



# Preface

The research training group 1554 is located at the Otto von Guericke University, Magdeburg (OvGU) and is financed by the German Research Foundation (DFG). The members are PhD students, postdocs, and professors from the faculties of mechanical engineering, process and systems engineering, mathematics and natural sciences. Their working areas cover topics from different engineering branches, applied mathematics as well as theoretical and computational physics.

In order to promote scientific exchange and discussions, workshops take place twice a year. These semi-annual workshops are traditionally organized by the PhD students themselves.

This document contains all necessary information for the Winter Workshop 2016 of the DFG research training group *Micro-Macro-Interactions in Structured Media and Particle Systems*, which will take place at the *Michaelis Hotel* in *Leipzig* from May 18<sup>th</sup> to 19<sup>th</sup>, 2017.

I'd like to thank everybody who has made suggestions concerning the programme, thus contributing to a successful workshop and scientific exchange among the members of the research training group. Special thanks goes to my colleague Sebastian Dieck for constant support throughout the organization of the workshop.

Magdeburg, March 25<sup>th</sup>, 2017

Gaurav Kulkarni  
(student representative)

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# 1 Location and Travel Guide

## 1.1 Workshop venue

The workshop will take place at:

**Hotel Michaelis**

**Paul-Gruner-Straße 44**

**04107 Leipzig**

+49 (0) 341 26780

[www.michaelis-leipzig.de](http://www.michaelis-leipzig.de)

## 1.2 Journey to Leipzig on May 18<sup>th</sup>, 2017

- at 06:45 we meet at train station *Magdeburg Hbf* on platform 13
- IC 2031 starts at 07:02 from platform 13
- IC 2031 arrives at *Leipzig Hbf* at 08:19. From here we have to board S 2 from platform 1 at 08:29 (10 minutes transfer time)
- S 2 arrives at *Leipzig Bayerischer Bahnhof* at 08:33
- The workshop venue is 10 minutes (800 m) walk from *Leipzig Bayerischer Bahnhof*  
<https://goo.gl/maps/LDajLZBDGrr>

## 1.3 Journey to Magdeburg on May 19<sup>th</sup>, 2017

- at 14:03 we leave from *Leipzig Bayerischer Bahnhof* with S 2 from platform 2
- S2 changes to RB 16482 and arrives at *Magdeburg Hbf* at 15:55.

With regard to passenger transport within *Leipzig*, please see timetables at [www.l.de](http://www.l.de). For more information about the city, please visit [www.leipzig.de](http://www.leipzig.de).

## 2 Timetable

### 2.1 Thursday

09:25	<b>Opening</b>		
<b>S1</b>			<b>Chair: Resam Makvandi</b>
09:30	Marcus	Aßmus	Projector Representation of Isotropic Linear Elastic Material Laws for Directed Surfaces
09:50	Helal	Chowdhury	An inverse approach for estimating CRSS based on Crystal Viscoplasticity
10:10	Martin	Weber	Material Plasticity to model the change of elastic anisotropy at finite strains
<b>10:30</b>	<b>Coffee break</b>		
<b>S2</b>			<b>Chair: Marcus Aßmus</b>
10:50	Resam	Makvandi	Isogeometric Analysis of Second-Strain-Gradient Elasticity
11:10	Gaurav	Kulkarni	Jet Impingement Heat Transfer of Moving Metal Sheet
11:30	Ahu	Öncü	Grain growth in nanocrystalline, metallic thin films
11:50	Amir	Eshghinejadfard	Non-spherical particles in turbulent flows
<b>12:10</b>	<b>Lunch</b>		
<b>S3</b>			<b>Chair: Gaurav Kulkarni</b>
<b>Guest Lecture</b>			
13:10	Sashikumaar	Ganesan	Local projection stabilized formulation for computations of Oldroyd-B viscoelastic fluid flows
<b>S4</b>			<b>Chair: Yasaman Jabbari</b>
<b>Presentation of Posters</b> (max. 3 min. each)			
14:00	Sara	Bucci	Non convex yield surface and non associative flow rule for honeycombs
	Johanna	Eisenträger	A Calibration Procedure for a Phase Mixture Model
	Zhengkun	Liu	Modelling thermomechanically induced ductile fracture using a phase-field approach
	Sebastian	Dieck	Reversed austenite for enhancing ductility of martensitic stainless steel
	Evgeniya Stratieva	Roydeva	Preparation of SAPO 34 and zeolite 13X coatings on alumina beads by a fluidized bed procedure
	Reihaneh	Pashminehazar	Spatial morphology of real and model agglomerates determined from X-ray microtomography images
	Janett	Schmelzer	Effect of heat treatment on properties and microstructure of V-Si materials

