



# Topological and dynamical aspects of flows in curved fluid membranes



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## ABSTRACT

We will investigate hydrodynamic flows sourced by motors in fluid membranes. The membrane is modelled as a monolayer of viscous fluid, surrounded by external solvents of different viscosities. The in-plane 2D fluid flows sourced by these motors are modelled as point defects, such as vortices and force dipoles. We will explore the effects of membrane curvature and topology on the flows sourced by these motors. We will understand the hydrodynamic interactions between them and discover interesting regimes of co-ordinated activity, vortex lattice formation, global rotation and aggregate formation in the fluid membrane interface. We will also present relevant simulations where several mathematical theorems such as Poincare Index theorem, Liouville-Arnold theorem and Kimura's conjecture will play a role.

## VENUE

PAMU Seminar Hall

## DATE & TIME

8th February, 2023  
03:00 PM



*Everyone is invited to attend*

Head, PAMU