

1173-92-225

**Maria-Veronica Ciocanel\***, ciocanel@math.duke.edu, and **Scott McKinley**. *Applications of topological data analysis to intracellular organization dynamics.*

Actin filaments are polymers that interact with motor proteins inside cells and play important roles in cell motility, shape, and development. Depending on its function, this dynamic network of interacting proteins reshapes and organizes in a variety of structures, including bundles, clusters, and contractile rings. In this work, we generate realistic and complex spatio-temporal data on filament-motor interactions using agent-based modeling. In studying time-series data extracted from these filamentous network interactions, we develop tools based on topological data analysis that are able to distinguish between distinct filament organization. This work raises interesting questions about how to assess the significance of topological features in topological summaries such as persistence diagrams. (Received September 20, 2021)