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Reaction-Diffusion Model Simulations of Varying Lengths Employed to interpret Chaotic Taylor Vortex Formation in Modified Taylor-Couette Flow[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. The calculations of Riecke and Paap suggested that a quadrupling of the length of the system would lead to spatial chaos in the vortex formation. We present a careful recreation of the previous calculation and consider an intermediate length. We demonstrate that doubling the length should be sufficient to observe spatially chaotic behavior.

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[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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