Collective Patterns in Active Liquid Crystal Systems

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I will present some results for active matter systems resulting from 1. a self-driven active particle systems on prescribed surfaces; 2. active matter models for cytoskeleton of live cells. We have found some spatial-temporal patterns in collective dynamics that can be controlled by the substrate morphology, especially, the curvature and symmetry of the geometry of the substrate. For the active matter model for cytoskeleton of live cells, we will show some basic instabilities due to actomyosin dynamics.