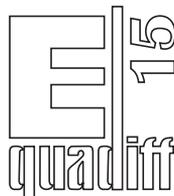# SCIENTIFIC PROGRAM
EQUADIFF 15

Conference on Differential Equations
and Their Applications

Brno, Czech Republic, July 11–15, 2022

(version: July 13, 2022)

Contents

Scientific program in details

MONDAY – JULY 11

9:00–9:15 **Opening Ceremony (Room 101 – aula)**

MONDAY – PLENARY LECTURES

Aula Chairman: Alessandro Fonda

9:15–10:10 **Stefan Siegmund** (Germany)
Maxwell's equations revisited - mental imagery and mathematical symbols

10:15–10:45 *Coffee break*

Chairman: Juncheng Wei

10:45–11:40 **Mária Lukáčová-Medviďová** (Germany)
Dissipative solutions for compressible fluid flows

MONDAY – INVITED LECTURES

Room 102 (ODE) Chairman: Jan Andres

11:50–12:25 **Elena Braverman** (USA)
On the connection of differential, difference, delay and dynamic equations

12:30–14:00 *Lunch*

Room 104 (PDE) Chairman: Vincenzo Ambrosio

11:50–12:25 **Agniezska Świerczewska-Gwiazda** (Poland)
Onsager's conjecture for general conservation laws

12:30–14:00 *Lunch*

Room 106 (NAA) Chairman: Robert Nürnberg

11:50–12:25 **Dirk Praetorius** (Austria)
Adaptive FEM with quasi-optimal cost for nonlinear PDEs

12:30–14:00 *Lunch*

MONDAY – ODE MINISYMPOSIA

Room 102 Keynote speaker: Jan Tomeček

ODE-11 Recent progress in boundary value problems for differential equations

14:00–14:25 **Jan Tomeček** (Czech Republic)
Multiple solutions of certain Dirichlet problems in billiard spaces

14:30–14:55 **Olena Atlasiuk** (Czech Republic)
Linear ordinary differential systems with generic inhomogeneous boundary conditions in Sobolev spaces

15:00–15:25 **Jan Andres** (Czech Republic)
Topological entropy and differential equations

15:30–15:55 **Milan Tvrdý** (Czech Republic)
Duality for Stieltjes integral equations

16:00–16:30 *Coffee break*

Room 302a Keynote speaker: Hideaki Matsunaga

ODE-01 Qualitative theory of delay differential and difference equations

14:00–14:25 **Junya Nishiguchi** (Japan)
Critical delay and stability for linear delay differential equations

14:30–14:55 **Kodai Fujimoto** (Japan)
Singular solutions of ordinary differential equations with $p(t)$-Laplacian

15:00–15:25 **Robert Hakl** (Czech Republic)
Periodic, permanent, and extinct solutions in population models

15:30–15:55 **Hideaki Matsunaga** (Japan)
Stability switches in linear delay differential equations

16:00–16:30 *Coffee break*

Room 302b Keynote speaker: Jelena Manojlović

ODE-08 Karamata theory of regular variation and its application to asymptotic theory of differential, difference and q-difference equations

14:00–14:25 **Jelena Manojlović** (Serbia)
Strongly monotone solutions of systems of nonlinear differential equations with rapidly varying coefficients

14:30–14:55 **Katarina Djordjević** (Serbia)
Application of the Karamata theory in the study of asymptotic properties of the half-linear q-difference equation

15:00–15:25 **Aleksandra B. Kapešić** (Serbia)
Decreasing solutions of cyclic systems of second-order Emden-Fowler type difference equations

15:30–15:55 **Vladimir Rasvan** (Romania)
Critical cases in neutral functional differential equations arising from hydraulic engineering

16:00–16:30 *Coffee break*

MONDAY – ODE CONTRIBUTED TALKS

Room 102 Chairman: Jaqueline Godoy Mesquita

16:30–16:45 **Renato Huzak** (Belgium)
Predator-prey slow-fast cycles and Hilbert's 16th problem

16:50–17:05 **Petr Zemánek** (Czech Republic)
Discrete symplectic systems and eigenfuctions expansion

17:10–17:25 **Luděk Nechvátal** (Czech Republic)
Linearized stability for fractional differential and difference equations

17:30–17:45 **Paolo Gidoni** (Czech Republic)
A topological degree theory for rotating solutions of planar systems

19:00 *Welcome party*

Room 302a Chairman: Anatoli Ivanov

16:30–16:45 **Jana Burkotová** (Czech Republic)
Bouncing solutions of generalized Lazer-Solimini equation

