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ICTP-SAIFR/IFT-UNESP PHYSICS DISCUSSIONS

March 24, 2021 • 1:40pm

JOSHUA SHAEVITZ (PRINCETON UNIVERSITY)

SELF-DRIVEN PHASE TRANSITIONS IN LIVING MATTER

The soil dwelling bacterium *Myxococcus xanthus* is an amazing organism that uses collective motility to hunt in giant packs when near prey and to form beautiful and protective macroscopic structures comprising millions of cells when food is scarce. In this lecture Prof. Shaevitz will present an overview of how these cells move and how they regulate that motion to produce different phases of collective behavior. Inspired by recent work on active matter and the physics liquid crystals, he will discuss experiments that reveal how these cells generate nematic order, how defect structure can dictate global behavior, and how they actively tune the Péclet number of the population to drive a phase transition from a gas-like flocking state to an aggregated liquid-droplet state during starvation.

Joshua Shaevitz is a biophysicist and Professor of Physics at the Lewis-Sigler Institute at Princeton University. Prof. Shaevitz's work focuses on precision measurements in a variety of biological systems, focusing on topics related to cell shape in bacteria, active matter and pattern formation in groups of moving cells, and the quantification of animal behavior.

More information: ictp-saifr.org/physicsdiscussions