

## Curriculum vitae **Dr. Hana Mizerová**

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### PERSONAL DETAILS

Date of birth: November 10th, 1988

Nationality: Slovak

Email: hana.mizerova@fmph.uniba.sk, mizerova@math.cas.cz

Webpage: <http://hore.dnom.fmph.uniba.sk/~mizerova/>

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### HIGHER EDUCATION

01/09/2012 - 07/12/2015 **Doctor of Natural Sciences in Mathematics** (Dr. rer. nat.) *summa cum laude*  
(PhD equivalent) Faculty of Physics, Mathematics and Computer Science  
Johannes Gutenberg University Mainz, Germany

13/09/2010 - 21/06/2012 **Master of Science in Mathematics** (Mgr.) *summa cum laude*  
Faculty of Mathematics, Physics and Informatics  
Comenius University in Bratislava, Slovakia

06/09/2007 - 01/07/2010 **Bachelor of Science in Mathematics** (Bc.) *summa cum laude*  
Faculty of Mathematics, Physics and Informatics  
Comenius University in Bratislava, Slovakia

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### RESEARCH EXPERIENCE

since 01/03/2018 **PostDoc researcher**  
Czech Academy of Sciences, Prague, Czech Republic  
within *Czech Grant Agency (GAČR) grant*

since 27/02/2018 **Assistant professor**  
Comenius University in Bratislava, Slovakia

01/10/2017 - 31/01/2018 **PostDoc researcher**  
Czech Academy of Sciences, Prague, Czech Republic  
within *ERC Advanced Grant "MATHEF"*

01/04/2017 – 30/09/2017 **PostDoc researcher**  
Johannes Gutenberg University Mainz, Germany  
within *Internal University Research Funding (IURF) grant*

13/02/2017 - 31/03/2017 **Junior Simons Professor**  
Polish Academy of Sciences, Banach center, Warsaw, Poland  
within *Simons Semester "CrossFields PDEs"*

15/12/2015 – 31/03/2017 **Research assistant**  
Johannes Gutenberg University Mainz, Germany

09/09/2013 - 08/03/2014 **PhD student (research stay in Tokyo)**  
Waseda University in Tokyo, Japan  
6-months-long stay funded by *German Research Foundation (DFG)*

10/12/2012 – 09/12/2015 **PhD student**  
*German Research Foundation (DFG) scholarship*  
Johannes Gutenberg University Mainz; Technical University Darmstadt, Germany  
within *International Research Training Group (IRTG) "Mathematical Fluid Dynamics"*

01/09/2012 – 09/12/2012 **Research assistant**  
Johannes Gutenberg University Mainz, Germany

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## AWARDS

- 2018 **Seal of Excellence by the European Commission**  
for the proposal submitted under H2020-MSCA-IF-2017
- 2016 **Prize of the Faculty for excellent dissertation thesis**  
Faculty of Physics, Mathematics and Computer Science  
Johannes Gutenberg University Mainz, Germany
- 2012 **Rector's award for excellent master thesis**  
**Rector's award for outstanding study results**  
Comenius University in Bratislava, Slovakia

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## PARTICIPATION IN PROJECTS, RECEIVED FUNDING

- 01/03/2018 - 31/12/2020 **Czech Grant Agency (GAČR) grant** 18-05974S [PI: Eduard Feireisl]  
*"Oscillations and concentrations versus stability in the equations of mathematical fluid dynamics"*  
PostDoc researcher
- 01/10/2017 - 31/01/2018 **ERC Advanced Grant** 320078 [PI: Eduard Feireisl]  
*"Mathematical Thermodynamics of Fluids"*  
PostDoc researcher
- 01/04/2017 - 30/09/2017 **Grant of IURF JGU Mainz** [PI: Mária Lukáčová]  
*"Uniformly stable numerical schemes for multiscale weakly compressible flows"*  
PostDoc researcher
- 13/02/2017 - 31/03/2017 **Simons Foundation grant** 346300  
within *Simons Semester "CrossFields PDEs"*  
Junior Simons Professorship  
[collaborators: Agnieszka Świerczewska-Gwiazda, Piotr Gwiazda]
- 24/02/2015 - 30/09/2017 **DFG Collaborative Research Center (CRC) TRR 146**  
*"Multiscale Simulation Methods for Soft Matter Systems"*  
associate PhD student and PostDoc researcher
- 07/2017, 01/2016 *travel grants* from **IURF JGU Mainz**
- 07/2016 *travel grant* from **German Academic Exchange Service (DAAD)**
- 10/12/2012 – 09/12/2015 **DFG IRTG 1529 "Mathematical Fluid Dynamics"**  
doctoral scholarship  
[supervisors: Mária Lukáčová; in Tokyo: Hirofumi Notsu, Masahisa Tabata]