16:50–17:05 **Filip Ficek** (Poland)
Stationary solutions of semilinear Schröedinger equations with trapping potentials in supercritical dimensions

17:10–17:25 **István Balázs** (Hungary)
Global stability for price models with delay

17:30–17:45 **Jan Jekl** (Czech Republic)
Recent results in the theory of p-critical linear even-order difference equations

19:00 *Welcome party*

Room 302b Chairman: Teresa Faria

16:30–16:45 **Lucia Lopez-Somoza** (Spain)
Lower and upper functions method for even order boundary value problems

16:50–17:05 **Tomoharu Suda** (Japan)
Equivalence of ill-posed dynamical systems

17:10–17:25 **Marc Homs-Dones** (UK)
Simplest bifurcation diagram of vector fields on a torus

17:30–17:45 **Satyam Narayan Srivastava** (Israel)
Vallée-Poussin theorem for fractional functional differential equations

19:00 *Welcome party*

MONDAY – PDE MINISYMPOSIA

Room 104 Keynote speaker: Miroslav Bulíček

   PDE-04 Open systems in PDE describing flows of fluids

14:00–14:25 **Miroslav Bulíček** (Czech Republic)
Convergence to equilibria for weak solutions of heat conducting non-Newtonian fluids

14:30–14:55 **Daniel Lear** (Czech Republic)
Traveling waves close to the Couette flow

15:00–15:25 **Josef Málek** (Czech Republic)
On rate-type viscoelastic fluids with stress diffusion and their large-data analysis

15:30–15:55 **Casey Rodriguez** (USA)
On elastic strain-limiting special Cosserat rods

16:00–16:30 *Coffee break*

Room 103 Keynote speaker: Philippe Souplet

   PDE-08 Qualitative behavior in nonlinear parabolic problems

14:00–14:25 **Piotr Biler** (Poland)
Large global solutions of the parabolic-parabolic Keller-Segel system, and blowup for related toy models

14:30–14:55 **Phillipe Laurencot** (France)
TBA

15:00–15:25 **Carlos Esteve Yague** (UK)
Boundary behaviour for viscous and inviscid Hamilton-Jacobi equations

15:30–15:55 **Philippe Pierre Souplet** (France)
Diffusive Hamilton-Jacobi equations and their singularities

16:00–16:30 *Coffee break*

Room 303 Keynote speaker: Matteo Franca

   PDE-11 Qualitative behavior of nonlinear Laplace and p-Laplace equations

14:00–14:25 **Matteo Franca** (Italy)
Ordering properties for radial solutions of p-Laplace equations

14:30–14:55 **Francesca Colasuonno** (Italy)
Two solutions to a p-Laplacian supercritical Neumann problem: existence and asymptotics

15:00–15:25 **Soohyun Bae** (Republic of Korea)
Asymptotic behavior of singular solutions of nonlinear elliptic equations

15:30–15:55 **Francesca Dalbono, Matteo Franca** (Italy)
A bifurcation phenomenon for the critical Laplace and p-Laplace equation in the ball

16:00–16:30 *Coffee break*

MONDAY – PDE CONTRIBUTED TALKS

Room 104 Chairman: Pavel Drábek

16:30–16:45 **Masaaki Mizukami** (Japan)
Blow-up in a two-species chemotaxis-competition system

16:50–17:05 **Tai Phuoc Nguyen** (Czech Republic)
Semilinear nonlocal elliptic equations involving measures

17:10–17:25 **Saadet Erbay** (Turkey)
Convergence of the nonlocal nonlinear equation to the nonlinear elasticity equation

17:30–17:45 **Karol Wojciech Hajduk** (Poland)
Towards global existence in the 3D chemorepulsion system

19:00 *Welcome party*

Room 103 Chairman: Phillipe Laurencot

16:30–16:45 **Matteo Rizzi** (Germany)
Normalised solutions to semilinear equations with potential

16:50–17:05 **Erika Maringová** (Austria)
On implicit constitutive relations to parabolic problems

17:10–17:25 **Igor Kossowski** (Poland)
Nonlocal heat equations with generalized fractional Laplacian

17:30–17:45 **Władysław Jan Klinikowski** (Poland)
Periodic solutions of nonlinear damped wave equations on $\mathbb{R}^N$

