Šárka Nečasová (Matušů)

Date and place of birth: 26 April 1965; Prague, Czechoslovakia

Nationality: Czech

Family situation: 3 kids: Martin, Jan, Lucie

Education

- 1979 - 1983 Grammar School, gymnazium of Sladkovský, Prague 3
- 1983 - 1988 Faculty of Mathematics and Physics, Charles University in Prague, RNDr. degree 1988,

  thesis: *Strongly Nonlinear Elliptic Equations and Their Numerical Solution by FEM*,

  supervisor: Prof. S. Feistauer.

- 1988 - 1991 PhD student, Faculty of Mechanical Engineering, Czech Technical University in Prague,Prague, CSc. degree 1991(equivalent PhD.)

  thesis: *Quantitative and Qualitative Properties of Motion Equations and their Numerical Solution*,

  supervisors: Prof. J. Neustupa and Prof. K. Kozel

Academic Career:

- Habilitation - Diriger des Recherches del'Université de Pau et des Pays de l'Adour (France), 2010
- DSc. (Doctor of Sciences) Academy of Sciences of the Czech Republic, 2013

Appointments and professional activities:

1991 - 1995 Assistant Professor, Dept. of Mathematics, Faculty of Mechanical Engineering, Czech Technical University, Prague

1995 - 2010 Researcher, Institute of Mathematics, Czech Academy of Sciences of the Czech Rep., Prague

2010 - date Head of the Department of Evolution DEs and Researcher, Institute of Mathematics, Czech Academy of Sciences of the Czech Rep., Prague,

Supervisor

supervisor of PhD study of:

- Matteo Cagio (starting from September 2013 - 2017), his thesis: Navier-Stokes equations and related problems
- Martin Kobera (starting from September 2013 - 2016) thesis: Qualitative properties of radiation magnetohydrodynamics

supervisor of bachelor thesis (M. Šefl)

Teaching:

1989 - 1995 **CTU** exercises, lecture on Mathematical modelling of non-Newtonian fluids

2000 **University of Pittsburgh** - calculus on algebra and mathematical analysis

2018 **University of Wurzburg**, Prodi Chair position

Faculty of Mathematics and Physics, Charles University - regular lecture:
Lectures for magister and doctoral studies

Mathematical modelling of bodies in viscous fluids with M. Pokorný, P. Knobloch

Seminar on Partial Differential Equations with M. Pokorný

Seminar on Regularity of the Navier-Stokes equations with M. Pokorný

Nečas Seminar on Continuum Mechanics with M. Feistauer, J. Haslinger, M. Kružík

One of the main organizers:

- Partial differential Equations and Applications, Oloumouc 1999 (To honor of Jindřich Nečas)

- Minisymposium (Š. Nečasová, M. Pokorný, J. Neustupa) in the framework of International Conference on Fluid Dynamics and Aerodynamics, Corfu, August, 2005

- Minisymposium (Š. Nečasová) in the framework of International Conference on Continuum Mechanics, Evia, Greece, May
  2006
- Minisymposium (Š. Nečasová, R. Rautmann, V. S. Solonnikov, J. Heywood) in the framework of World Congress of Nonlinear Analysis 2007

- Nonlinear PDE's to commemorate the work of Jindřich Nečas (14. 12. 1929 – 5. 12. 2002) together with M. Pokorný

- together with T. Bodnár organizer of minisymposia ECCOMAS CFD, 2010, Lisbon

- together with T. Bodnár : Summer school - Fluid-Structure Interaction for Biomedical Applications, August, 2011, Prague

- together with T. Bodnár and M. Pokorný: Summer School - Nonhomogeneous Fluids and Flow, August, 2012, Prague

- together with R. Rautmann (University of Paderborn) and W. Varnhorn (University of Kassel) organizers of minisymposia (*The Navier-Stokes Equations and Related Problems*) 9th AIMS conference, Orlando 2012

- together with E. Feireisl organizer of minisymposia (*Recent progress in the mathematical theory of compressible and incompressible fluid flows*), 9th AIMS conference, Orlando 2012

