



UFRJ

INSTITUTO DE MATEMÁTICA



Universidade Federal do Rio de Janeiro

Analysis/PDE Group.

Lunch time seminar: Focusing in fundamental analysis of Nonlinear Partial Differential Equations, and numerical algorithms for their solutions.

April 2017

CT - Bloco C - Sala 116 (12h:00 - 13h:00)

Date 13; Taynara Andrade (UFRJ)

Title: Homogenização Estocástica de Equações de Transporte Lineares
Abstract: Nessa palestra, falaremos sobre o comportamento assintótico de equações de transporte cuja estrutura diferencial é herdada do limite semi-clássico de equações de Schrödinger linear mais simples. Esse comportamento assintótico foi estudado por Frenod e Hamdache em 1996 no caso periódico usando como ferramenta básica a clássica convergência duas escalas. Em 2008, Dalibard transportou o estudo feito por Frenod e Hamdache para o contexto estocástico. Nessa palestra, falaremos sobre o trabalho da Dalibard.

Date 20; Nour Seloula (Université de Caen - Francia)

Title: The Stokes and Navier-Stokes equations with pressure-vorticity boundary conditions
Abstract: In a three dimensional bounded domain, eventually multiply connected, we consider the Stokes and Navier-Stokes problems under boundary conditions involving the vorticity and the pressure. In a first part, we consider the stationary case with Navier-type boundary condition. We prove the solvability in L^p spaces for $1 < p < \infty$ where the main ingredients are given by the Inf-Sup conditions, some Sobolev's inequalities for vector fields and the theory of vector potentials. In a second part, we will consider the nonstationary case for the Stokes equations with a pressure boundary condition. We first prove that the Stokes operator generates a bounded analytic semigroup and then show the existence of weak and strong solutions. Finally, we propose and analyze a Discontinuous Galerkin approximation $\{\mathbf{DG}\}$ for the incompressible Stokes problem with pressure-vorticity boundary conditions in two dimension spaces.

Date 27; Hermano Frid (IMPA)

Title: A Boundary Value Problem for a Class of Anisotropic Degenerate Parabolic-Hyperbolic Equations
Abstract: We consider a mixed type boundary value problem for a class of degenerate parabolic-hyperbolic equations. Namely, we consider a Cartesian product domain and split its boundary into two parts. In one of them we impose a Dirichlet boundary condition; in the other, we impose a Neumann condition. We apply a normal trace formula for L^2 -divergence-measure fields to prove a new strong trace property in the part of the boundary where the Neumann condition is imposed. We prove existence and uniqueness of the entropy solution. This is a joint work with Yachun Li.