Einladung zum Oberseminar Wissenschaftliches Rechnen

Julius-Maximilians-Universität Würzburg
Lehrstuhl für Wissenschaftliches Rechnen IX

Prof. Dr. Abderrahmane Habbal

Université Côte d'Azur, Inria

Games to solve Joint Data Completion and Obstacle Detection in Stokes Problems

We consider the geometric inverse problem where one or more obstacles are to be detected in a Stokes flow, using boundary measurements. In our case, the boundary data are not available everywhere, but are over-specified in an accessible part of the boundary, while they are missing on the remaining -inaccessible- part. The inverse problem is then of Cauchy type, a family of problems known to be severely ill-posed (in the sense of Hadamard) even without obstacle detection. In order to solve the joint completion/detection problem, we reformulate it as a three players Nash game. The two first players aim at identifying the Dirichlet and Neumann missing data, while the third player aims at identifying the shape(s) of the obstacle(s). We shall present in this talk the framework under which the Nash game is set. We prove the ability of Nash equilibria to capture the missing data for the completion problem, and propose a new algorithm dedicated to the joint computation of the missing data and the obstacle shapes. A level set approach is used for the latter geometric identification problem. Several numerical experiments corroborate the efficiency of our approach.

Ort: Raum 30.02.003 (2. Stock) (Mathegeb. 30 West) Zeit: Montag, 28.05.2018, 10:00 Uhr

Zu diesem Vortrag laden wir Sie herzlich ein.

gez. Prof. Dr. Alfio Borzì
gez. Prof. Dr. Bernadette Hahn