- together with R. Rautmann (University of Paderborn) and W. Varnhorn (University of Kassel) organizers of minisymposia (*The Navier-Stokes Equations and Related Problems*) 10th AIMS conference, Madrid 2014

- together with T. Bodnár (Czech Technical University) and G. P. Galdi (University of Pittsburgh) Summer school - Particles in Flows 25.8.2014 - 31.8.2014

- together with T. Bodnár (Czech Technical University) and G. P. Galdi (University of Pittsburgh) Summer school - Fluids under Pressure, 29.8.2016 - 2.9.2016

- together with R. Rautmann (University of Paderborn) and W. Varnhorn (University of Kassel) organizers of minisymposia (*The Navier-Stokes Equations and Related Problems*) 11th AIMS Conference, Orlando 2016

- together with B. Ducomet minisymposium in frame of EMS, Berlin 2016
- together with R. Rautmann (University of Paderborn) and W. Varnhorn (University of Kassel) organizers of minisymposia (*The Navier-Stokes Equations and Related Problems*) 12th AIMS Conference, Taipei, Twaivan 2018
- together with Anja Schlömerkemper (Institute of Mathematics, University of Würzburg), Arghir Zarnescu (Basque Center for Applied Mathematics, Bilbao), Giulio Schimperna (Department of Mathematics, University of Pavia), organizers of minisymposia *Analysis of evolutionary systems of partial differential equations for complex materials*, 12th AIMS Conference, Taipei, Twaivan 2018

Member of Scientific Council of Institute of Mathematics

Member of Editorial Board of:

- Differential Equations and Applications
- DCDS-S
- Atlantis Briefs in Differential Equations together with M. Pokorný (Charles University) and Z. Došlá (Masaryk University)

Awards:

2003 Wichterle prize - Prize of Academy of Sciences of the Czech Republic for young resercher

Visiting positions:
1993-1994 Postdoctoral Fellow, Department of Mathematics, University of Ferrara, Italy (Invited by Prof.Padula and Prof.Galdi)

1998, 2 months research position on the Northern Illionis University, 1998

1999 7 months research position, Institute Superior Tecnico, Lisbon, Portugal and CIM, Coimbra, Portugal (Invited by Prof.Sequeira)

2000 4 months as a visiting professor on University of Pittsburgh, Department of Mathematics

2002, 2011 visiting professor on University de Toulone et du Var

2003, 2006, 2007, 2010, 2014 Université de Pau et des Pays de l'Adour, France, visiting professor

2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015 visiting position CEA

2018 Professor position Prodi- Chair, University Würzburg

Editorial work:

- **Proceedings of Partial Differential Equations and Applications**, Olomouc 1999, in the occasion of the 70th anniversary of birthday of Prof. Nečas, edited by Š. Nečasová, H. Petzeltová, M. Pokorný, A. Sequeira

- **Special Issue Dedicated to Professor Vsevolod Aleksevich Solonnikov on the Occasion of his 75th Birthday**, Discrete and Continuos Dynamical Systems, S, 3, 2, June 2010, edited by Š. Nečasová, Reimund Rautmann and Werner Varnhorn

- **Special Issue Dedicated to Professor Vsevolod Aleksevich Solonnikov on the Occasion of his 75th Birthday**, Applicable Analysis: 90, 1, January 2011, 1-3, edited by Š. Nečasová, Reimund Rautmann Roger Temam and Werner Varnhorn

- Jindřich Nečas, **Directed Methods in the Theory of Elliptic Equations** translated by G. Tronel and A. Kufner, editorial coordination by Š. Nečasová, contribution of C. Simader, Springer 2012

- **Fluid-Structure Interaction and Biomedical Applications**, Series Advances in Mathematical Fluid Mechanics, editors: T. Bodnár, G. P. Galdi, Š. Nečasová, 2014, XIV, 569 p. 101 illus., 54 illus. in color.,Birkhauser Basel

- **Selected works of Jindřich Nečas**, edited by M. Pokorný, Š. Nečasová, V. Šverák, January 2015 (publisher Birkhauser)

