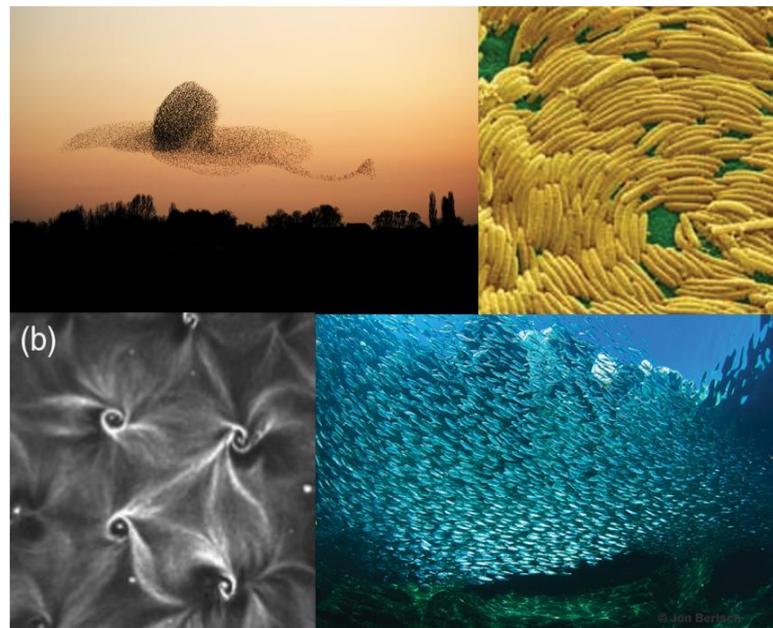


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Models of Active Matter

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Active matter consists of particles, agents or constituents that consume energy, which they use to generate directed motion, forces and shape deformations, or even to proliferate and annihilate. Living systems — in which active units reproduce, adapt and dynamically respond to environmental changes — are paradigmatic examples of active matter. Active matter systems are out of equilibrium, and the nature of the energy input distinguishes them from externally driven systems such as shear flow. Some of the basic features of active matter are broken time-reversal symmetry, broken detailed balance and lack of an equation of state. New models, methods and computational techniques, to be reviewed in this talk, have been developed in the past two decades to understand and unravel the emerging physical principles governing active matter.