couette Flow with Hourglass Geometry in both Laminar and Turbulent Regimes¹ ADAM KOWALSKI, THOMAS OLSEN, Lewis & Clark College, Portland, OR, RICHARD WIENER, Pacific University, Forest Grove, OR — Previously we have presented Correlation Dimension and Kaplan-Yorke Dimension analyses of the irregular generation of new Taylor Vortex Pairs in both laminar and turbulent Taylor-Couette flow with hourglass geometry could be characterized as low dimensional chaos². We now present a multifractal analysis^{3,4} of the same data. We comment on the additional insights into the physical process provided.

¹Supported by Research Corporation, the Rogers Science Research Program, and NSF DMR-0241814 & DMR-0241890.

²A. Kowalski, T. Olsen, & R. Wiener, Bull. Am. Phys. Soc. **50-9**, P1.00030 (2006).

³J. A. Glazier & A. Libchaber, IEEE Trans. On Circuits and Systems **35-7**, 790 (1988).

⁴T. Halsey, M. H. Jensen, L. P. Kadanoff, I. Procaccia, & B. I. Shraiman, Phys. Rev. A **33**, 1141 (1986).

Thomas Olsen
Lewis & Clark College

Date submitted: 07 Aug 2007

Electronic form version 1.4