19:00 *Welcome party*

MONDAY – NAA MINISYMPOSIA

Room 106 Keynote speaker: Robert Nürnberg

NAA-09 **Finite element methods for geometric PDEs**

14:00–14:25 **Robert Nürnberg** (Italy)
A generalized DeTurck trick for anisotropic curve shortening flow

14:30–14:55 **Tim Binz** (Germany)
TBA

15:00–15:25 **Björn Stinner** (UK)
Convergent FE schemes using the Dirichlet energy for mesh smoothing

15:30–15:55 **Elena Bachini** (Germany)
An intrinsic finite element method for PDEs on surfaces

16:00–16:30 *Coffee break*

Room 304 Keynote speaker: Thomas Richter

NAA-10 Hybrid pde simulations using deep neural networks

14:00–14:25 **Thomas Richter** (Germany)
Hybridization of finite element and neural network simulations

14:30–14:55 **Alexander Heinlein** (Netherlands)
Surrogate models for computational fluid dynamics simulations using convolutional autoencoder neural networks and physical constraints

15:00–15:25 **Robert Jendersie** (Germany)
Enhancing a multigrid solver for the Navier-Stokes equations with deep learning

16:00–16:30 *Coffee break*

MONDAY – NAA CONTRIBUTED TALKS

Room 106 Chairman: Patrick Farrell

16:30–16:45 **Michal Beneš** (Czech Republic)
Normal and binormal motion of interacting curves in space

16:50–17:05 **Husnu Ata Erbay** (Turkey)
Error estimates of a semi-discrete numerical scheme for nonlocally regularized KdV-type equations

17:10–17:25 **Teresa Kunkel** (Germany)
Observer-based data assimilation for isothermal gas transport using distributed measurements

17:30–17:45 **Jiten C. Kalita** (India)
Computation of flow past cactus-shaped cylinders: A hybrid immersed interface approach

19:00 *Welcome party*

TUESDAY – JULY 12

TUESDAY – PLENARY LECTURES

Aula Chairman: Eduard Feireisl

9:00–9:55 **Barbara Wohlmuth** (Germany)
Algorithms and applications of fractional PDEs

10:00–10:25 *Coffee break*

TUESDAY – INVITED LECTURES

Room 102 (ODE) Chairman: Mihály Pituk

10:30–11:05 **Masakazu Onitsuka** (Japan)
Ulam stability of generalized logistic equations

11:10–11:45 **Jan Čermák** (Czech Republic)
Stability regions for linear fractional and delay differential equations

12:00–14:00 *Lunch*

Room 104 (PDE) Chairman: Agnieszka Świerczewska-Gwiazda

10:30–11:05 **Ulisse Stefanelli** (Austria)
Doubly nonlinear stochastic evolution equations

11:10–11:45 **Gianluca Crippa** (Switzerland)
An elementary proof of existence and uniqueness for the Euler flow in uniformly localized Yudovich spaces

12:00–14:00 *Lunch*

Room 106 (NAA) Chairman: Dirk Praetorius

10:30–11:05 **Ulrik Skre Fjordholm** (Norway)
Numerical methods for conservation laws on networks

11:10–11:45 *Lunch*

TUESDAY – ODE MINISYMPOSIA

Room 102 Keynote speakers: Serena Matucci, Pavel Řehák

ODE-07 Asymptotic theory of differential and integral equations

14:00–14:25 **Serena Matucci** (Italy)
Existence and multiplicity of decaying solutions to BVP on the half-line for nonlinear equations with p-Laplacian

14:30–14:55 **Luisa Malaguti** (Italy)
Diffusion-convection reaction equations with sign-changing diffusivity

15:00–15:25 **Paola Rubbioni** (Italy)
Asymptotic stability of solutions of differential equations with delay

15:30–15:55 **Pavel Řehák** (Czech Republic)
Nonlinear Poincaré–Perron theorem

16:00–16:30 *Coffee break*

Room 302a Keynote speaker: Roberta Fabbri

ODE-05 Qualitative theory for linear Hamiltonian systems and nonautonomous dynamical systems

14:00–14:25 **Roberta Fabbri** (Italy)
Some results for nonautonomous linear Hamiltonian systems

14:30–14:55 **Peter Šepitka** (Czech Republic)
New comparison theorems for solutions of Riccati matrix differential equations without controllability condition

15:00–15:25 **Abel Garab** (Austria)
Absence of small solutions and existence of Morse decomposition for a cyclic system of delay differential equations

15:30–15:55 **Ana M. Sanz** (Spain)
Qualitative theory for monotone and sublinear non-autonomous finite-delay FDEs for an exponential ordering

