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Burning invariant manifolds for propagating fronts in a chain of vortices[1] TOM SOLOMON, Bucknell University, MARK KINGSBURY, Bucknell University, JOHN MAHONEY, KEVIN MITCHELL, University of California at Merced — We present experimental studies of the behavior of reaction fronts in a chain of alternating vortices. The flow is produced by a magnetohydrodynamic forcing technique, and the fronts are produced by the ferroin-catalyzed Belousov-Zhabotinsky chemical reaction. We introduce *burning invariant manifolds* (BIMs) which act as barriers to front propagation, similar to the role played by invariant manifolds as barriers to passive transport in two-dimensional flows. Unlike manifolds for passive transport, though, BIMs are one-sided barriers, passing either left- or right-going fronts but blocking the other. We show how the BIMs can be measured experimentally for both time-independent and time-periodic flows. The experimental results are compared to simulations based on a simplified numerical model of the flow.

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Tom Solomon
Bucknell University

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