Chaotic Taylor Vortex Formation in Modified Taylor-Couette Flow in Systems of Varying Lengths Modeled by Reaction-Diffusion Equations[1] YUNJIE ZHAO, ANDREW HALMSTAD, THOMAS OLSEN, Lewis & Clark College, Portland, OR, RICHARD WIENER, Pacific University, Forest Grove, OR — Previously, we have observed a period-doubling cascade to chaos in Modified Taylor-Couette Flow with Hourglass Geometry[2]. Such behavior has been modeled by The Reaction-Diffusion equation [3]. In the experiment, chaotic formation of Taylor-Vortex pair formation was restricted to a very narrow band about the waist of the hourglass. We examine the dependence of the range of locations in which vortex pair formation occurs. We compare to previous calculations and consider intermediate length systems as well. We find doubling the length to be sufficient to generate spatially chaotic behavior.

[2]Richard J. Wiener *et al*, Phys. Rev. E **55**, 5489 (1997).
[3]H. Riecke and H.-G. Paap, Europhys. Lett. **14**, 1235 (1991).

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