16:00–16:30 *Coffee break*

Room 302b Keynote speaker: Agnieszka Malinowska

ODE-04 On consensus in multi-agent Systems

14:00–14:25 **Agnieszka B. Malinowska** (Poland)
Stability of multi-agents systems under DoS attacks

14:30–14:55 **Ewa Girejko** (Poland)
On impact of disturbance in the deployment problem of multi-agent system

15:00–15:25 **Dorota Mozyrska** (Poland)
Numerical simulations of fractional consensus approach in attitude dynamics modeling

15:30–15:55 **Malgorzata Wyrwas** (Poland)
Consensus of a fractional model in attitude dynamics

16:00–16:30 *Coffee break*

TUESDAY – ODE CONTRIBUTED TALKS

Room 102 Chairman: Milan Tvrdý

16:30–16:45 **Tomáš Kisela** (Czech Republic)
Oscillatory properties of fractional delay differential equations

16:50–17:05 **Giselle A. Monteiro** (Czech Republic)
On discontinuous sweeping processes and vanishing viscosity approximations

17:10–17:25 **Shuenn-Yih Chang** (Taiwan)
Problem-dependent formulas for solving stiff problems

17:30 *Poster session*

Room 302a Chairman: Josef Diblík

16:30–16:45 **Michal Veselý** (Czech Republic)
Perturbations of homogeneous linear difference systems with coefficient matrices from commutative groups

16:50–17:05 **Hiroshi Kajimoto** (Japan)
Ordinary differential equations derived from cluster integrals

17:10–17:25 **Jiřina Šišoláková** (Czech Republic)
Non-oscillation of linear and half-linear Euler type differential equations

17:30 *Poster session*

Room 302b Chairman: Feliz Minhós

16:30–16:45 **Jorge Rodríguez-López** (Spain)
Transversality conditions for discontinuous differential equations

16:50–17:05 **Martina Pavlačková** (Czech Republic)
Semilinear second-order differential inclusions in abstract spaces

17:10–17:25 **Natalia Dilna** (Slovak Republic)
D-stability of the initial value problem for symmetric nonlinear functional differential equations

17:30 *Poster session*

TUESDAY – PDE MINISYMPOSIA

Room 104 Keynote speaker: Antonín Slavík, Petr Stehlík

PDE-01 Spatially discrete evolution equations

14:00–14:25 **Hermen Jan Hupkes** (Netherlands)
Discrete mean curvature flows

14:30–14:55 **Vladimír Švígler** (Czech Republic)
Propagation reversal for bistable differential equations on trees

15:00–15:25 **Antonín Slavík** (Czech Republic)
Spatial maxima, unimodality, and asymptotic behavior of solutions to discrete diffusion equation

15:30–15:55 **Petr Stehlík** (Czech Republic)
Bifurcations in Nagumo equations on graphs

16:00–16:30 *Coffee break*

Room 103 Keynote speaker: Roman Shvydkoy

PDE-07 Hydrodynamics of collective behavior

14:00–14:25 **Roman Shvydkoy** (USA)
Global hypocoercivity of Fokker-Plank-Alignment models

14:30–14:55 **Daniel Lear** (Czech Republic)
Unidirectional flocks in collective dynamics

15:00–15:25 **Trevor M Leslie** (USA)
Sticky Particle Methods for the 1D Euler Alignment System

15:30–15:55 **Jan Peszek** (Poland)
Heterogeneous gradient flows with applications to collective dynamics

16:00–16:30 *Coffee break*

TUESDAY – PDE CONTRIBUTED TALKS

Room 104 Chairman: Ulisse Stefanelli

16:30–16:45 **Pavel Drábek** (Czech Republic)
On Szegö–Weinberger inequalities for special type of domains

16:50–17:05 **Jiří Benedikt** (Czech Republic)
Maximum principles for parabolic p-Laplacian problems

17:10–17:25 **Lukáš Kotrla** (Czech Republic)
Comparison principles in problems with p-Laplacian

17:30 *Poster session*

Room 103 Chairman: George Avalos

16:30–16:45 **Jan Eisner** (Czech Republic)
Critical points for reaction diffusion system with unilateral conditions

16:50–17:05 **Andrii Khrabustovskyi** (Czech Republic)
Operator estimates for homogenization in perforated domains

17:10–17:25 **Sumit Arora** (India)
Finite-approximate controllability of fractional functional evolution equation via variational approach

