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Modeling actin waves in dictyostelium cells VAIBHAV WASNIK,
RANJAN MUKHOPADHYAY, Clark University — Actin networks in living cells demonstrate a high capacity for self-organization and are responsible for the formation of a variety of structures such as lamellopodia, phagocytic cups, and cleavage furrows. Recent experiments have studied actin waves formed on the surface of dictyostelium cells that have been treated with a depolymerizing agent. These waves are believed to be physiologically important, for example, for the formation of phagocytic cups. We propose and study a minimal model, based on the dendritic nucleation of actin polymers, to explain the formation of these waves. This model can be extended to study the dynamics of the coupled actin-membrane system.

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