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## INVITATION TO INTERNATIONAL CONFERENCES AND WORKSHOPS

- 06/2019 Conference *Numerical methods for hyperbolic problems 2019*, **Málaga, Spain**
- 05/2018 *Workshop on Mathematical Fluid Dynamics*  
DFG IRTG 1529, **Bad Boll, Germany**
- 11/2016 *KI-Net Young Researches Workshop:*  
*Stochastic and deterministic methods in kinetic theory*  
Duke University, **Durham, North Carolina, USA**
- 11/2016 *Oberwolfach Seminar: Different Mathematical Perspectives on Description of Unresolved Scales in Multiscale Systems*  
Oberwolfach Research Institute for Mathematics, **Oberwolfach, Germany**
- 10/2016 *CoMFoS16: Mathematical Analysis of Continuum Mechanics and Industrial Applications II*, Kyushu University, **Fukuoka, Japan**
- 03/2016 *Algorithm 2016*  
Slovak University of Technology, **Podbanské, Slovakia**

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### INVITED SEMINAR TALKS

- 01/2019 *RTG Energy, Entropy and Dissipative Dynamics*, RWTH Aachen University
- 12/2017 *Current problems in numerical mathematics*, Czech Academy of Sciences
- 12/2017 *Nečas seminar on continuum mechanics*, Charles University
- 11/2017 *Seminar on partial differential equations*, Czech Academy of Sciences
- 10/2016 Seminar at Institute of Science and Engineering, Kanazawa University
- 12/2015 *Seminar on qualitative theory of differential equations*, Comenius University
- 03/2014 *Seminar on partial differential equations*, Czech Academy of Sciences
- 09/2013 Seminar at Waseda Institute for Advanced Study, Waseda University

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### SHORT-TERM RESEARCH STAYS (from one week to one month)

- 01/2019; 01, 05/2018 Johannes Gutenberg University Mainz, Germany
- 10/2016 Kanazawa University, Japan
- 09/2016; 03/2014 Czech Academy of Sciences, Prague, Czech Republic
- 03/2015 Waseda University in Tokyo, Japan

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### EDITORIAL WORK

- since 04/2018 editorial board member of *Applications of Mathematics* (Springer)

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### PARTICIPATION IN INTERNATIONAL CONFERENCES AND WORKSHOPS

- 10/2018 Fall school *Hyperbolic conservation laws and mathematical fluid dynamics*, Würzburg
- 08/2018 Summer school and Workshop *Waves in Flows*, Prague
- 08/2018 The 4th International conference *Applications of Mathematics*, Prague
- 01/2018 The 15th Japanese – German Workshop on Mathematical Fluid Dynamics, Tokyo
- 12/2017 Conference *Prague Compressible Meeting*, Prague
- 07/2017 International conference *Equadiff 2017*, Bratislava
- 03/2017 Workshop *Current Topics in Kinetic Theory* within “*CrossFields PDEs*”, Warsaw
- 02/2017 Workshop *Ideal Fluids and Transport* within “*CrossFields PDEs*”, Warsaw
- 08/2016 Summer school and Workshop *Fluids under Pressure*, Prague
- 06/2016 Workshop *Hybrid Simulation Methods in Fluid Dynamics*, Munich
- 10/2015 Workshop *Women in Applied Math & Soft Matter Physics*, Mainz
- 10/2015 International conference SPP 1506 – IRTG 1529, Darmstadt
- 06/2015 Workshop for Young Researchers in Fluid Dynamics, Darmstadt
- 05/2015 The 14th School *Mathematical Theory in Fluid Mechanics*, Kácov
- 03/2015 The 11th Japanese – German Workshop on Mathematical Fluid Dynamics, Tokyo
- 11/2014 Symposium *Simulation and Optimization of Extreme Fluids*, Heidelberg
- 10/2014 Autumn school and Workshop on Mathematical Fluid Dynamics, Bad Boll
- 08/2014 Summer school and Workshop *Particles in Flow*, Prague
- 01/2014 Winter school *Fluids and Snow*, La Clusaz
- 11/2013 The 9th Japanese – German Workshop on Mathematical Fluid Dynamics, Tokyo
- 06/2013 The 8th Japanese – German Workshop on Mathematical Fluid Dynamics, Tokyo
- 05/2013 The 13th School *Mathematical Theory in Fluid Mechanics*, Kácov
- 09/2012 International conference *Algoritmy 2012*, Podbanské

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### ARTICLES IN INTERNATIONAL PEER-REVIEWED JOURNALS

- 2018 H. Mizerová, B. She:** A conservative scheme for the Fokker-Planck equation with applications to viscoelastic polymeric fluids