<b>14:20</b>	<b>Poster session with coffee and cake</b>
<b>15:20</b>	<b>Board meeting</b>
<b>16:30</b>	<b>1000 Jahre Leipzig city tour</b> (starting point: <i>Hotel Michaelis</i> , foyer)
<b>18:45</b>	<b>Dinner at Moritzbastei</b>

## 2.2 Friday

<b>S5</b>			<b>Chair: Helal Chowdhury</b>
09:00	Yuan	Fang	Influential parameters on heat transfer with jets and sprays
09:20	Yasaman	Jabbari	Towards estimation of the effective transport parameters of porous media from pore network simulations of spontaneous liquid imbibition
09:40	Nicole	Vorhauer	A pore scale approach to the microwave drying of wet clay
10:00	Christoph	Matern	The Riemann problem for a weakly hyperbolic two-phase flow model
<b>10:20</b>	<b>Coffee Break</b>		
<b>S6</b>			<b>Chair: Ahu Öncü</b>
10:40	Abbas	Kamranian Marnani	A study on fluidization, compression, and permeation of fine, cohesive and compressible particles
<b>S7 Introduction of New Members</b>			<b>Chair: Sebastian Dieck</b>
11:10	Sebastian	Hütter	
11:20	Xiang	Lu	
11:30	Joachim	Nordmann	
11:40	Abhinandan Kumar	Singh	
11:50	Jannik	Voges	
12:00	Popovych	Olah	
12:10	Kazemi	Omid	
<b>12:20</b>	<b>Closing remarks</b>		
<b>12:25</b>	<b>Student meeting and Elections</b>		
<b>12:35</b>	<b>Lunch</b>		

Please adhere to your specified presentation time, i.e. 15 minutes of speaking time for presentations and maximum 3 minutes of speaking time for posters. Talks exceeding this limit will be canceled by the chairman or chairwoman, respectively.

### 3 Guest Lecture

Dr. rer. nat. Sashikumaar Ganesan is currently an Assistant Professor in Department of Computational and Data Sciences, Indian Institute of Science, Bangalore, India. In 2006 he finished his Doctoral degree in Mathematics from OvGU and consecutively he was a Postdoctoral Fellow with Prof. Tobiska and an Associate Member of GKMM.

In this talk, a three-field formulation based on the one-level Local Projection Stabilization (LPS) will be presented for computations of Oldroyd-B viscoelastic fluid flows with high Weissenberg numbers. Viscoelastic flows can be found in a wide range of industrial and commercial applications such as enhanced oil recovery, pesticide deposition, medicinal/pharmaceutical sprays, drug delivery, injection molding, polymer melts, inkjet printing, additive manufacturing, cosmetics industry and food processing.

### 4 Social Programme

On Thursday, we will go for a *1000 Jahre Leipzig detective/city tour*. We will meet at the foyer of our hotel at 16:30 and we will travel to *Alten Rathauses* by walk. The distance is 20 minutes (1.4 km) by walk.

Check the route at <https://goo.gl/maps/DiFgCHmwEkE2>.

From *Alten Rathauses* we will start our tour. Two guided tour will be offered in German. The Leipzig city detectives will offer us time travel tour. The detective discovery tour through the Leipzig city center offers history to touch and even explore! We, as players divided in teams, in playful Competition against each other, equipped with our Rally Bags (including high-quality puzzles, City maps, compasses), explore Leipzig on one way. At the end a winning team gets a small prize.

For details please visit the tour website at [www.leipziger-stadtdetektive.de](http://www.leipziger-stadtdetektive.de)

### 5 Workshop Dinner

The city tour will end in front of the *Alten Rathauses* at 18:30. From there we will walk to restaurant *Moritzbastei*. The distance is 4 minutes (550 m) by walk. Kindly check the following link for the route:

<https://goo.gl/maps/hpMXU278F9K2>

We start our dinner there at 18:45. Please remember what dish you've chosen!

