

Abstract Submitted
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Use of Multifractal Analysis to Characterize Chaotic Behavior of Laminar and Turbulent Regimes in Modified Taylor-Couette Flow¹ ADAM KOWALSKI, YUNJIE ZHAO, THOMAS OLSEN, Lewis & Clark College, Portland, OR, RICHARD WIENER, Pacific University, Forest Grove, OR — Previously we have presented basic fractal dimensional analyses^{2,3} of the irregular generation of new Taylor Vortex Pairs in Taylor-Couette flow with hourglass geometry⁴. Our continued multifractal analysis of the system in both laminar and turbulent regimes allows us to now present more thorough insights into the physical system, and to further compare these two regimes.

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²J. A. Glazier & A. Libchaber, *IEEE Trans. On Circuits and Systems* **35-7**, 790 (1988).

³T. Halsey, M. H. Jensen, L. P. Kadanoff, I. Procaccia, & B. I. Shraiman, *Phys. Rev. A* **33**, 1141 (1986).

⁴A. Kowalski, T. Olsen, & R. Wiener, *Bull. Am. Phys. Soc.* **52-17**, 225 (2007).

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