*J. Comput. Phys.* 374, pp. 941–953  
DOI: [10.1016/j.jcp.2018.08.015](https://doi.org/10.1016/j.jcp.2018.08.015)

- 2018** P. Gwiazda, M. Lukáčová-Medvid'ová, **H. Mizerová**, A. Świerczewska-Gwiazda: Existence of global weak solutions to the kinetic Peterlin model  
*Nonlinear Anal.-Real* 44, pp. 465-478  
DOI: [10.1016/j.nonrwa.2018.05.016](https://doi.org/10.1016/j.nonrwa.2018.05.016)
- 2017** M. Lukáčová-Medvid'ová, **H. Mizerová**, Š. Nečasová, M. Renardy: Global existence result for the generalized Peterlin viscoelastic model  
*SIAM J. Math. Anal.* 49-4, pp. 2950-2964  
DOI: <https://doi.org/10.1137/16M1068505>
- 2017** M. Lukáčová-Medvid'ová, **H. Mizerová**, H. Notsu, M. Tabata: Numerical analysis of the Oseen-type Peterlin viscoelastic model by the stabilized Lagrange-Galerkin method, Part I: A nonlinear scheme  
*ESAIM: M2AN* 51, pp. 1637-1661  
DOI: <https://doi.org/10.1051/m2an/2016078>
- 2017** M. Lukáčová-Medvid'ová, **H. Mizerová**, H. Notsu, M. Tabata: Numerical analysis of the Oseen-type Peterlin viscoelastic model by the stabilized Lagrange-Galerkin method, Part II: A linear scheme  
*ESAIM: M2AN* 51, pp. 1663-1689  
DOI: <https://doi.org/10.1051/m2an/2017032>
- 2016** M. Lukáčová-Medvid'ová, **H. Mizerová**, B. She, J. Stebel: Error analysis of finite element and finite volume methods for some viscoelastic fluids, *J. Numer. Math.* 24(2), pp. 105-123  
DOI: <https://doi.org/10.1515/jnma-2214-0057>
- 2015** M. Lukáčová-Medvid'ová, **H. Mizerová**, Š. Nečasová: Global existence and uniqueness result for the diffusive Peterlin viscoelastic model, *Nonlinear Anal.-Theor.* 120, pp. 154–170  
DOI: <https://doi.org/10.1016/j.na.2015.03.001>

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#### ARTICLES UNDER REVISION

- 2018** E. Feireisl, M. Lukáčová-Medvid'ová, **H. Mizerová**, B. She: Convergence of a finite volume scheme for the compressible Navier-Stokes system, submitted to *ESAIM: M2AN*, arXiv: <https://arxiv.org/abs/1811.02866>
- 2018** E. Feireisl, M. Lukáčová-Medvid'ová, **H. Mizerová**: A finite volume scheme for the Euler system inspired by the two velocities approach, submitted to *Numer. Math.*, arXiv: <https://arxiv.org/abs/1805.05072>
- 2018** E. Feireisl, M. Lukáčová-Medvid'ová, **H. Mizerová**: Convergence of finite volume schemes for the Euler equations via dissipative measure-valued solutions, submitted to *Found. Comput. Math.*, arXiv: <https://arxiv.org/abs/1803.08401>

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#### THESES

- 2015** *Analysis and numerical solution of the Peterlin viscoelastic model* (dissertation) Johannes Gutenberg University Mainz  
pdf: <http://ubm.opus.hbz-nrw.de/volltexte/2015/4231/>
- 2012** *The Navier-Stokes equations with boundary conditions involving pressure* (master thesis) Comenius University in Bratislava
- 2010** *On the Navier-Stokes equations* (bachelor thesis) Comenius University in Bratislava

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## TEACHING EXPERIENCE

### **Comenius University in Bratislava**

- Summer 2019 Numerical methods (2)  
Numerical mathematics (1)
- Winter 2018/19 Numerical methods (1)  
Variational methods for differential equations  
Ordinary differential equations

### **Johannes Gutenberg University Mainz**

- Winter 2016/17 Numerics of ordinary differential equations  
Summer 2016 Basics of numerical mathematics  
Summer 2014 Seminar on complex fluids  
Winter 2012/13 ODEs and functions of complex variable

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## LANGUAGE SKILLS

- Slovak native speaker  
English fluent  
German good working knowledge  
Czech good working knowledge  
Spanish basic communication skills  
Japanese basics (Hiragana and Katakana)

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## SOFTWARE AND PROGRAMMING SKILLS

C code, MATLAB, COMSOL Multiphysics, ParaView, LaTeX