

# 5<sup>th</sup> Chinese-German Workshop on Computational and Applied Mathematics

University of Augsburg, 21/09 – 25/09/2015

## Workshop Programme

**Arrival: Sunday, September 20, 2015**

**Monday, September 21, 2015**

Opening Ceremony 09:00 - 09:30  
(incl. taking of  
conference photo)

**Talks** **Chair: Malte Peter**

Zhong-Ci Shi 09:30 - 10:10  
Title: Finite element approximation for Reissner-Mindlin plates

Carsten Carstensen 10:10 - 10:50  
Title: On the axioms of adaptivity

**Tea Break** 10:50 - 11:10

**Talks** **Chair: Zhong-Ci Shi**

Ronald H.W. Hoppe 11:10 - 11:50  
Title: Equilibrated a posteriori error estimators for Interior Penalty  
Discontinuous Galerkin approximations of second and fourth order  
elliptic problems

Jianguo Huang 11:50 - 12:30  
Title: A class of high order adaptive mixed element methods for Kirchhoff  
plate bending problems

**Lunch** 12:30 - 14:00

**Talks** **Chair: Carsten Carstensen**

Danfu Han 14:00 - 14:40  
Title: A two-grid accelerating iterative method for solving nonlinear PDE

Willy Dörfler 14:40 - 15:20  
Title: An adaptive space-time discontinuous Galerkin method for Maxwell's  
equations

Zhongyi Huang 15:20 - 16:00  
Title: Tailored finite point method for the numerical solution of partial  
differential equations

**Tea Break** 16:00 - 16:30

**Talks** **Chair: Wei Gong**

Xuejun Xu 16:30 - 17:10

Title: On a new-Robin domain decomposition preconditioner  
Stefan Funken 17:10 - 17:50  
Title: Remarks on p-Version of the boundary element method -  
quadrature, data compression and implementation

## Tuesday, September 22, 2015

### Talks Chair: Hans-Georg Bock

Ralf Kornhuber 09:00 - 09:40  
Title: Numerical approximation of rate and state dependent friction problems

Reinhold Schneider 09:40 - 10:20  
Title: Hierarchical tensor representation or tensor network states for solving high-dimensional and parametric PDE

**Tea Break** 10:20 - 10:50

### Talks Chair: Xuejun Xu

Daniel Peterseim 10:50 - 11:30  
Title: Eliminating pre-asymptotic effects in numerical homogenization and high-frequency scattering by local sub-scale correction

Volker Schulz 11:30 - 12:10  
Title: A novel Steklov-Poincare type metric for efficient PDE constrained optimization in shape spaces

**Lunch** 12:10 - 14:00

### Talks Chair: Dietmar Kröner

Chuanju Xu 14:00 - 14:40  
Title: Numerical investigation of complex flows with abnormal diffusion

Axel Voigt 14:40 - 15:20  
Title: Collective motion - modeling, numerics and interesting physics

Guido Kanschat 15:20 - 16:00  
Title: Asymptotically correct multigrid methods for radiation transport

**Tea Break** 16:00 - 16:30

### Talks Chair: Zhongyi Huang

Wei Gong 16:30 - 17:10  
Title: A parareal in time algorithm for optimal control problems with evolution equations

Helmut Harbrecht 17:10 - 17:50  
Title: Numerical solution of elliptic diffusion problems on random domains

**Banquet** 19:30  
**Brauhaus Riegele, Frölichstraße 26, 86152 Augsburg**

## Wednesday, September 23, 2015

<b>Talks</b>	<b>Chair: Michael Griebel</b>
Dietmar Kröner Title:	09:00 - 09:40 Scalar conservation laws on moving hypersurfaces
Qingsong Zou Title:	09:40 - 10:20 Finite volume schemes of any order over quadrilateral meshes
<b>Tea Break</b>	10:20 - 10:50
<b>Talks</b>	<b>Chair: Xiaoping Xie</b>
Jinru Chen Title:	10:50 - 11:30 A new augmented immersed finite element method without using SVD interpolations
Stefan Turek Title:	11:30 - 12:10 Numerical simulation of "extreme fluids" with complex rheology
<b>Lunch</b>	12:10 - 13:00
<b>Excursion</b>	

## Thursday, September 24, 2015

<b>Talks</b>	<b>Chair: Andrea Walther</b>
Andreas Prohl Title:	09:00 - 09:40 Numerical analysis of the optimal control of the stochastic heat equation
Ekkehard Sachs Title:	09:40 - 10:20 Calibration of nonlinear PDEs with reduced order models
Tea Break	10:20 - 10:50
<b>Talks</b>	<b>Chair: Jianguo Huang</b>
Liwei Xu Title:	10:50 - 11:30 Numerical methods for the direct and inverse fluid-structure interaction problems
Malte Braack Title:	11:30 - 12:10 Fishing strategies as a nonconvex optimal control problem
Andrea Walther Title:	12:10 - 12:50 On an extension of the augmented Lagrangian approach for one-shot optimization
<b>Lunch</b>	12:50 - 14:00

**Talks****Chair: Ekkehard Sachs**

Wen Li

14:00 - 14:40

Title:

Some bounds for the spectral radius of nonnegative tensors

Hans Georg Bock

14:40 - 15:20

Title:

Numerical solution of inverse optimal control problems - with applications to modeling human locomotion

Ekaterina Kostina

15:20 - 16:00

Title:

Efficient optimization methods for model validation in dynamical processes - exploiting second order information for experimental design

**Tea Break**

16:00 - 16:30

**Talks****Chair: Jun Hu**

Michael Hinze

16:30 - 17:10

Title:

When do semilinear optimal control problems admit a unique global solution?

Winnifried Wollner

17:10 - 17:50

Title:

Adaptive optimal control of the obstacle problem

**Friday, September 25, 2015****Talks****Chair: Ronald H.W. Hoppe**

Michael Griebel

09:00 - 09:40

Title:

Dimension-adaptive sparse grid simulations of multiscale viscoelastic flows

Xiaoping Xie

09:40 - 10:20

Title:

BPX preconditioner for nonstandard finite element methods for diffusion problems

**Tea Break**

10:20 - 10:50

**Talks****Chair: Danfu Han**

Jun Hu

10:50 - 11:30

Title:

Mixed finite element methods for linear elasticity

Malte Peter

11:30 - 12:10

Title:

Numerical simulation of surface acoustic wave actuated separation of rigid enantiomers by the fictitious domain Lagrange multiplier method

**Lunch****12:10 – 13:00****Excursion****Departure: Saturday, September 26, 2015**