

# International Conference

## SPP 1506 Transport Processes at Fluidic Interfaces

### IRTG 1529 Mathematical Fluid Dynamics

#### JSPS Program of The Japanese-German Graduate Externship

### Program

Monday, October 5

8:00			Registration open
9:00 – 9:15	D. Bothe A. Reusken R. Farwig		Welcome and Conference opening
9:15 – 10:00 Invited Talk	P. Colinet	Université Libre de Bruxelles	Microstructure of moving and/or evaporating contact lines
10:00 – 10:30	S. Wereley	Purdue University	3D Interface, Surface Tension, and Refractive Index Measurement
10:30 – 11:00	Coffee Break		
11:00 – 11:25	C. Lv, S. N. Varanakkottu, S. Hardt	TU Darmstadt	Manipulation of Nano-/Micro Particles Using Light-Actuated Marangoni Tweezers
11:25 – 11:50	S. Kastens, C. Meyer, M. Hoffmann, M. Schlüter	TU Hamburg	Experimental Investigation of Global & Local Transport Phenomena at Taylor Bubbles in Vertical Channels
11:50 – 12:15	M. Haghnegahdar, S. Boden, U. Hampel	HZDR	Mass transfer measurement in a square milli-channel using high-resolution microfocus X-ray imaging
12:15 – 12:40	K. Schwarzenberger, S. Aland, S. Odenbach, K. Eckert	TU Dresden	Relaxation oscillations of solutal Marangoni convection
12:40 – 14:00	Lunch		
14:00 – 14:45 Invited Talk	V. Pimienta	Université de Toulouse	Surfactant-induced self-sustained dynamical patterns of an oil drop on water
14:45 – 15:10	T. Köllner, K. Schwarzenberger, K. Eckert, T. Boeck	TU Ilmenau TU Dresden	Solutal Rayleigh-Marangoni convection: Three dimensional simulations and experiments in the water-isopropanol-cyclohexanol system
15:10 – 15:35	S. Metzger	Universität Erlangen – Nürnberg	Simulation of ion induced fluid motion and droplet break-up
15:35 – 16:00	O. Boyarkin, R. Hoppe, M. Peter	Universität Augsburg	Transport at interfaces in lipid membranes and enantiomer separation
16:00 – 16:30	Coffee Break		

16:30 – 16:55	<u>S. Aland</u> , J. Lowengrub A. Voigt	TU Dresden	Diffuse interface models for locally inextensible vesicles
16:55 – 17:20	<u>S. Reuther</u> , A. Voigt	TU Dresden	Surface vs. Bulk Viscosity - A Phase Field Model for the Interaction between Surface and Bulk Flow
17:20 – 17:45	<u>H. Garcke</u> , J. W. Barrett, R. Nürnberg	Universität Regensburg	Parametric Finite Element Approximations of Two-Phase Flow with Soluble Surfactant
17:45 – 18:10	R. Seemann, <u>M. Hein</u> , S. Afkhami	New Jersey Institute of Technology	Capillary self-focusing in a microfluidic system
18:10 – 18:35	<u>G. Grün</u> , S. Metzger	Universität Erlangen – Nürnberg	On micro-macro models for two-phase flow with dilute polymeric solutions – modeling and analysis
18:35 – 18:55	<u>T. Keil</u> , M. Hintermüller, D. Wegner	Humboldt Universität zu Berlin	Optimal control of a semi-discrete Cahn-Hilliard/Navier-Stokes system with variable densities

## Tuesday, October 6

09:00 – 09:45 Invited Talk	E. Burman	University College London	Nitsche's method for multiphysics problems on unfitted meshes
09:45 – 10:15	<u>M. Sussmann</u> , M. Vahab, Y. Hussaini, Y. Lian	Florida State University	An adaptive coupled level set and moment-of-fluid method for simulating droplet impact and solidification on solid surfaces with application to aircraft icing
10:15 – 10:45	Coffee Break		
10:45 – 11:10	<u>F. Denner</u> , A. Charogiannis, M. Pradas, C. N. Markides, B.G.M. van Wachem, S. Kalliadasis	Imperial College London	Instability mechanism and non-linear dispersion of interfacial waves on gravity-driven liquid films
11:10 – 11:35	<u>P. Schmidt</u> , L. Ó Náraigh, M. Lucquiaud, P. Valluri	University of Edinburgh	Spatio-temporal interfacial instabilities in vertical gas-liquid flows
11:35 – 12:00	<u>T. Hitz</u> , S. Fechter, C.-D. Munz	Stuttgart	A sharp interface tracking method for simulating compressible multi-phase flows
12:00 – 12:25	S. Afkhami	New Jersey Institute of Technology	A Positive Definite Preserving Numerical Method for Viscoelastic Two-Phase Flows
12:25 – 12:50	T. Waclawczyk	TU Darmstadt	A consistent formulation of the conservative level-set method

