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## **SEMINÁRIO DE ANÁLISE E EQUAÇÕES DIFERENCIAIS**

**Dia 20 de Novembro (terça-feira), às 14h00, na sala 6.2.33**

# **On a two components condition for regularity of the 3D Navier-Stokes equations under physical slip boundary conditions**

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### **Abstract:**

This work concerns the sufficient condition for the regularity of solutions to the evolution Navier-Stokes equations known in the literature as Prodi-Serrin condition. H.-O. Bae and H.J. Choe proved in 1997 that in the whole space  $\mathbb{R}^3$  it is sufficient that two components of the velocity satisfy the above condition in order to guarantee the regularity of solutions. In a recent contribution we have extended this result to the half-space case  $\mathbb{R}^n_+$  under slip boundary conditions, by assuming that the velocity components parallel to the boundary enjoy the above condition. It remained open whether the flat boundary geometry is essential. Now, in collaboration with J. Bemelmans and J. Brand we have prove that under physical slip boundary conditions imposed in cylindrical boundaries, the result still holds (to appear in Math. Annalen). It would be of interest to extend the result to arbitrary, smooth, boundaries.

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