

## **Internal Webinar**

### **Dense polar active suspensions: stability and turbulence**

**Navdeep Rana**

**TIFR-Hyderabad**

At low Reynolds number ( $Re \ll 1$ ), where viscosity dominates over the inertial forces, ordered states of active polar particles in a bulk fluid are unstable to small perturbations. This Stokesian instability lies at the heart of active turbulence seen in bacterial and algae suspensions.

Ordered flocks are widely observed in the regimes far away from the Stokesian limit where inertia cannot be ignored. In this talk, I will describe the stability of the orientational order in dense suspensions at  $Re \sim O(1)$ , where viscous and inertial forces are comparable. I will show how inertia and swimmer motility can stabilize the ordered flock against small perturbations. Further, I will discuss the nature of turbulent steady states arising from the instabilities of the ordered state.

***Tuesday, March 2<sup>nd</sup> 2021***

***09:30 AM***