

# Active Granular Nematics

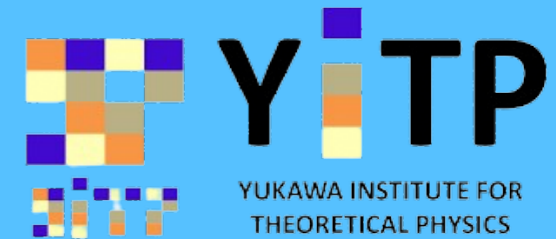
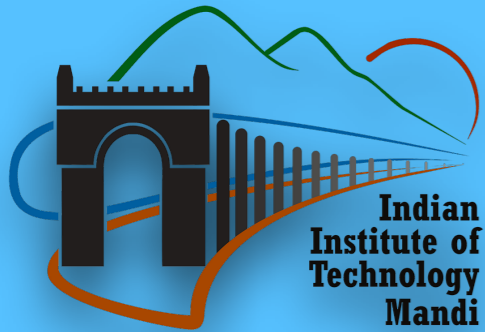
Abhishek Sharma

Supervisor: Dr. Harsh Soni

Indian Institute of Technology Mandi, India-175005

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## 1. Introduction

- Active matter in nature:



Bird Flock

<https://www.nature.com/collections/hvczfmjz1>



Fish School

<https://researchfeatures.com/schooling-fish-pay-attention-neighbours-coordinating-their-collective-movements/>

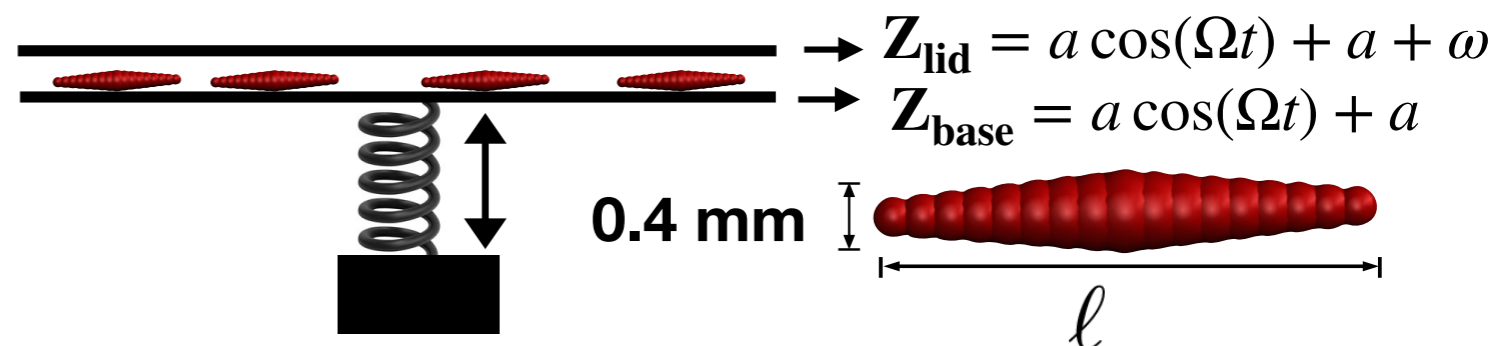
## 2. Active granular nematic system

- Experimental setup:



