Oberseminar
Analysis und Theoretische Physik

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Fluid flow in non-smooth domains

Abstract:

Fluid flow in non-smooth domains appears in a natural way in applications. For instance, models of cyclones, such as hurricanes or tornados, are considered in a cylinder which is, by the presence of edges, a so-called weakly singular domain. Another important application is given by wetting and de-wetting phenomena. Here, in general three-phase dynamic contact lines (gas/fluid/solid, fluid/fluid/solid, etc.) appear which at the end lead to systems of equations on wedge type domains. In spite of their significance, there still exist fundamental open problems concerning their rigorous mathematical treatment. The aim of the lecture, hence, is to present some recent progress in this direction. We intend to present maximal regularity type results for the Stokes equations subject to Navier slip on cylindrical domains, on wedge type domains, an on (graph) Lipschitz domains. These results are based on parabolic cylindrical theory, the commuting and non-commuting operator sum method, and off-diagonal estimates. As a consequence of the linear outcome we can recover well-known results for the Navier-Stokes equations obtained on smooth domains.

Dienstag, 27.01.2015, 15:00 Uhr, Raum g005
Hauptgebäude der Universität

Über Ihren Besuch würden sich freuen:

Prof. Dr. Wolfram Bauer
Prof. Dr. Joachim Escher
Prof. Dr. Olaf Lechtenfeld
Prof. Dr. Elmar Schrohe
Prof. Dr. Christoph Walker