- Archiv of Prof. J. Nečas

- **Mathematical Models with Singularities,** *Author: Torres, Pedro J.* Atlantis Briefs in Differential Equations - Springer, Editors: Došlá, Zuzana, Nečasová, Šárka, Pokorný, Milan

- **State-Dependent Impulses, Boundary Value Problems on Compact Interval**, *Authors: Rachůnkov; Irena, Tomeček, Jan* Atlantis Briefs in Differential Equations - Springer, Editors: Došlá, Zuzana, Nečasová, Šárka, Pokorný, Milan

- **Differential Equations with Involutions,** *Authors: Cabada, Alberto, F. Tojo, F. Adrián* Atlantis Briefs in Differential Equations - Springer, Editors: Došlá, Zuzana, Nečasová, Šárka, Pokorný, Milan

- **Particles in Flows**, Series Advances in Mathematical Fluid Mechanics, editors: T. Bodnár, G. P. Galdi, Š. Nečasová, 2017, XIV, 569 p. 101 illus., 54 illus. in color., Birkhauser Basel

Invited lectures at international conferences
1) March 1993
Mathematical problems for Navier-Stokes equations, Cento, Italy

2) May 1994, Madeira
Third International Conference on Navier-Stokes equations and Related Nonlinear Problems

3) **International Conference on Applied Analysis**,
Lisbon, 26.2.-1.3.1997

4) **International Conference on Navier-Stokes equations, Theory and Numerical Methods**, Varenna, Italy, 2.6.-6.6., 1997,

5) **International Conference on Navier-Stokes equations, Theory and Numerical Methods**, Varenna, Italy, May, 1999

6) **International conference on Dynamics of Continuous, Discrete and Impulsive Systems**, London, Canada, July 27-31, 2001

7) Workshop : **Navier-Stokes equations: Theory meets simulations**, June 21, 2002, Centre de Mathematiques et d'Informatique, Technopole de Chateaux-Gombert

8) **Mathematical Fluid Mechanics - Recent results and open questions**, Czech Republic, Trest, June 29 - July 4, 2002

9) **World Congress of Nonlinear Analysts, Session of Mathematical Fluid Mechanics**, Orlando 2004

10) **International Workshop on Current topics in Mathematical Fluid Mechanics**, Lisbon, Portugal 2005

11) **Mathematical Fluid Mechanics and Applications**, June 2006, Evora, Portugal

12) **6th Conference Internationale AIMS Systems Dynamique, Equations Differentielles et Applications**, Poitiere, June 2006, France

13) **Parabolic equations and Navier-Stokes equations**, Bedlewo, Poland, September 2006

14) **Mathematical Fluid Mechanics**, Estoril 2007, Portugal

15) Equadiff 2007, Vienna, Austria

16) **Nonlocal and abstract parabolic equations and their applications**, Bedlewo, 2007

17) **First Joint International Meeting**, AIMS, Warsawa, 2007

18) **Conference on the Navier-Stokes equations and their Applications**, Kyoto, Japan, 2006

19) **Vorticity, rotation and symmetry-stabilizing and destabilizing fluid motion**, Luminy, France, 18.5.-24.5.08, *On the motion of several rigid bodies in an incompressible non-Newtonian fluids*

20) **WCNA**, (one of organizers of minisymposia) The Navier-Stokes equations and related problems, Orlando 08,1.7.-11.7.08, *Motion of fluid around a rotating rigid body*

21) **Parabolic and Navier-Stokes equations 08**, Będlewo 08, 3.9.-5.9.08, *Motion of a flow around a rotating body in a weighted L^q spaces*

22) **Mathematical Fluid Dynamics**, Darmstadt 08,7.9.-10.9.08, *The problem of the motion of several rigid bodies in viscous fluids*

23) **50 years of optimal control**, Bedlewo 08

24) **Parabolic equations 09**, May (in honnor of Prof. Amann) *Fundamental solutions of problem of motion of fluids around a rotating body*

25) **Partial Differential Equations in Fluid Dynamics and related field**, Jilin, Northeast Dianli University, China *Motion of several rigid bodies in viscous fluids*

