

## **Seminar**

### **Phototaxis as a collective phenomenon**

**Varuni P**

**IMSc, Chennai**

Cells in microbial colonies integrate information across multiple spatial and temporal scales while sensing environmental cues. Cyanobacteria, like *Synechocystis* sp, are photosynthetic microbes and even though cells can respond individually to light, colonies are observed to move collectively towards the light source in dense finger-like projections. Cells can locally interact through type IV pili-mediated physical attachment, as well as through the secretion of complex polysaccharides ('slime') that facilitates cell motion. We propose an 'agent-based' model for cyanobacterial phototaxis that incorporates slime deposition and pili-mediated cell-cell interactions. The talk will outline how our results capture observations from recent experiments on cyanobacterial colonies under various illumination schemes. Our modelling approach allows us to investigate the possible mechanisms through which cells integrate information under complex illumination schemes, and to quantitatively address the emergent nature of the observed collective motion.

***Friday, Aug 2<sup>nd</sup> 2019***

***11:30 AM (Tea/Coffee at 11:00 AM)***

***Seminar Hall, TIFR-H***