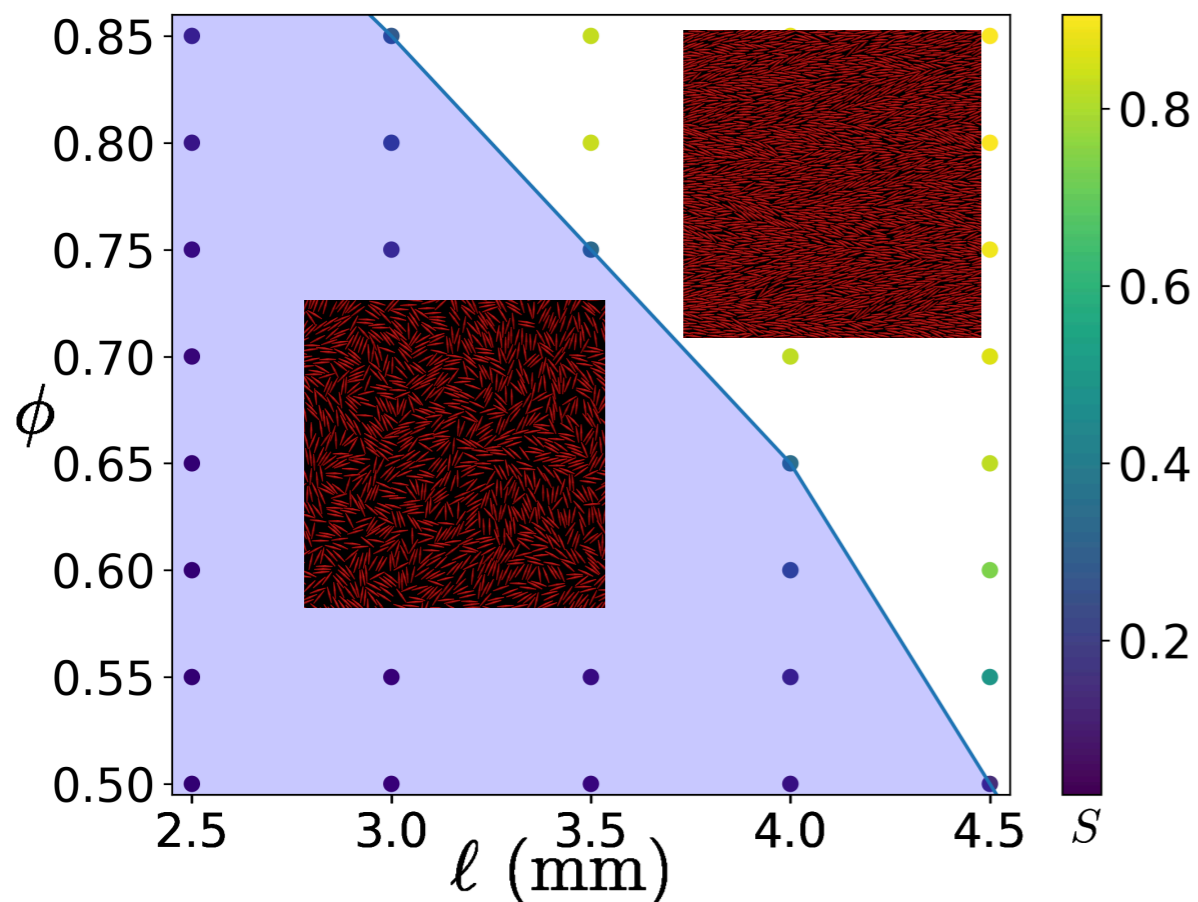
-A. K. Sood lab

- Simulation model:

