Internal Webinar

Gap distribution of interacting active particles in one dimension

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Microscopic understanding of the emergence of novel macroscopic properties observed in active systems is an important question in non-equilibrium statistical mechanics. Here, I shall first talk about the gap distribution of two run and tumble particles (RTPs) in one dimension in presence of thermal noise. We analytically compute the steady state distribution and find that this is exponentially localised in space. We also studied the full time dependent problem and found the approximate spectrum for large systems using certain symmetries. In particular, we observe that the relaxation time scale undergoes a crossover from a constant to a size dependent value with increasing ring size.

Time permitting, I shall also touch upon the dynamical emergence of phase transition and giant fluctuations in a model of active particles in 1D lattice.

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