

Crossing the Disciplinary Boundaries of Physics (Bohr-100 Centennial Celebrations)

Contribution ID: 41

Type: **not specified**

Topological puzzles in cell biology

Thursday, August 10, 2023 11:10 AM (50 minutes)

Recreational mathematics is a century-old field which involves mathematical puzzles and games, often appealing to children and untrained adults, inspiring deep study of the subject. Can a similar analogy be drawn in biology? One place to explore these ideas is the role of geometry and topology (geometric properties invariant to continuous change in shape or size) in biological form and function. Without making any claims of usefulness, in this talk I will explore a wide range of topological and geometrical puzzles in cellular physiology: Can single cells be toroidal in nature? Can cellular geometry (cytoskeleton) explain complex behavior in single cells? Can “Klein bottles” help us understand a fungal pathogen? Do cells get stuck forever in topological traps? Finally, we will reflect on the role of curiosity as an engine for discovery in life sciences.

Presenter: PRAKASH, Manu (Stanford)