

SEMINÁRIO DE MECÂNICA

Navier-Stokes Equations: A broad overview

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Abstract. In an editorial of the Notices of the AMS (vol. 47, Number 3, March 2000), Felix Browder, President of the AMS, refers to “... some of the major classical problems: the Riemann Hypothesis, the Poincaré Conjecture, and the regularity of three-dimensional fluid flows”. I imagine that many beginning graduate students in Mathematics have heard of the first two of these problems, but maybe not so many know about the third. I would like to describe here this third problem in a broader context, involving not only PDE questions of existence, uniqueness and regularity of solutions, but also dynamical issues concerning stability and statistical questions raised by instability.