26) **Career Oportunities for Women in Mathematical Fluids Dynamics**, TU Darmstadt *Motion of several rigid bodies in viscous fluids*

27) **SIAM** conference PDE 7.12.–10.12. USA *On the problem of motion of fluid around a rotating rigid body*

28) **8th AIMS Conference on Dynamical Systems, Differential Equations and Applications**, 24.5.-28.5. 2010, Dresden *Global existence of solution for the one-dimensional motions of a compressible viscous gas with radiation*

29) **ECCOMAS CFD 2010**, 14.6.-17.6. 2010 *Theoretical aspects of motion of fluid around a rotating rigid body*

30) **Evolution equations**, Schmitten, 10.10.-15.10. 2010 *On a model in radiation hydrodynamics*

31) **Trends in multi-scale analysis and homogenization**, 23.9.-25.9. 2010, CLUJ, *On the asymptotic limit of the Navier-Stokes system with rough boundary*

32) **Conference on Computer Methods in Mechanics**, 9.5.-12.5. 2011 *Boundary behaviour of viscous fluids*

33) **Spring school TH Darmstadt**, 28.2.–3.3. 2011 *On a some model of radiation*

34) **Vorticity, Rotation and Symmetry II**, Luminy, 22.5.–26.5. 2011 *On the motion of several rigid bodies in incompressible and compressible viscous fluids*

35) **International Conference on Mathematical Fluid Mechanics and Biomedical Applications**, Azores, Ponta Delgada, 30.5.–5.6. 2011 *On the motion of several rigid bodies in incompressible and compressible viscous fluids*

36) **Topics from the Theory of Navier- Stokes System**, Calais, March 22-23, 2012 *Weak solutions for the motion of a self-propelled deformable structure in a viscous incompressible fluid*

37)**Model reduction in continuum thermodynamics: Modeling, analysis and computation, Banff, 16.9.- 22.9, Canada** *Weak solutions to the barotropic Navier-Stokes system with slip boundary conditions in time dependent domains*

38) **Parabolic and Navier-Stokes equations, Bedlewo, 4.9.- 7. 9, 2012** *Weak solutions to the barotropic Navier-Stokes system with slip boundary conditions in time dependent domains*

39) **Dynamical Systems, Differential Equations and Applications, Orlando, 2012** *Weak solutions for the motion of a self-propelled deformable structure in a viscous incompressible fluid*

40) **Workshop on Navier-Stokes Equations, Aachen, May 29.5.- 1.6. 2012** *Weak solutions to the barotropic Navier-Stokes system with slip boundary conditions in time dependent domains*

41) **Worshop on Complex Fluids, 10.7 - 13.7. 2012, Darmstadt** *Weak solutions for the motion of a self-propelled deformable structure in a viscous incompressible fluid*

42) **International Conference on the Mathematical Fluid Dynamics on the occasion of Prof. Shibata, Nara, Japan, 5.3.–9.3.2013** *Compressible barotropic fluids in time-dependent domains:existence and incompressible limits.*

43) **Nonlinearities 2013, 11.6.-15.6.2013, Male Ciche** *Compressible barotropic fluids in time-dependent domains: existence and incompressible limits*

44) **Workshop on Navier-Stokes equations 21.5.- 24.5. 2013, Aachen** *Compressible barotropic fluids in time-dependent domains: existence and incompressible limits*

45) **SIAM meeting** , University of San Diego USA (July 2013) *Incompressible limits of fluids excited by moving boundaries*

46) **Mathematical Hydrodynamics and Parabolic Equations Steklov Institute**, San Petersburgh (September 2013), *Low Mach number limit and diffusion limit in a model of radiative flow*

47) **EQUADIFF 2013** Praha,Czech Republic (August 2013)2 lectures: *On the existence of weak solution to the coupled fluid-structure interaction problem for non-Newtonian shear-dependent fluid*, *Weak solutions for the motion of a self-propelled deformable structure in a viscous incompressible fluid*

48) **SIAM-PDE meeting**, Orlando, Florida (December 2013) *The motion of the rigid body in viscous fluid including collisions. Global solvability result*

