

## **Towards a statistical mechanical understanding of living matter**

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Active matter is a remarkable class of physical systems that exhibit collective behaviour unseen in systems at thermal equilibrium. This collective behaviour, that includes the flocking of birds, schooling of fish, turbulence in swimming bacteria and so on, emerges from the consumption of fuel by individual constituents at the microscopic level. In this talk I will briefly introduce the phenomenology of some active systems and how toy models, based largely on statistical physics, have revealed their success. Then, I will discuss my work on controlling active matter and how the intrinsic non-equilibrium nature of active systems presents many opportunities to discover new insights and physics.