

Internal Seminar

Athermal binary mixture of active and passive discs: depletion and motility induced clustering

Pritha Dolai

IIT-M, Chennai

We study binary mixtures of small active and big passive athermal discs, interacting via soft repulsive forces. The presence of small active particles induces an effective attractive interaction between the big passive particles. This attraction is similar to the depletion attraction present in bidisperse thermal mixtures above a certain size ratio of particles. Here it arises due to the activity of small particles. We study the dynamics of passive particles and find that the diffusivity increases almost linearly with size and activity. Passive particles exhibit giant number fluctuations when the volume fraction of small particles is sufficiently large. The cluster size distribution of active particles exhibits power law behaviour for large volume fractions and activity of active particles. The presence of passive particles not only increases the effective volume fraction of small particles, it also slows down the active particles. Passive particles act as nucleation sites and enhance the clustering of active particles.

Tuesday, Aug 1st 2017

02:00 PM (Tea/Coffee at 01:45 PM)

Auditorium, TIFR (FReT-B)