Talks on the Discussion Meeting Days

(Dec 13 – Dec 14, 2012)

Professor Mythily Ramaswamy (TIFR CAM)

Title: *Control of Compressible Navier-Stokes System*
Time: 2-3 pm, 13 Dec 2012

Abstract: we consider compressible Navier-Stokes system linearized around a steady state in one dimension and study controllability and stabilizability issues. We also discuss the local stabilization of the nonlinear system.

Professor Vivek S Borkar (IIT Bombay)

Title: *Certain small noise limits for diffusions*
Time: 3:30-4:30 pm, 13 Dec 2012

Abstract: This talk will describe some recent work (joint with K Suresh Kumar) on the small noise large time asymptotics of the normalized Feynman-Kac semigroup using control theoretic techniques.

Dr. Sakthivel Kumarasamy (IIST Thiruvananthapuram)

Title: *Martingale solutions for stochastic Navier-Stokes equations with Le'vy noise*
Time: 4:45-5:30pm, 13 Dec 2012

Abstract: In this talk, we discuss the solvability of martingale solutions for the stochastic Navier-Stokes equations with Ito-Le'vy noise under appropriate conditions in bounded and unbounded domains in R^d, d = 2, 3. The tightness criteria for the laws of a sequence of semimartingales is obtained from a theorem of Rebolledo as formulated by Metivier for the Lusin space valued processes. The existence of martingale solutions (in the sense of Stroock and Varadhan) relies on a generalization of Minty-Browder technique to stochastic case obtained from the local monotonicity of the drift term. By applying the Yamada-Watanabe construction, we also deduce that the existence of a weak solution together with pathwise uniqueness property imply the uniqueness in law.

Professor M Vanninathan (TIFR CAM)

Title: *Helmholtz Model in Fluid-Structure Interaction and its control*
Time: 9-10 am, 14 Dec 2012

Abstract: The so-called Helmholtz model representing fluid-structure vibrations will be introduced. Various properties of the model including its controllability will be discussed.

Professor K Balachandran (Bharathiar University)
Title: *Controllability of Nonlinear Systems*
Time: 10:30-11:30 am, 14 Dec 2012

Abstract: In this talk we discuss the controllability problem for nonlinear systems and integrodifferential systems including delay systems in finite and infinite dimensional spaces. The importance of fixed point technique is established for solving the nonlinear controllability problem. This technique is also useful to study the controllability of nonlinear fractional dynamical systems.

Professor Adi Adimurthi (TIFR CAM)
Title: *Optimal control for scalar conservation laws in one space dimension*
Time: 11:45 am-12:45 pm, 14 Dec 2012

Abstract: In view of the non differentiability and non convex of cost function, the optimal control problem is quite hard in the case of Scalar conservation laws. Recently for in the Burger's equation, this was considered by Castro and Zuazua and showed proved an existence theorem. Also they proposed an algorithm to capture an optimal control. It was an open problem to show the convergence of the scheme. In this we adopt the Lax Oleinik explicit formula to solve this problem in full generality.

Discussion Forum on Control and Optimal Control
Time: 2 pm-3 pm, 14 Dec 2012
Chair: Professor Raju K George (IIST Thiruvananthapuram)