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Chemical Diode Behavior in the Belousov-Zhabotinsky Reaction due to Inhomogeneous Diffusion[1] CHASE FULLER, The College of Wooster — Excitable Reaction-Diffusion systems profuse nature, including in critical functions in the human body. It is of interest, then, to study laboratory examples to inform investigations of other systems. In this study, we numerically integrated the Tyson-Fife model of the Belousov-Zhabotinsky reaction using a finite difference method. We constructed simulations of two dimensional channels bounded by Carl Neumann no-flux boundary conditions and introduced soft obstacles in the form of activator and inhibitor diffusion coefficient inhomogeneities. We describe the mechanism by which excitation waves die due to fast inhibitor diffusion and show that, under particular configurations of soft obstacles, excitation waves exhibit unidirectional propagation behavior.

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