49) **Recent Advances in PDEs and Applications**,Levico Terme,Italy (February 2014),*On the existence of weak solution to the coupled fluid-structure interaction*

50) **Compflows 2014** Bedlewo, Poland (March 2014)*Low Mach number limit and diffusion limit in a model of radiative flow*

51) **Vorticity, Rotation and Symmetry** Luminy, France (May 2014)*Low Mach number and diffusion limit for a radiative flow*

52) **10th AIMS Conference Madrid**, Spain (July 2014)*Linearized stationary incompressible flow around rotating and translating body-Leray solution, asymptotic profile*

53) **Conference on PDE**, Novacella, Italy (May 2014),*On the low Mach number limit and diffusion limit in a model of radiative flow*

54) **Classical Problems and New Trends in Mathematical Fluid Dynamics**, Ferrara, Italy (September 2014), *Low Mach number limit and diffusion limit in radiation hydrodynamics*

55) **Mathematical Fluid Dynamics** - Autumm School and Workshop organized by TH Darmstadt, Bad Boll (October 2014), *Low Mach number limit and diffusion limit on the model of radiative flow*

56) **Workshop on PDE's and Biomedical Applications**, Lisbon, Portugal (December 2014), *Diffusion limit in a model of radiative flow*

57) **BIO Fluids**, Warsaw, Poland (April 2015), *Singular limits in a model of radiative fluid*

58) **SMAIS**, Karellis,France (June 2015), *Singular limis in radiation flow*

59) **Asymptotic problems:Elliptic and Parabolic Issues**, Vilnius, Lithuania (June 2015), *Inviscid incompressible limits on expanding domains*

60) **Singular PDEs, Analytical Tools and Application**, Male Ciche, Poland (June 2015), *Diffusion and low Mach number limits in a model of radiative flow*

61) **Equadiff 2015**, Lyon, France (July 2015),*Inviscid incompressible limits on expanding domains*

62) **Modelling and Analysis of Problems in Continuum Mechanics**, Kassel, Germany (September 2015), *On the problem of singular limit in a Navier-Stokes-Fourier model coupled with the transport of radiative intensity*

63) **Multiscale simulation methods for soft matter systems**, Mainz, Germany (October 2015), *On the problem of singular limit in a Navier-Stokes-Fourier model with radiation*

64) **Mathematical Fluid Mechanics,Old problems, New Trends- A week for Wojciech Zajaczkowski**, Bedlewo, Poland (August 2015), *Inviscid incompressible limits on expanding domains*

65) **The Navier- Stokes Equations and Related Topics** Nagoya University, Nagoya, Japan (March 2016) *The problem of dynamics of a self-propelled deformable body in viscous compressible fluid and the dynamics of rigid body with a cavity filled by a viscous compressible fluid*

66) **International Conference on Navier-Stokes equations and related PDEs : In honor of the 60th birthday of Professor Hi Jun Choe** NIMS, Dajeon, Republic of Korea (June 2016), *Derivation of the Navier - Stokes (Fourier) - Poisson system for an accretion disk*

67)**The 11th AIMS Conference on Dynamical Systems** Orlando, FL (July 2016) *Mathematical analysis of the motion of incompressible viscous fluid around a moving rigid body*

68)**ECM Berlin** TU Berlin (July 2016) *The motion of incompressible viscous fluid around a moving rigid body*

69) **First Chinese Czech Conference on Mathematical Fluid Mechanics** Beijing, Academy of Sciences of China (September 2016) *On the problem of rotating compressible fluids on thin domains*

70) **Workshop on Nonlinear Mechanics and Applications in Life Sciences Lisbon,** Technical University (October 2016) *Rigorous derivation of the equations describing objects called "accretion disk*

71) **Workshop on mathematical fluid dynamics** TH Darmstadt (November 2016) *The motion of a rigid body in a viscous fluid*

72) **Mathflows 2017** Bedlewo, Poland (January 2017) *The motion of a rigid body in a viscous fluid*

73) **Theory of the incompressible Navier-Stokes system and related topics** Calais, France (March 2017) *Weak solutions to the Navier-Stokes-Fourier system with slip boundary conditions in time dependent domains*

