

ICTS Statistical Physics Journal Club Seminar

Title : Lagrangian manifestations of anomalies in active turbulence

Speaker : Rahul Kumar Singh (ICTS – TIFR, Bengaluru)

Date : Thursday, 11th November, 2021

Time : 03:00 pm (IST)

Abstract : Bacterial swarms display intriguing dynamical states like active turbulence. Using a hydrodynamic model we now show that such dense active suspensions manifest anomalous Lagrangian properties. For instance, these flows give rise to super-diffusion, via Lévy walks, which masquerades as a crossover from ballistic to diffusive scaling in measurements of mean-squared-displacements, and is tied to the emergence of hitherto undetected oscillatory streaks in the flow. This leads to a fundamental dynamical heterogeneity in the system, where certain flow regions assist trajectories in being persistent. Such behaviour can possibly lead to emergent advantageous strategies in the collective motion of microorganisms, which we quantify in terms of the first passage problem.

Venue : Please click on the below link to join the seminar

<https://us06web.zoom.us/j/86387047382?pwd=eGhZcVlsSkNwRk9mYXpiWUM2dzJ6Zz09>

Meeting ID: 863 8704 7382

Passcode: 386683