17:30 *Poster session*

Room 303 Chairman: Casey Rodriguez

16:30–16:45 **Angela Bašić-Šiško** (Croatia)
Existence and uniqueness of a generalized solution to the one-dimensional flow and thermal explosion micropolar reactive real gas model

16:50–17:05 **Miroslav Kolář** (Czech Republic)
Area preserving geodesic curvature driven flow of closed curves on a surface

17:30 *Poster session*

TUESDAY – NAA MINISYMPOSIA

Room 106 Keynote speaker: Klemens Fellner

NAA-03 Evolution differential equations with application to physics and biology II

14:00–14:25 **Klemens Fellner** (Austria)
Oscillatory behaviour of a nonlinear Becker-Döring type model for prion dynamics

14:30–14:55 **Michael Kniely** (Germany)
Global weak and renormalized solutions to a class of energy-reaction-diffusion systems

15:00–15:25 **Martin Brokate** (Germany)
Strong stationarity for an optimal control problem for a rate independent evolution

15:30–15:55 **Bao Quoc Tang** (Austria)
On dissipative reaction-diffusion systems

16:00–16:30 *Coffee break*

Room 304 Keynote speaker: Karen Veroy-Grepl

NAA-05 Informing physics-based models through data

14:00–14:25 **Karen Veroy-Grepl** (Netherlands)
Optimal experimental design in the deterministic and probabilistic settings

14:30–14:55 **Han Cheng Lie** (Germany)
Overconfidence in numerical Bayesian inference

15:00–15:25 **Masoumeh Dashti** (UK)
Nonparametric Bayesian inference of discretely observed diffusions

16:00–16:30 *Coffee break*

Room 303 Keynote speaker: Max Jensen

NAA-07 Computational methods for fully nonlinear equations and applications

14:00–14:25 **Max Jensen** (United Kingdom)
Discretising boundary conditions of fully nonlinear equations

14:30–14:55 **Indranil Chowdhury** (Croatia)
On numerical schemes for fractional order Mean Field Games

15:00–15:25 **Dietmar Gallistl** (Germany)
Convergence of a regularized finite element discretization of the two–dimensional Monge–Ampère equation

15:30–15:55 **Iain Smears** (UK)
Adaptive methods for fully nonlinear PDE

16:00–16:30 *Coffee break*

TUESDAY – NAA CONTRIBUTED TALKS

Room 106 Chairman: Michal Beneš

16:30–16:45 **Petr Tomášek** (Czech Republic)
Numerical solution of Caputo fractional differential equations initial value problems

16:50–17:05 **Utku Kaya** (Germany)
Local pressure-corrections for incompressible flows

17:10–17:25 **Sunčica Sakić** (Czech Republic)
On the error analysis of the time-continuous Discontinuous Galerkin scheme for degenerate parabolic equations

17:30 *Poster session*

WEDNESDAY – JULY 13

WEDNESDAY – PLENARY LECTURES

Aula Chairman: Mária Lukáčová-Medviďová

8:30–9:25 **Juncheng Wei** (Canada)
Stability of Sobolev inequalities and related topics

9:30–10:00 *Coffee break*

WEDNESDAY – OTHER PROGRAM

10:00–11:55 MINISYMPOSIA (see below)

12:00 *Lunch*

13:15 *Trip – meeting*

13:30 *Trip – boarding*

13:40 *Trip – departure*

WEDNESDAY – ODE MINISYMPOSIA

Room 102 Keynote speaker: Mihály Pituk

ODE-03 Qualitative properties of ordinary and delay differential equations

10:00–10:25 **Mihály Pituk** (Hungary)
Explicit values of the oscillation bounds for linear delay differential equations

10:30–10:55 **Davor Dragičević** (Croatia)
Shadowing for nonautonomous differential equations

11:00–11:25 **Teresa Faria** (Portugal)
Permanence and stability for a Nicholson's equation with mixed monotonicities

11:30–11:55 **Tibor Krisztin** (Hungary)
Periodic and connecting orbits for Mackey–Glass type equations

Room 103 Keynote speaker: Alexander Domoshnitsky

ODE-02 Stability of functional differential equations

10:00–10:25 **Alexander Domoshnitsky** (Israel)
On stability of delay differential equations

10:30–10:55 **Anatoli F. Ivanov** (USA)
Global asymptotic stability and periodic solutions in scalar differential delay equations

11:00–11:25 **Irada A. Dzhalladova** (Czech Republic)
Dynamical system with the non-Markovian process: stability and optimization

