Mês de: JULHO 2013

SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS

Dia 11 de Julho (quinta-feira), às 14h45, na Sala B3-01

On the impossibility of the Leray-Hopf condition: the outflow case

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Abstract:

The Navier-Stokes equations in a domain $\Omega = A \setminus \overline{B}$, $B \subset\subset A$, A, B simply connected, that is topologically equivalent to an annulus can be solved for inhomogeneous boundary data as long as these data admit for a solenoidal extension that satisfies the Leray-Hopf inequality. John G. Heywood showed in [1] that there is no extension that fulfills this inequality if the flux through each boundary component differs from zero, and if there are $B_r(0)$ and $B_R(0)$ with $B \subset\subset B_r(0) \subset\subset B_R(0) \subset\subset A$.

We give an outline of the proof in the case that the flow into Ω through ∂B is positive as is the flow out of Ω through ∂A (outflow case). We then discuss the possibility of extending this result to more general domains.

[1] **Heywood, John G.:** *On the Impossibility, in Some Cases, of the Leray-Hopf Condition for Energy Estimates,* J. Math. Fluid Mech. 13 (2011), 449-457.

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