

# COLLOQUIUM

## Stability and Controllability of Nonlinear Systems

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# Abstract

The importance of control theory is well documented. A large class of scientific and engineering problems is modeled by differential equations in Banach spaces. These types of physical models can be reformulated mathematically into control system by suitably choosing the control in a space of sufficiently smooth functions and it is interesting to study the controllability problem of such systems in Banach spaces. The main objective of this lecture is to discuss controllability problem of the following nonlinear systems in Banach spaces.

- Integrodifferential systems
- Evolution systems
- Delay differential systems
- Neutral differential systems

Further the problem of Neumann and Dirichlet boundary control of Burger's equation would also be discussed in this lecture. The purpose is to derive boundary control laws which make the system globally asymptotically stable.