

## **A phase-field model for amoeboid motility**

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The crawling of eukaryotic cells on substrates is driven by the cytoskeleton. How the cytoskeleton is organized in this process is still poorly understood. It has been suggested that spontaneous polymerization waves provide a possible answer to this question. We examine this possibility theoretically by analyzing a system of treadmilling filaments in presence of nucleating proteins. A challenge arises from the need to describe a moving deformable cell boundary. In this minimal system we treat the cell shape by a phase-field approach. We find spiral waves as well as self-sustained motion of the cell in agreement with experiments on amoeboid motility.