

Faculdade de Ciências da Universidade de Lisboa  
cmafci@fc.ul.pt Tel. (+351) 21 750 00 27

## SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 1 de junho (quinta-feira), às 13h30, sala 6.2.33

# Free Boundary Problems for Viscous Fluids

**Vsevolod Solonnikov**

(Steklov Mathematics Institute - St.Petersburg)

**Abstract:** The communication is concerned with the problem governing the non-stationary motion of two immiscible fluids (both incompressible or incompressible and compressible), contained in a bounded vessel and separated with a free interface. The motion is described by the system of two Navier-Stokes equations completed by initial and boundary conditions at the exterior boundary and at the free interface that is given at the initial instant  $t = 0$ . It is proved that the problem is uniquely solvable in the Sobolev spaces of functions locally in time or in the infinite time interval  $t > 0$ , provided that the initial data are close to the rest state: the velocity vector fields of both fluids vanish, the pressure and the density of the compressible fluid are constant, the free boundary is a sphere. As  $t \rightarrow \infty$ , the solution tends to the equilibrium state. The results are obtained in collaboration with I.V. Denisova.

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