

Mgr. Šimon Axmann, Ph.D.

CONTACT INFORMATION

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RESEARCH INTERESTS

Partial differential equations, continuum thermodynamics, mathematical modeling.

EDUCATION

Charles University in Prague - Faculty of Mathematics and Physics

Ph.D. programme, Mathematical and computer modeling, 2012-2016

- Topic: *Mathematical analysis of equations describing the flow of compressible heat conducting fluids*
- Supervisor: Doc. Mgr. Milan Pokorný, Ph.D.

Master study: Mathematical Modeling in Physics and Technology, 2010-2012

- Topic: *Kritéria regularity pro nestacionární nestlačitelné Navier-Stokesovy rovnice*
- Supervisor: Doc. Mgr. Milan Pokorný, Ph.D.

Bachelor study: General Mathematics, 2007-2010

- Topic: *Fourierova transformace distribucí a aplikace v PDR*
- Supervisor: Doc. Mgr. Milan Pokorný, Ph.D.

PUBLICATIONS

“Steady solutions to a model of compressible chemically reacting fluid with high density” with Milan Pokorný, *Mathematical Methods in the Applied Sciences*, **44** (8), pp. 6422-6447, 2021, DOI: 10.1002/mma.7193

“Steady solutions to the Navier-Stokes-Fourier system for dense compressible fluid.” with Piotr B. Mucha and Milan Pokorný, *Topological Methods in Nonlinear Analysis*, **52** (1), pp. 259-283, 2018, DOI: 10.12775/TMNA.2018.023

“Steady solutions to viscous shallow water equations. The case of heavy water.” with Piotr B. Mucha and Milan Pokorný, *Communications in Mathematical Sciences*, **15** (5), pp. 1385-1402, 2017, DOI: 10.4310/CMS.2017.v15.n5.a8

“Decently regular steady solutions to the compressible NSAC system” with Piotr B. Mucha, *Topological Methods in Nonlinear Analysis*, **48** (1), pp. 1-27, 2016, DOI: 10.12775/tmna.2016.042

“Time-periodic solutions to the full Navier–Stokes–Fourier system with radiation on the boundary” with Milan Pokorný, *Journal of Mathematical Analysis and Applications*, **428** (1), pp. 414-444, 2015, DOI: 10.1016/j.jmaa.2015.03.023

“Some developments on the global conditional regularity of the Navier–Stokes equations concerning one velocity component“ *Proceedings of 4th Scientific Colloquium; in honor of Prof. Alois Klíč and Prof. Milan Kubíček*, Institute of Chemical Technology, Prague, pp. 61-71, 2014.

“Time-periodic solutions to the Navier–Stokes–Fourier system in 2D.” *WDS'13 Proceedings of Contributed Papers: Part III Á Physics (edited by J. Šafránková and J. Pavlů)*, Prague, Matfyzpress, pp. 85-90, 2013.

“A generalization of some regularity criteria to the Navier–Stokes equations involving one velocity component” with Milan Pokorný, *Recent Developments of Mathematical Fluid Mechanics*, Series: Advances in Mathematical Fluid Mechanics (edited by Giovanni P. Galdi, John G. Heywood and Rolf Rannacher), Springer, pp. 79-97, 2016.

SELECTED
SCIENTIFIC
EXPERIENCE

conference [Equadiff 15](#), Brno, Czech Republic, participant
poster: Rigid body in compressible flow with general inflow-outflow boundary data July 2022

ESSAM school on [Mathematical Aspects of Fluid Flows](#), Kácov, Czech Republic, participant
short communication: Steady flow of compressible chemically reacting fluid May 2019

Chinese-Czech Conference on Mathematical Fluid Mechanics, Prague, participant
talk: Steady flow of dense compressible chemically reacting mixture September 2018

The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications,
Taipei, Taiwan, invited talk in special session: Steady flows of dense compressible fluids
July 2018

conference [Equadiff 2017](#), Bratislava, Slovakia, invited speaker
talk: Existence of strong steady solutions to the NSF system for dense compressible fluid
July 2017

ESSAM school on [Mathematical Aspects of Fluid Flows](#), Kácov, Czech Republic, participant
short communication: Steady solutions to the Navier-Stokes system for dense compressible fluid
May 2017

winter school [CrossFields PDEs](#), Bedlewo, Poland, participant
poster: Strong Solutions to the Steady Navier-Stokes Equations December 2016

First Chinese Czech Conference on Mathematical Fluid Mechanics, Beijing, China, invited speaker
talk: Strong Solutions to the Steady Navier-Stokes Equations September 2016

summer school on evolution equations [EVEQ 2016](#), Prague, Czech Republic, participant
poster: Steady solutions to the Navier–Stokes equations for dense compressible fluids
July 2016

PhD internship, [Warsaw Center of Mathematics and Computer Science](#), Poland
October 2014 - January 2015 and October 2015 - January 2016

school [Mathematical Theory in Fluid Mechanics](#), Kácov, Czech Republic, participant
short communication: Steady solutions to the compressible NSAC system May 2015

conference [4th Scientific Colloquium](#), Prague, Czech Republic, participant
contribution: Time-periodic Solutions to the full Navier–Stokes–Fourier System June 2014

conference [Week of Doctoral Students](#), Prague, Czech Republic, participant
contribution: Time-periodic Solutions to the Navier–Stokes–Fourier System in 2D June 2013

school [Mathematical Theory in Fluid Mechanics](#), Kácov, Czech Republic, participant
short communication: Regularity criteria for the weak solutions to Navier–Stokes equations
concerning one velocity component May 2013

PEDAGOGICAL
EXPERIENCE

assistant lecturer at [the University of Chemistry and Technology, Prague](#) since 2013

intern at [the University of Warsaw, Poland](#) winter semester 2015/2016
exercises to [Mathematical Analysis I](#) (in English)