74) **Modern challenges in continuum mechanics** Zagreb (April 2017) *Viscous compressible Navier-Stokes-(Fourier) system coupled to the radiative transfer equation*

75) **Vorticity, Rotation and Symmetry (IV) - Complex Fluids and the Issue of Regularity** CIRM, Luminy,France (May 2017) *Weak-strong uniqueness for fluid-rigid body interaction problem with slip boundary condition*

76) **Equadiff 2017** Bratislava, Slovakia (July 2017) *Weak-strong uniqueness for fluid-rigid body interaction problem with slip boundary condition*

77) **The last 60 years of Mathematical Fluid Mechanics: Longstanding Problems and New Perspective** Vilnius,Lithuania (August 2017) *Application of the relative entropy inequality in moving domains*

78) **Conference on Analysis of Classical Incompressible Fluids** Shanghai,China (October 2017) *Relative entropy inequality in fluid structure interaction problem*

79) **Workshop on kinetic and fluid partial differential equations** Université Paris Descartes (March 2018) *Viscous compressible fluids in time dependent domain*

80) **Conference on Mathematical Fluid Dynamics**, Bad Boll, France, May, 2018, *Analysis of viscous compressible fluids in time dependent domain*

(81) **Workshop on Mathematical fine structures in fluid dynamics**, Aquila, Italy, June, 2018; *Viscous compressible fluids in time dependent domain*

(82)**Mathematical Philosophy in the 21st Century**, Oxford Centre for Industrial and Applied Mathematics, June, Great Britain, 2018,*On the motion of a body with a cavity filled with compressible fluid*

(83)**12th AIMS conference on dynamical systems, differential equations and applications**, Taipei, Taiwan, July, 2018,*Influence of pressure and bulk viscosity in congestion phenomena*

(84) **18th Conference on Applied Mathematics and Scientific Computing Sibenic**, Croatia, September, 2018, *On the problem of the motion of a rigid body with a cavity filled with a viscous compressible fluid*

(85) **Workshop Analysis and PDE**, Hannover, Germany, October, 2018, *On the problem of the motion of a rigid body with a cavity filled with a viscous compressible fluid*

(86) **28th IFIP TC7 conference on system modeling and optimization**, University of Essen (July 2018), *Weak-strong uniqueness in fluid structure interaction*

(87) **ICA 2018** University of Nanjing (October 2018), *On the problem of viscous compressible fluids in time dependent domain*

(88) **2nd of Czech-Chinnese conference** Institute of Mathematics, Praha (September 2018) *Influence of pressure and bulk viscosity in congestion phenomena*

Invited lectures at international universities
1) April 1994

Catania, Italy, Dipartimento di Matematica

2) April 1994

Palermo, Italy, Dipartimento di Matematica , Università
degli Studi di Palermo

3) May 1994
Polytechnico Milano, Dipartimento di Matematica

5) June 1996
University of Ferrara

6) February 1997,

Lisbon, Instituto di Matematica

7) TH Darmstadt, Darmstadt 1997

8) University of Pittsburgh, May 1998

9) Northern Illinois University, March-May 1998

10) September 1993-September 1994
Università degli Studi di Ferrara,
series of lectures

11) November 1998
Waseda University, Tokio, Japan

12) January 15 -May 15, 1999 Instituto Superir Tecnico, Lisbon, Portugal series of lectures(viscoelastic fluids)

13) May 15 - July 31, 1999 Cim, Coimbra, Portugal, series of lectures (compressible fluids, self-propelled motion)

14) August 1999, November 2006 Weierstrass Institute for Applied Analysis and Stochastics in Forchungsverbund Berlin e.V.