12:50 – 14:00	<b>Lunch</b>		
14:00 – 14:45 Invited Talk	<b>P. Spelt</b>	<b>Université de Lyon</b>	<b>Numerical simulation of flows with moving contact lines</b>
14:45 – 15:20	<b>S. Bommer, S. Jachalski, D. Peschka, R. Seemann, B. Wagner</b>	<b>Universität Saarbrücken TU Berlin</b>	<b>Morphologies in liquid/liquid dewetting</b>
15:20 – 15:45	<b>C. Pesci, H. Marschall, D. Bothe</b>	<b>TU Darmstadt</b>	<b>Finite Volume interface tracking method for soluble surfactants and interfacial mass transfer</b>
15:45 – 16:10	<b>L. Tobiska, A. Hahn, K. Simon</b>	<b>Universität Magdeburg</b>	<b>Arbitrary Lagrangian Eulerian finite element methods of higher order for flows with surfactants</b>
16:10 – 16:45	<b>Coffee Break</b>		
16:45 – 17:20	<b>M. Waidmann, S. Gerber, M. Oevermann, R. Klein</b>	<b>FU Berlin</b>	<b>Discretization Techniques for Surface Tension Forces in Fully Conservative Two-Phase Flow Finite Volume Methods</b>
17:20 – 17:45	<b>C. Lehrenfeld, A. Reusken</b>	<b>RWTH Aachen Universität Münster</b>	<b>Space-time XFEM method for mass transport in two-phase flow</b>
17:45 – 18:10	<b>T. Utz, F. Kummer, M. Oberlack</b>	<b>TU Darmstadt</b>	<b>Extended DG for Two-Phase Flows: spatial discretization, curvature evaluation and reinitialization</b>
18:10 – 18:35	<b>A. Schier, M. Griebel</b>	<b>Universität Bonn</b>	<b>Accurate and Efficient Coupled Surfactant Calculations for Two-Phase Flows with the Discrete Exterior Calculus</b>

19:30 Conference Dinner (Staatsarchiv Darmstadt)



**Wednesday, October 7**

09:00 – 09:45 Invited Talk	G. Tryggvason	University of Notre Dame	DNS of Gas-Liquid Flows in Vertical Channels
09:45 – 10:15	J. Lowengrub	UC Irvine	Non-local Hydrodynamic Models for Freezing
10:15 – 10:45	Coffee Break		
10:45 – 11:10	H. Garcke, C. Hechter, M. Hinze, C. Kahle, K.-F. Lam	Universität Regensburg Universität Hamburg	Topology optimization in Navier-Stokes flow using a porosity and a phase field approach
11:10 – 11:35	H. Abels, Y. Liu	Universität Regensburg	Sharp Interface Limits for Two-Phase Flows
11:35 – 12:00	J. Weber, H. Abels, H. Garcke	Universität Regensburg	Existence of weak solutions for diffuse interface model with soluble surfactants in two-phase flows
12:00 – 12:45 Invited Talk	J. Prüss	Universität Halle-Wittenberg	Modeling and Analysis of Incompressible Multi-Component Two-Phase Fluid Flows with Mass Transfer and Phase Transition
12:45 – 13:00	D. Bothe A. Reusken		Closing Part I and SPP-relevant information
13:00 – 14:15	Lunch		
14:15 – 15:00 Invited Talk	T. Gallay	Université de Grenoble	Vortex rings and axisymmetric solutions of the Navier-Stokes equations (part 1)
15:05 – 15:35	Y. Shibata	Waseda University	Global well-posedness of some free boundary problem for the Navier-Stokes equations in an exterior domain
15:35 – 16:00	Coffee Break		
16:00 – 16:45 Invited Talk	L. Diening	Universität Osnabrück	Aspects of power law fluids (part 1)
16:50 – 17:20	H. Notsu	Waseda University	Convergence analysis of stable and stabilized Lagrange-Galerkin schemes for natural convection problems
17:25 – 17:45	M. Fischer	TU Darmstadt	Shape Optimization of the Boussinesq Equations via a Characteristics P1/P1 FE Discretization
17:50 – 18:10	G. Takahashi	Waseda University	On Extension of Solutions to the Navier-Stokes Equations

**Thursday, October 8** (This part takes place at the Staatsarchiv, Karolinenplatz)

09:00 – 09:45 Invited Talk	T. Gallay	Université de Grenoble	Vortex rings and axisymmetric solutions of the Navier-Stokes equations (part 2)
09:50 – 10:20	H. Koba	Waseda University	On $L^{3\infty}$ -stability of the Navier-Stokes system in exterior domains
10:20 – 11:00	Coffee Break		
11:00 – 11:25	E. Ushikoshi	Tamagawa University	The application of the Hadamard variational formula for the eigenvalue of the Stokes equations
11:30 – 11:55	J. Sauer	TU Darmstadt	Time-Periodic Stokes Equations on Domains

<b>12:00 – 12:25</b>	<b>T. Nakatsuka</b>	<b>University of Zurich</b>	<b>A remark on the uniqueness of steady Navier-Stokes flows in exterior domains</b>
<b>12:25 – 14:00</b>	<b>Lunch</b>		
<b>14:00 – 14:45</b> <b>Invited Talk</b>	<b>L. Diening</b>	<b>Universität Osnabrück</b>	<b>Aspects of power law fluids (part 2)</b>
<b>14:50 – 15:10</b>	<b>H. Mizerova</b>	<b>TU Darmstadt</b>	<b>Analysis and simulation of the Peterlin viscoelastic model</b>
<b>15:15 – 15:35</b>	<b>A.Koutsoukou-Argyaki</b>	<b>TU Darmstadt</b>	<b>Effective information for abstract Cauchy problems extracted via Proof Mining</b>
<b>15:40 – 16:00</b>	<b>M. Bolkart</b>	<b>TU Darmstadt</b>	<b>The Stokes equations in spaces of <i>BMO</i> type</b>