Modeling and Hydrodynamics of Active Matter

Clément Erignoux [1]

[1] IMPA

Extensive work has been put in the modeling of active matter in the last decades, building on the work of Viscek & al (1995). These empirical approaches have unveiled several interesting phenomenon regarding phase transitions and separations. However, most of the theoretical background in collective dynamics modeling relies on mean-field approximations. I will briefly present the phenomenology of active matter and discuss some lattice models where interactions between particles happen at a purely microscopic level, and where one can prove exact hydrodynamics and hope to recover this rich variety of behavior.