

Abstract Submitted
for the NWS05 Meeting of
The American Physical Society

A Program of Reaction-Diffusion Model Simulations of Modified Taylor-Vortex Flow in Systems of Varying Length¹ YU HOU, THOMAS OLSEN, Lewis & Clark College, Portland, OR, RICHARD WIENER, Pacific University, Forest Grove, OR — We seek to inform an experimental program of study of Modified Taylor-Vortex Flow with Hourglass Geometry² in systems of varying lengths. These systems are modeled with Reaction-Diffusion equations.³ For short systems, the formation of phase slips (corresponding to the formation of new pairs of Taylor-Vortices) occurs in a narrow range of positions near the waist of the hourglass. As the system length increases, the range of positions at which phase slips occur increases sharply, suggesting a transition from purely temporal to spatio-temporal chaos. Details of the simulations will be presented.

¹This research was supported by the Rogers Science Research Program and National Science Foundation grants DMR-0241814 & DMR-0241890

²Richard J. Wiener *et al*, Phys. Rev. E **55**, 5489 (1997).

³H. Riecke and H.-G. Paap, Europhys. Lett. **14**, 1235 (1991).

Thomas Olsen
Lewis & Clark College

Date submitted: 11 Apr 2005

Electronic form version 1.4