

Plenary Talk

PLV VII Wed 14:00 HSZ/0002

Stronger yet weaker: Long-range orientational order in 2D active matter — ●HUGUES CHATÉ — CEA - Saclay, France

The Mermin-Wagner-Hohenberg theorem tells us that, in a 2D system in equilibrium, the spontaneous breaking of a continuous symmetry cannot lead to true long-range order. Out of equilibrium, and in particular in active matter systems, it is now well known that 2D true

long-range orientational order is possible.

I will first give an updated view of our knowledge of polarly ordered phases in 2D active matter systems. I will then proceed to show that many of these phases are metastable to the nucleation of droplets which, opposite to the Peierls argument at play in equilibrium, grow and eventually destroy order. Order is thus both stronger (truly long-range) and weaker (metastable) in 2D active systems.