# Mês de:          MAIO 2014

# SEMINÁRIOS DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

## Dia 22 de Maio (quinta-feira), às 13:30h, na Sala B3-01

### $L_p$-theory of free boundary problems of magnetohydrodynamics

**Vsevolod Solonnikov**
(Steklov Mathematical Institute, St. Petersburg, Russia)

**Abstract:**

The communication concerns free boundary problems of magnetohydrodynamics of viscous incompressible electrically conducting fluid occupying a bounded variable domain $\Omega_t$ with a free boundary $\Gamma_t$, $t \geq 0$, and surrounded by a vacuum region that can be both bounded and unbounded (i.e., exterior with respect to $\Omega_t$).

The fluid is subject to mass forces and possibly also to the capillary forces on $\Gamma_t$.

The case $p = 2$ is considered by the author in the paper published recently in "Interfaces and free boundaries". The case $p \neq 2$ (in fact, $p > 3$) seems to be preferable from the technical point of view, in particular, in treating nonlinear terms in the problem.

In the communication some typical problems with various assumptions concerning topological structure of $\Omega_t$ and on the forces acting on the liquid are considered. In most cases the basic result is the local solvability of the problem but in some cases the solution may be extended to the infinite time interval $t > 0$.

**(Atenção à mudança de sala no segundo seminário)**

## Dia 22 de Maio (quinta-feira), às 14:30h, na Sala B2-01

### On the global uniqueness for the Einstein-Maxwell-scalar field system with a cosmological constant

**Pedro Girão**
(Departamento de Matemática e CAMGDS, do IST)

**Abstract:**

Given spherically symmetric characteristic initial data for the Einstein-Maxwell-scalar field system with a cosmological constant $\Lambda$, with the data on the outgoing initial null hypersurface given by a subextremal Reissner-Nordström black hole event horizon, we study the future extendibility of the corresponding maximal globally hyperbolic development as a Lorentzian manifold. This is joint work with João Costa, José Natário and Jorge Silva.