

Abstract Submitted  
for the DFD08 Meeting of  
The American Physical Society

**Control of the Damped, Driven Pendulum, in both Numerical Models and Physical Apparatus to develop algorithms appropriate to the control chaotic formation of Taylor Vortex Pairs in Modified Taylor-Couette Flow**<sup>1</sup> ERIC DOUGLASS, YUNJIE ZHAO, LUCAS HILL, DAVID BRENMAN, THOMAS OLSEN, Lewis & Clark College, Portland, OR, RICHARD WIENER<sup>2</sup>, Research Corporation — Chaos has been observed in the formation of Taylor Vortex pairs in Modified Taylor Couette flow with hourglass geometry.<sup>3</sup> Control of chaos has been demonstrated in this system employing the RPF algorithm.<sup>4,5</sup> Seeking alternative algorithms, we are implementing the OGY<sup>6</sup> algorithm in a numerical model<sup>7</sup> of a damped driven mechanical pendulum and a physical apparatus.<sup>8</sup> We report on both and future plans for the Modified Taylor-Couette system.

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

<sup>2</sup>Formerly of Pacific University, Forest Grove, OR

<sup>3</sup>Wiener *et al*, Phys. Rev. E **55**, 5489 (1997).

<sup>4</sup>Rollins *et al*, Phys. Rev. E **47**, R780 (1993).

<sup>5</sup>Wiener *et al*, Phys. Rev. Lett. **83**, 2340 (1999).

<sup>6</sup>E. Ott, C. Grebogi, & J. A. Yorke, Phys. Rev. Lett. **64**, 1196 (1990).

<sup>7</sup>G. L. Baker, Am. J. Phys. **63**, 832 (1995).

<sup>8</sup>J. A. Blackburn *et al*, Rev. Sci. Instr. **60**, 422 (1989).

Thomas Olsen  
Lewis & Clark College

Date submitted: 05 Aug 2008

Electronic form version 1.4