



Ask us about these new projects!



- Non-reciprocal field theories for active matter
Explore the effect of non-reciprocal interfacial forces, analyse phase separation dynamics & travelling patterns (continuum/lattice simulation, spinodal theory)
- Formation of competing phases
What happens in complex mixtures if multiple new phases compete for the same resources? (Lifshitz-Slyozov-Wagner theory, continuum simulation)
- Are amorphous materials “like” random matrices?
Disordered interactions give complicated density of states, hence unusual heat capacity and elastic behaviour – can simpler random matrix models reproduce this? (cavity method, random matrix theory)
- Barrier crossing problems in active matter
How do active particles use self-propulsion optimally to get across barriers between energy minima? (path integral formalism, large deviations)
- Crystallization and jamming by active forces
Shear can jam or crystallize a material – can active forces also do this, and how is the physics different? (quasistatic and/or stochastic simulation)