PDE Control

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This project aims at putting together researchers having interests in control theory from French and indian sides of the UMI IFCAM. Our project focuses on control issues for fluid flows and more generally for models involving parabolic and hyperbolic effects, such as compressible Navier-Stokes equations, density dependent incompressible Navier-Stokes equations, fluid-structure interaction models. Handling these challenging questions requires the development and extension of classical tools of control theory for PDE such as Carleman estimates, feedback operators, etc.

Our project can be considered through the two following points of view:

- Control issues for fluid flows: Existence of controls, Design of controls, Finite-dimensional controls, Feedback controllers (Non-linear feedback controls, Observers), Numerical methods to compute controls.
- Development and extension of the tools of control theory: Characterization of optimal controls (Hamilton Jacobi equations), Carleman estimates, Feedback controllers, linear or non-linear.

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