Einladung zum

Würzburger Mathematischen Kolloquium

Julius-Maximilians-Universität Würzburg • Fakultät für Mathematik und Informatik

Prof. Dr. Qin Li

University of Wisconsin, Madison, Wisc., USA

Kinetic fluid coupling: the transition form Boltzmann to the Euler

Mittwoch, 13. Jan. 2016 • 16:15 Uhr

Raum SE 40, Mathematik Ost, Emil-Fischer-Str. 40, Campus Hubland-Nord

Inhaltsangabe

In Hilbert's sixth problem he discussed the connection between two ways to model gases, the microscopic (given by kinetic equations) and the macroscopic description (given by the fluid regime). Kinetic equations (the Boltzmann, the neutron transport equation etc.) are known to converge to fluid equations (the Euler, the heat equation etc.) in certain regimes. But when kinetic and fluid regime co-exist, how to couple the two systems remains an open problem. The key is to understand the half-space problem that resembles the boundary layer at the interface. In this talk, I will present a unified proof for the well-posedness of a class of half-space equations with general incoming data, propose an efficient spectral solver, and utilize it to couple fluid with kinetics. Moreover, I will present the complete error analysis for the proposed spectral solver. Numerical results will be shown to demonstrate the accuracy of the algorithm.

www.mathematik.uni-wuerzburg.de/kolloquium.html

Zu diesem Vortrag laden wir Sie herzlich ein.
Im Anschluss an die Vorträge stehen Kaffee und Tee im Foyer vor dem SE 40 bereit.

Die Dozentinnen und Dozenten der Mathematik