The address of the restaurant is:

**Moritzbastei**  
**Universitätsstraße 9,**  
**04109 Leipzig**  
+49(0) 0341 702590  
[www.moritzbastei.de/](http://www.moritzbastei.de/)

The way back to hotel is a distance of 16 minutes (1.2 km) by walk:

<https://goo.gl/maps/aEn2vuLpLdF2>

Please check the website of the research training group for updated versions of the programme:  
[www.grk1554.ovgu.de](http://www.grk1554.ovgu.de)

## 6 List of Participants

### 6.1 Professors

Holm **Altenbach**  
Institute of Mechanics  
holm.altenbach@ovgu.de

Albrecht **Bertram**  
Institute of Mechanics  
albrecht.bertram@ovgu.de

Thorsten **Halle**  
Institute of Materials and Joining Technology  
thorsten.halle@ovgu.de

Daniel **Juhre**  
Institute of Mechanics  
daniel.juhre@ovgu.de

Manja **Krüger**  
Institute of Materials and Joining Technology  
manja.krueger@ovgu.de

Konstantin **Naumenko**  
Institute of Mechanics  
konstantin.naumenko@ovgu.de

Franziska **Scheffler**  
Institute of Chemistry  
franziska.scheffler@ovgu.de

Eckehard **Specht**  
Institute for Fluid Dynamics and Thermodynamics  
eckehard.specht@ovgu.de

Dominique **Thévenin**  
Institute for Fluid Dynamics and Thermodynamics  
dominique.thevenin@ovgu.de

Lutz **Tobiska**  
Institute for Analysis and Numerics  
lutz.tobiska@ovgu.de

Evangelos **Tsotsas**  
Institute of Process Engineering  
evangelos.tsotsas@ovgu.de

Gerald **Warnecke**  
Institute for Analysis and Numerics  
gerald.warnecke@ovgu.de

Dana **Zöllner**  
Institute of Experimental Physics  
dana.zoellner@ovgu.de

Sashikumaar **Ganesan**  
Department of Computational and Data Sciences,  
IISc Bangalore, India  
sashi@cds.iisc.ac.in

### 6.2 Post-Docs

Abdolreza **Kharaghani**  
Institute of Process Engineering  
abdolreza.kharaghani@ovgu.de

Ashok Kumar **Nallathami**  
Institute of Fluid Dynamics and Thermodynamics  
ashok.nallathambi@ovgu.de

### 6.3 Students

Marcus **Aßmus**  
Institute of Mechanics  
marcus.assmus@ovgu.de

Helal **Chowdhury**  
Institute of Mechanics  
helal.chowdhury@ovgu.de

Sara **Bucci**  
Institute of Mechanics  
sara.bucci@ovgu.de

Sebastian **Dieck**  
Institute of Materials and Joining Technology  
sebastian.dieck@ovgu.de

Johanna **Eisentträger**  
Institute of Mechanics  
johanna.eisentraeger@ovgu.de

Amir **Eshghinejadfard**  
Institute of Fluid Dynamics and Thermodynamics  
amir.eshghinejadfard@ovgu.de

Yuan **Fang**  
Institute of Fluid Dynamics and Thermodynamics  
m\_yuanfang@hotmail.com

Yasaman **Jabbari**  
Institute of Process Engineering  
m\_yasaman.jabbari@ovgu.de

Abbas **Kamranian Marnani**  
Institute of Process Engineering  
abbas.kamranian@st.ovgu.de

Gaurav **Kulkarni**  
Institute of Fluid Dynamics and Thermodynamics  
gaurav.kulkarni@ovgu.de

Zhengkun **Liu**  
Institute of Mechanics  
zhengkun.liu@ovgu.de

Resam **Makvandi**  
Institute of Mechanics  
resam.makvandi@ovgu.de

Christoph **Matern**  
Institute of Analysis and Numerics  
christoph.matern@ovgu.de

Ahu **Öncü**  
Institute of Materials and Joining Technology  
ahu.oencue@ovgu.de

Evgeniya **Roydeva**  
Institute of Chemistry  
evgeniya.roydeva@st.ovgu.de

Janett **Schmelzer**  
Institute of Process Engineering  
reihaneh.pashminehazar@st.ovgu.de

Reihaneh **Pashminehazar**  
Institute for Analysis and Numerics  
kristin.simon@ovgu.de

Nicole **Vorhauer**  
Institute of Process Engineering  
nicole.vorhauer@ovgu.de

Martin **Weber**  
Institute of Mechanics  
martin.weber@ovgu.de

Sebastian **Hütter**  
Institute of Materials and Joining Technology  
sebastian.huetter@ovgu.de

Xiang **Lu**  
Institute of Process Engineering  
xiang.lu@ovgu.de

Joachim **Nordmann**  
Institute of Mechanics  
Joachim1992@gmx.net

Abhinandan Kumar **Singh**  
**Institute of Mechanics**  
abhinandan.singh@st.ovgu.de

Jannik **Voges**  
Institute of Mechanics  
jannik.voges@gmx.de

Popovich **Olah**  
Institute of Materials and Joining Technology  
olha.popovych@ovgu.de

Kazemi **Omid**  
Institute of Materials and Joining Technology  
omid.kazemi@ovgu.de