15) January-May 2000 Pittsburgh University, Department of Mathematics (series of lectures on compressible newtonian and non-Newtonian case)

16) April 2000 Carnegie Mellon University

17) November 2001, Ecole Polytechnique, CMAP, Palaseau

18) June 2002, Universite Marne la Valee

19) July 2002, Stuttgart, Dept. of Mathematics

20) May 2002, Northern Illinois University, Dept. of Mathematics

21) July 2003, Equadiff, Hasselt, Belgium

22) December 2004, Instituto Superior Technico, Lisbon, Portugal

23) June 2005, University of Metz, France

24) November 2006, Paderborn University, Germany

25) November 2006, Kassel University, Germany

26) University of Darmstadt, Germany, 2005, 2006, 2007

27) Waseda University, Tokio, Japan, 2006

28) University of Pau, France, 2005, 2006, 2007

29) December 2007, University of Heidelberg, Germany,

30) Universita di Lisboa, Portugal, November 2008, *On the problem of the motion of several rigid bodies in the fluid*

31) TH Hamburg, 2.2.-5.2. 2010, *On the motion of fluid of several rigid bodies in an incompressible non-Newtonian fluids*

32) TU Darmstadt, 7.11.-12.11. 2010, *On pointwised decay of linearized stationary incompressible viscous flow around rotating and translating body*

33) Université de Pau, 28.6. 2010, habilitation lecture *Mathematical modelling of fluid mechanics*

34) University of TH Dresden, 23.6.–24.6. 2011 *Mathematical aspects on the motion of fluid around rotating body and motion of several rigid bodies in fluid*

35) University of Oxford, 5.5.2013 – 11.5.2013 *Compressible barotropic fluids in time-dependent domains: existence and incompressible limits*

36)University of Nanjing, 12.10.2013 – 18.10.2013, *Existence and singular limits for compressible fluids on moving domains*

37) University in Beijing, 18.10.-20.10. 2013, *Weak solutions of deformable body*

38) Univ. of Chambery, 10.6.2015 - 12.6.2015, *Singular limits in radiation flow*

39) University of Oregon, 12.10.2015 - 16.10.2015, *The motion of fluid around moving rigid body*

40) University of Austin, 18.10.2015 - 21.10.2015, *On the problem of singular limit of the Navier - Stokes- Fourier system with radiation*

41) University of Columbus, 23.3.2016 - 25.3.2016, *On the problem of singular limit of the Navier-Stokes-Fourier system coupled with radiation or with electromagnetic field*

42) University of Wurzburg, 24.1.2017 - 27.1.2017, *Motion of fluids: applications in astrophysics, in medicine and in other areas*

43) University of Zagreb, 20.2.2017 - 25.2.2017, *Rigorous derivation of the equations describing objects called "accretion disk*

44) Tech. University of Virginia, 18.10.2017 - 20.10.2017, *Motion of fluids: applications in astrophysics and in other areas*

45) University of Oregon, 20.10.2017 - 27.10.2017, *Singular limits: mathematical derivation of the equations describing objects called "accretion disk",rotating fluids*

46) University of Pau, 26.11.2017 - 30.11.2017, *Derivation of equations describing the motion of fluids*

47) University of Humbold, Berlin, February 2018, *Weak-strong uniqueness in fluid structure interaction*

48) University of Nanjing, October 2018, *Long time behaviour on the motion of a rigid body with a cavity filled with compressible fluid*

49) University of Würzburg, April - July 2018, *Prodi lecture - Introduction to the mathematical theory of compressible flow,Prodi lecture - Seminar on Fluid-structure interactions*

Research Projects Proposer

- **Grant Agency of Academy of Sciences**

  - Mathematical modelling of motion of bodies in Newtonian and non-Newtonian fluids and related mathematical problems 2005–2007
  - The motion of rigid bodies in fluids: mathematical analysis, numerical simulation and related problems 2008–2010

- **DAAD projekt (Czech-German)**
  - 2005-2006 together with Prof. R. Farwig (TU Darmstadt)
  - 2009-2010 together with Prof. R. Farwig (TU Darmstadt)
- **Barrande project (Czech-France)** 2003-2004 together with Prof. Sokolowski (Univ. of Nancy)
- **CNRS projekt** 2007-2008 together with Prof. Sokolowski (Univ. of Nancy)
- **Common project between Academy of Sciences of Czech Republic and Ukraine** 2008-2009, 20010-2012 together with Prof. I. Skrypnik (Univ. of Donetsk)
- **Grant Agency of the Czech Republic** 2011-2013 Motion of fluids in domains with varying geometry
- **Grant Agency of the Czech Republic** 2016-2018 Thermodynamically consistent models for fluid flows: mathematical theory and numerical solution
- **Grant Agency of the Czech Republic** 2019-2021 Partial differential equations in mechanics and thermodynamics of fluids

