भारतीय प्रौद्योगिकी संस्थान हैदराबाद
Indian Institute of Technology Hyderabad

Applied Physics & Machine Learning Seminar Series, IIT Hyderabad

Online webinar on **Dec 01, 2020 at 04:00 PM**

Date : 01-12-2020
Time : 04:00 PM (IST)
Speaker : **Dr. Vijay Kumar Krishnamurthy**
Affiliation : ICTS-TIFR, Bangalore
Title : Morphogenetic Patterns: Signalling, Mechanics, and Geometry.
Link : https://meet.google.com/pvv-ocne-xiv

Abstract

Morphogenesis, the emergence of the three-dimensional shape and functional form in developing embryos, involves a strong interplay between active mechanochemical forces and biochemical signaling. Mechanical forces in cells and tissues arise from the adenosine-triphosphate (ATP) consuming activity of molecular motors in the cellular cytoskeleton. I will discuss the generic physical principles underlying the emergence of active mechanochemical patterns in the actomyosin cytoskeleton. The coupling between developmental signals and these self-organized mechanochemical patterns can drive various morphogenetic processes. I will discuss the emergence of cell polarity and cell division patterns as archetypal examples. Finally, I will discuss our ongoing work to incorporate the curvature of shape and geometrical deformations into this framework.

Short Bio:

Vijay did his BSc from Bangalore University, Ph.D. from the Physics department, IISc and Postdocs at Max Planck Institute for the Physics of Complex Systems and the Max Planck Institute for Molecular Cell Biology & Genetics, Dresden, Germany. He is at ICTS since 2015 and his research group works on the physics of living systems with a focus on active matter approaches to cell and developmental biology.