



## **ICTS Biophysics Seminar (HYBRID)**

**Title** : Exploring mechanisms driving chromosome structural features across the tree of life

**Speaker** : Sumitabha Brahmachari (Rice University )

**Date** : Wednesday, 06<sup>th</sup> September, 2023

**Time** : 02:00 PM (IST)

**Abstract** : The genome is composed of chromosomes that are very long polymers, however, they are organized in a hierarchical manner that correlates with biological function. Understanding the mechanisms driving genome structure is not only an important biological question but also a rich playground for new physics of active polymers. Comparing the chromosome architectures for species across the tree of life we find conserved architectural features at the chromosome scale, even though there is a wide diversity of genome sizes and chromosome numbers. Using a combination of in vivo experiments, comparative genomics, and physical simulations we propose a mechanistic understanding of how molecular activity by proteins translate to the observed chromosome-scale features. I will discuss our findings and their relevance to chromosome biology, focusing on the computational framework that helped us unravel the nuances. The developed framework has potential to be instrumental in dissecting the fundamental principles governing the relationship between genome structure and function.

**Venue** : **Offline:** Feynman Lecture Hall (ICTS)

**Online:** Please click the below link to join the seminar

<https://icts-res-in.zoom.us/j/83042601985?pwd=S2xieGV1VmY1TlVxL0tHd0l3Qk1Zdz09>