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Reaction patterns in a blinking vortex flow¹ CAROLYN NUGENT, MATT PAOLETTI², TOM SOLOMON, Bucknell University — We study the patterns formed by the excitable Belousov-Zhabotinsky reaction in a blinking vortex flow produced by magnetohydrodynamic forcing. Mixing in this flow is chaotic, as has been documented extensively in previous studies. The reaction is triggered by a silver wire, and the result is a pulse (“trigger wave”) that propagates through the system. We investigate the patterns formed by the propagating pulse and compare them with theories³ that predict fractal patterns determined by the unstable manifolds of the flow. We also consider “burn-like” reaction fronts, and compare the results with previous experiments for patterns of oscillatory reactions in this flow.

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³T. Tel, A. de Moura, C. Grebogi and G. Karolyi, Phys. Rep. 413, 91 (2005).

Prefer Oral Session
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