

12th Annual Workshop on Numerical Methods for Problems with Layer Phenomena

Dedicated to the 65th birthday of Hans-Görg Roos

Dresden, Thursday, 9th - Friday, 10th April 2015

Workshop Organisers

- Sebastian Franz
- Natalia Kopteva
- Torsten Linß
- Gunar Matthies
- Martin Schopf

A two day workshop is being organised by the Institute of Numerical Mathematics, Technical University of Dresden, Germany.

The aim of the workshop is to bring together people, in the mathematics and general scientific community, who have particular interests in the development and applications of numerical methods for problems that exhibit layer phenomena, such as boundary/interior layers in fluid flow and other applications.

The previous meeting in this series was 11th Annual Workshop on Numerical Methods for Problems with Layer Phenomena 2014.

Thursday, April 9, 2015, Willersbau B 321		
Registration of participants 9:00 - 9:50, in front of Willersbau B 321		
Opening of the workshop 9:50		
10:00	Eugene O'Riordan	Review of some recent results on problems with interior layers

10:20	Jason Quinn	A numerical method for a nonlinear singularly perturbed interior layer problem using an approximate layer location
10:40	Mirjana Brdar	A singularly perturbed problem with two parameters on various meshes
11:00	Simon Becher	Richardson extrapolation for a singularly perturbed turning point problem with exponential boundary layers
Tea and coffee break 11:20 - 11:50, in front of C 307		
11:50	Gert Lube	Open problems of inf-sup stable FEM for incompressible flow problems - some first answers
12:10	Philipp Schroeder	A grad-div stabilised discontinuous Galerkin method for the computation of melting and solidification phenomena
12:30	Andreas Wachtel	Incompressible flow and (stabilised) mixed finite element methods on highly stretched meshes
12:50	Alexander Linke	On the discrete curl operator in mixed discretizations for the incompressible Navier-Stokes equations
Lunch 13:10 - 14:30, Alte Mensa		
14:30	Niall Madden	A balanced first-order system Petrov-Galerkin discretization for a reaction-diffusion problem on a fitted mesh
14:50	Goran Radojev	Collocation with arbitrary order C^1 -splines
15:10	Helena Zarin	CIPFEM for third-order singularly perturbed problems
15:30	Christos Xenophontos	An hp finite element method for fourth order singularly perturbed problems
Tea and coffee break 15:50 - 16:20, in front of C 307		
16:20	Thomas Apel	Discretization of the Poisson equation with L^2 boundary data in non-convex domains
16:40	Dmitry Lukyanenko	Some features of solving of coefficient inverse problem for a singular perturbed reaction-advection-diffusion equation
17:00	Michal Krizek	On Angle Conditions in the Finite Element Method
17:20	Vaclav Kucera	A generalization of the maximum angle condition in the finite element method
Organisational issues 17:40		
Conference dinner 19:30, Restaurant Carolaschlösschen in the park Großer Garten.		

Friday, April 10, 2015, Willersbau B 321

Start at 9:00, Willersbau B 321

9:00	Friedhelm Schieweck	Stabilized discretizations based on composite finite elements
9:20	Katharina Höhne	Div-Grad stabilisation on S-type meshes for the Oseen problem
9:40	Miloslav Feistauer	Discontinuous Galerkin method for the numerical simulation of dynamic elasticity and application to fluid-structure interaction
10:00	Benjamin Wacker	Boundary layer and interior layer phenomena in resistive magnetohydrodynamics

Tea and coffee break 10:20 - 10:50, in front of C 307

10:50	Nikolay Nefedov	Existence and stability of interior and boundary layers in some new classes of singularly perturbed reaction-advection-diffusion equations
11:10	Vladimir Volkov	Analytic-numerical method for moving fronts in one reaction-diffusion problem
11:30	Petr Knobloch	Algebraic Stabilization Schemes
11:50	Volker John	Numerical Experience with Algebraic Stabilization Schemes

Lunch 12:10 - 13:30, Alte Mensa

13:30	Grigory Shishkin	Stability to perturbations of solutions of standard difference schemes for singular perturbed convection-diffusion problems
13:50	Lidia Shishkina	Difference scheme of highest accuracy order for a singularly perturbed reaction-diffusion equation
14:10	Lutz Tobiska	Robust a posteriori error estimates for stabilized finite element methods
14:30	Natalia Kopteva	Maximum-norm a posteriori estimates for singularly perturbed reaction-diffusion problems

Closing of the workshop 14:50

Saturday, April 11, 2015

Assuming nice weather we offer to take a small hiking tour in the Sächsische Schweiz. You are welcome to join us.