

Spring
2017

Mathematical Sciences Colloquium

“A Non-Markov Model for Swimming Droplets”

Abstract. Leaky oil droplets that are self-propelling due to their created concentration gradient form an ideal system for studying collective behavior. I will present a simple model that can be reduced to a system of non-Markov stochastic differential equations, allowing for analytical results that match the observed experimental system. The particles' interactive force is observed through their hovering above a bottom plate and their repelling nature. The model also displays a regime of super-diffusive scaling likely related to the mobility transition to a constant velocity solution (of the deterministic system). The single non-dimensional parameter in the model controls the history of interaction, allowing the system to go from having complete memory to behaving like interacting electrostatic potentials.

Speaker: Katie Newhall

(University of North Carolina at Chapel Hill)

Monday, March 27, 2017

Time: 4:00 – 5:00 PM

**Location: Amos Eaton
214**



