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*Traveling wave solutions to bistable reaction
diffusion equations on spatially discrete domains
(with some applications)*

Christopher Elmer
22 Center Street
High Bridge, NJ 08829-1919
USA
chris_elmer2000@yahoo.com

Abstract

Work on reaction-diffusion equations with spatially discrete diffusion terms and bistable reaction terms has grown over the last ten years with particular interest in traveling wave solutions and in the phenomenon of propagation failure, i.e., in the effective resistance due to the discreteness of the diffusion operator. This is because spatially discrete structure occurs naturally in many physical systems and this structure affects the evolution and dynamics of the traveling waves of these systems (examples include interface motion in crystalline materials and action potential propagation in myelinated nerve axons). This talk will introduce some of the techniques for finding traveling (and stationary) waves and on some of the unique dynamics of these solutions.