Scientometry

- 145 items registered by MathSciNet
- 854 citations by 381 authors

1 List of publications of Š. Nečasová

1.1 Books

Nečasová, Šárka; Kračmar, Stanislav: Navier-Stokes flow around a rotating obstacle. Mathematical analysis of its asymptotic behavior. Atlantis Briefs in Differential Equations, 3. Atlantis Press, Paris, 2016. x+96 pp. ISBN: 978-94-6239-230-4; 978-94-6239-231-1

1.2 B - Chapters in monographs

1. **Š. Matušů - Nečasová, A. Sequeira, J. Videmann.** *Asymptotic behaviour of compressible Maxwell fluids in Exterior Domains.* Applied Nonlinear Analysis (ed. A. Sequeira, H. Beirao da Veiga, J. Videman). New York: Plenum Press, 1999, s. 373–390. ISBN 0-306-46303-2.

2. **Š. Nečasová, P. Penel.** *Remark on L^2 decay for weak solutions of non-Newtonian incompressible fluids in the whole space (II).* The Navier - Stokes Equations: Theory and Numerical Methods (ed. R. Salvi). New York: Marcel Dekker, 2001, s. 221–231. Lecture Notes in Pure and Applied Mathematics, **223**. ISBN 0-8247-0672-2

3. **E. Feireisl, Š. Nečasová.** *On the motion of several bodies in a viscous multipolar fluids.* Functional Analysis and Evolution Equations. The Günter Lumer Volume. Basel: Birkhäuser, 2007, s. 291–305. ISBN 978-3-7643-7793-9

4. **C. Amrouche, M. Krbec, Š. Nečasová, B. Lucquin-Desreux.** *Elliptic Differential equations: Linear theory.* Encyclopedia of Mathematical Physics (ed. J. P. Francoise, G. L. Naber, T. S. Tsun). Boston: Elsevier, 2006, s. 216–228. ISBN 0-12-512660-3

5. **E. Feireisl, Š. Nečasová.** *The effective boundary conditions for vector fields on domains with rough boundaries.* Applications to fluid mechanics, Special volume dedicated to Prof. V. A. Solonnikov, Application of Mathematics **56,** 1, 39–49, 2011. IF 0,39

6. **Y. V. Namlyeyeva, Š. Nečasová, I. Skypnik.** *The Dirichlet problems for steady Navier-Stokes equations in domains with thin channels.* Advances

in Mathematical Fluid Mechanics 1 (ed. A. Sequeira, R. Rannacher). Heidelberg: Springer, 2010, s. 339–366. ISBN 978-3-642-04067-2

7. **E. Feireisl, Š. Nečasová.** *On the long-time behavior of a rigid body immersed in a viscous fluid.* Special volume dedicated to Prof. V. A. Solonnikov, Applicable Analysis, **90**, 1, 59–66, 2011. IF 0,633

8. **P. Deuring, S. Kračmar, Š. Nečasová.** *A representation formula for linearized stationary incompressible viscous flows around rotating and translating bodies.* Special Volume dedicated to Prof. V. S. Solonnikov, DCDS serie S, **3**, 2, 237–254, 2010.

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2 Other scientific works

D1 - **Phd thesis** - Quantitative and qualitative properties of equations describing the motion of fluids and their numerical solution

D2 - **Habilitation à Diriger des Recherches del'Université de Pau et des Pays de l'Adour**, 2010, *On the mathematical aspects of the motion*

of fluid : fluid-structure interaction, compressible fluids, motion of fluid in oscillating domain, shape sensitivity analysis, boundary conditions

D3- DSc. Habilitation, 2013, *Mathematical analysis of the motion of viscous fluids: motion of incompressible fluid around rotating and translating rigid body, motion of compressible gas, motion of linear viscous fluid in the half space*