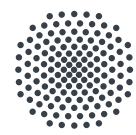


having a coffee in a Banach space makes you feel complete



Universität Stuttgart

$$\inf_{W \in W(\mathcal{G})} \sup_{V \in V(\mathcal{G})} \frac{B[W, V]}{\|W\|_W \|V\|_V} > 0$$

## Vortragsankündigung Oberseminar Sommersemester 2019 17:00 Uhr im Pfaffenwaldring 57, Raum 7.122)

06.06.2019 **Miloslav Feistauer** (Charles University in Prague)

Numerical solution of two-phase flow by the finite element-discontinuous Galerkin and level set method

**Abstract:**

The subject of the lecture is the numerical simulation of two-phase flow of immiscible fluids. Their motion is described by the incompressible Navier-Stokes equations with piecewise constant density and viscosity. The interface between the fluids is defined with the aid of the level-set method using a transport first-order hyperbolic equation. The Navier-Stokes system equipped with initial and boundary conditions and transmission conditions on the interface between the fluids is discretized by the Taylor-Hood  $P2/P1$  conforming finite elements in space and the second-order BDF method in time. The transport level-set problem is solved with the aid of the space-time discontinuous Galerkin method (DGM). The second part of the lecture is devoted to the theoretical analysis of the DGM for the level-set problem. Numerical experiments demonstrate the applicability, accuracy and robustness of the developed method.

The results were obtained in cooperation with Eva Bezchlebová, Vít Dolejší and Petr Sváček.

**Alle Interessenten sind herzlich eingeladen!**

Die Professoren des Instituts für Angewandte Analysis und Numerische Simulation

Veranstaltungsort: Raum 7.122, Pfaffenwaldring 57  
70569 Stuttgart

<http://www.ians.uni-stuttgart.de>

```
39 typedef Dune::ACFem::MassModel<EllipticModelType> MassModelType;
40 MassModelType bareMassModel(implicitEllipticModel);
41
42 auto massModel(mu * (mat.Z_a) * J + mat.Z_w) * bareMassModel);
```

$$\|U - u\|_W \lesssim \left( \sum_{E \in \mathcal{E}_G} \varepsilon_E^2(U; E) \right)^{1/2}$$

$$\operatorname{div}_x f(u) = 0$$