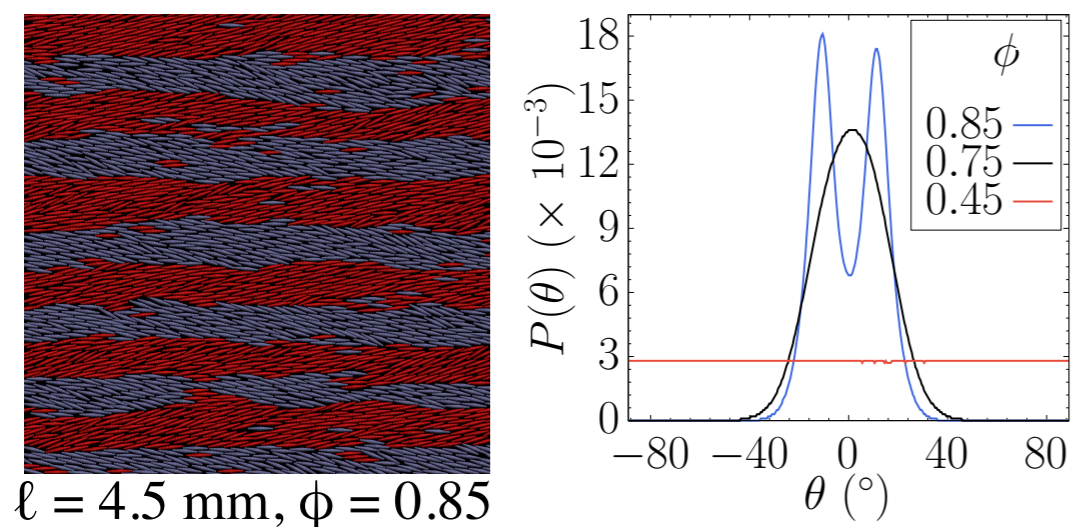


## 3. Main key findings

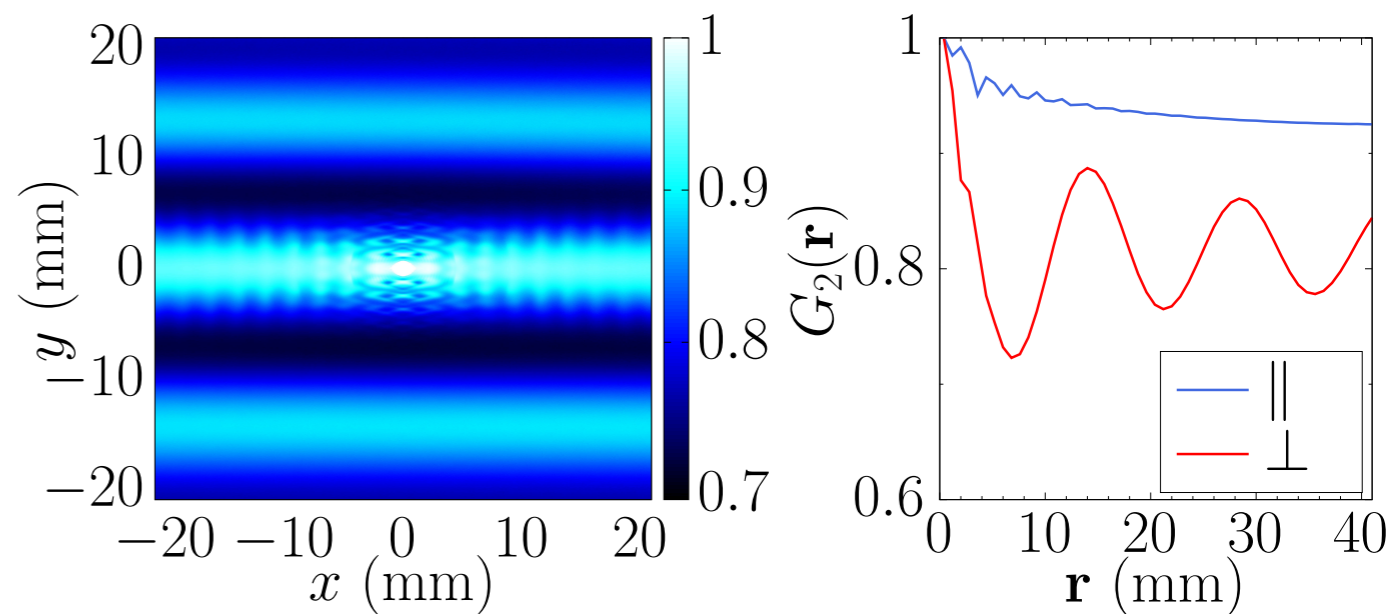
- Phase diagram in  $(\phi-\ell)$  plane



- Phase with periodic ordering and distribution function of orientation of rods  $P(\theta)$



- $G_2(\mathbf{r})$



- Mean square displacement  $\langle \Delta \mathbf{r}^2 \rangle$

