SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

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

Free Boundary Problems for Viscous Fluids

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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 $t \to \infty$, the solution tends to the equilibrium state. The resuls are obtained in collaboration with I.V. Denisova.

Local: FCUL – Edf. C6 - Piso 2, 6.2.33

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