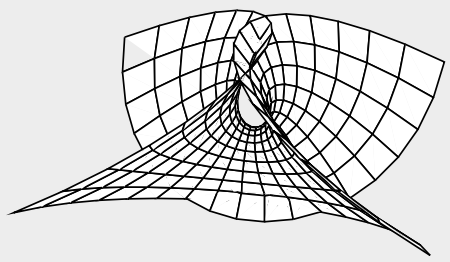


Einladung zum mathematischen Kolloquium

Institut für Mathematik
Julius-Maximilians-Universität Würzburg

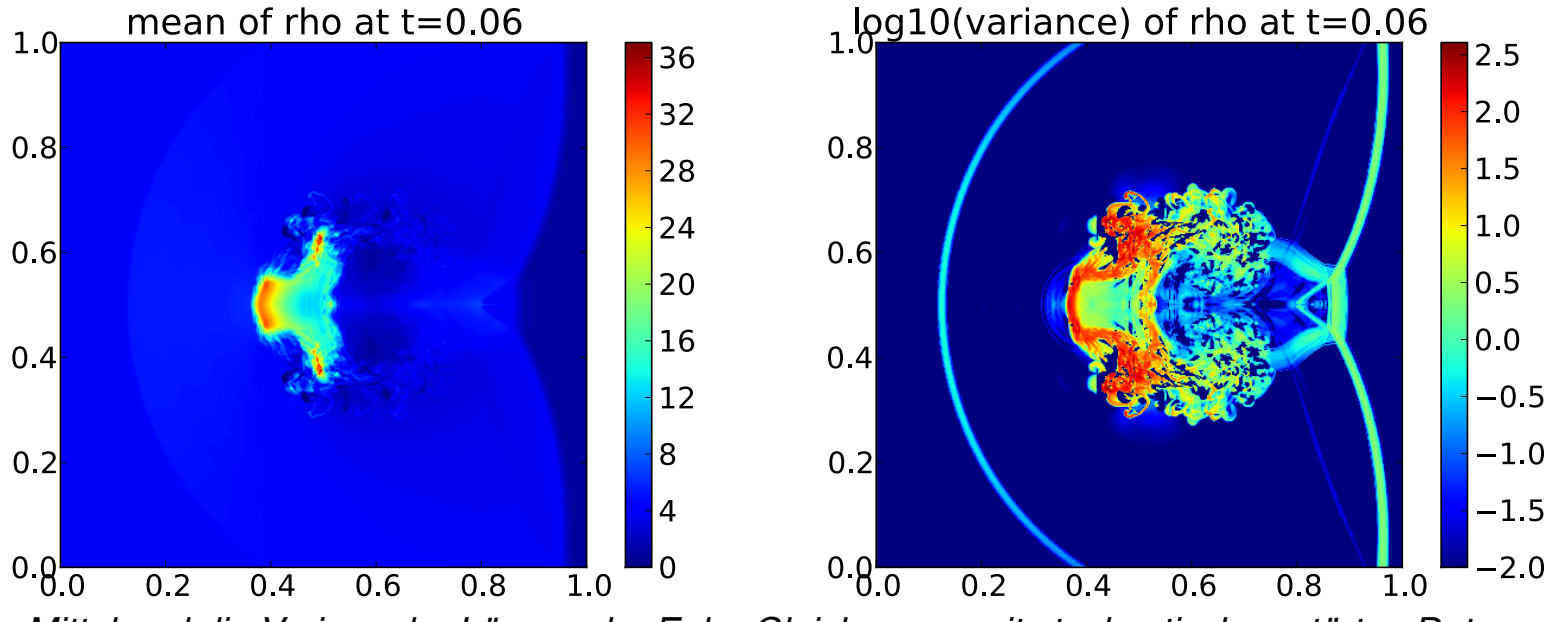
Prof. Dr. Siddharth Mishra

Seminar für angewandte Mathematik, ETH Zürich

The challenge of quantifying uncertainty in modeling fluids and plasmas

Zusammenfassung: Phenomena in nature can often be modelled by nonlinear partial differential equations. Their solution must be approximated numerically. So typically this modelling describes the evolution of a natural phenomona coming out of a given initial data. But the data itself may only be given with some uncertainty. We address the question how this effects the evolution in our model.

We quantify statistical uncertainty in solutions of hyperbolic PDEs by using sampling techniques, namely the Multi-level Monte Carlo (MLMC) method. We present the numerical method along with convergence and complexity estimates. A novel static load balancing algorithm that allows for the method to scale on a large number of processors is also described. Examples from shallow-water, Euler and MHD equations are presented. These are flows occurring in tsunamis or the interstellar medium. This is joint work with C. Schwab and J. Sukys (ETH Zurich).



Das Mittel und die Varianz der Lösung der Euler Gleichungen mit stochastisch gestörten Daten, wo eine Stoßwelle mit einer Wolke wechselwirkt.

Raum 40.00.001 (Mathematikgebäude Ost 40) **Zeit: Mittwoch, 22. Juni 2011, um 17:00**

Zu diesem Vortrag laden wir Sie herzlich ein.
Kaffee und Tee ab 16:30 im Raum 40.00.006 im Mathematikgebäude Ost 40.

Die Dozenten der Mathematik