

## ICTS Seminar

- Title** : Path integration in neural circuits and grid cells
- Speaker** : Sarthak Chandra (Massachusetts Institute of Technology)
- Date** : Friday, 22 March 2024
- Time** : 04:00 PM (IST)
- Abstract** : Circuits in the brain must convert the rapid, nearly memoryless operation of individual neurons into representations for memory and computation. Dynamical attractors underpin key memory and integration functions in these circuits. In this talk, I will discuss the types of attractors that arise in neural circuits, emphasizing the so-called “continuous attractors”. I will discuss why biological circuits may be expected to have such continuous attractors and the role that they play in integration, i.e., maintaining updated representations of continuously varying inputs from the external world. I will present recent results on the structure of neural attractors which permit representations of continuous variables for navigation in the world. Then, I will discuss how grid cells emerge, drawing inspiration from pattern formation in reaction-diffusion equations. Through a perturbation analysis of the neural dynamics, I will demonstrate the forms of interactions that lead to periodic patterning, significantly generalizing earlier results on grid-cell emergence.
- Venue** : Madhava Lecture Hall & Online
- Please click on the below link to join the seminar
- <https://icts-res-in.zoom.us/j/95801543801?pwd=MnZlZUtuFR1eENyZGx1NThvM0hqdz09>
- Meeting ID: 958 0154 3801
- Passcode: 212122