Room 303 Keynote speaker: Alberto Cabada

ODE-09 Topological and iterative methods on boundary value problems

10:00–10:25 **Alberto Cabada** (Spain)
Comparison results for local and nonlocal linear boundary value problems

10:30–10:55 **Sladana B. Dimitrijević** (Serbia)
The existence of a solution for nonlinear fractional differential equations where nonlinear term depends on the fractional and first order derivative of an unknown function

11:00–11:25 **Feliz Minhós** (Portugal)
On impulsive functional coupled systems of differential equations

WEDNESDAY – PDE MINISYMPOSIA

Room 104 Keynote speaker: Šárka Nečasová

PDE-03 Mathematical analysis: the interaction of fluids and solids

10:00–10:25 **Šárka Nečasová** (Czech Republic)
Existence of a weak solution to the problem of an interaction of compressible fluid with elastic structure

10:30–10:55 **Justin T. Webster** (USA)
Semigroup generation for Biot-Stokes interactions

11:00–11:25 **Boris Muha** (Croatia)
Fluid - Poroelastic Structure Interactions

11:30–11:55 **George Avalos** (USA)
Qualitative properties of a multilayered elasticity system - Stokes interaction

Room 302a Keynote speaker: Teresa Isernia

PDE-12 Nonlinear elliptic PDEs

10:00–10:25 **Teresa Isernia** (Italy)
Multiplicity and concentration results for some nonlinear Schrödinger equations with the fractional p-Laplacian

10:30–10:55 **Bartosz Bieganowski** (Poland)
Normalized ground states of the nonlinear Schrödinger equation with at least mass critical growth

11:00–11:25 **Laura Baldelli** (Poland)
Nonlinear elliptic critical problems in $\mathbb{R}^N$

11:30–11:55 **Ángel Crespo-Blanco** (Germany)
Parametric superlinear double phase problems with singular term and critical growth on the boundary

Room 302b Keynote speaker: Vít Průša

PDE-09 Complex dynamical systems in continuum mechanics

10:00–10:25 **Vít Průša** (Czech Republic)
Non-Linear stability and non-equilibrium thermodynamics – There and back again

10:30–10:55 **Angiolo Farina** (Czech Republic)
Mathematical modelling of viscoplastic flows

11:00–11:25 **Laurent Martin Witkowski** (Czech Republic)
On the role of arbitrary pollution effects on the stability of swirling free-surface flows

11:30–11:55 **Nicolas Boulle** (Czech Republic)
Bifurcation analysis of Rayleigh-Bénard convection using deflation

Room 304 Keynote speaker: Dan Goreac

PDE-10 Differential equations with random features and applications

11:00–11:25 **Dan Goreac** (China)
HJB approach to stochastic models of epidemics

11:30–11:55 **Eduard Rotenstein** (Romania)
Nonlinear Fokker-Planck equation on unbounded domain and featuring generalized reflecting boundary conditions

WEDNESDAY – NAA MINISYMPOSIA

Room 106 Keynote speaker: Martin Vohralík

NAA-01 Error control and adaptivity in numerical simulations

10:00–10:25 **Martin Vohralík** (France)
Error control and adaptivity in numerical simulations

10:30–10:55 **Tomáš Vejchodský** (Czech Republic)
A posteriori error bounds for eigenfunctions

11:00–11:25 **Philip Lukas Lederer** (France)
A note on asymptotically exact a posteriori error estimates for mixed Laplace eigenvalue problems

11:30–11:55 **Ani Miraçi** (Austria)
A-posteriori-steered h- and p-robust multigrid solvers

Room 304 Keynote speaker: Victor A. Kovtunenko

NAA-02 Evolution differential equations with application to physics and biology I

10:00–10:25 **Victor A. Kovtunenko** (Austria)
On solution of initial boundary value problems in hypoplasticity

10:30–10:55 **Bao Ngoc Tran** (Austria)
QSSA of the Michaelis-Menten reaction-diffusion system

THURSDAY – JULY 14

THURSDAY – PLENARY LECTURES

Aula Chairman: Barbara Kaltenbacher

9:00–9:55 **Alessandro Fonda** (Italy)
Generalizations of the Poincaré – Birkhoff Theorem for Hamiltonian systems

10:00–10:30 *Coffee break*

THURSDAY – INVITED LECTURES

Room 102 (ODE) Chairman: Elena Braverman

10:30–11:05 **Jean-Philippe Lessard** (Canada)
TBA

11:10–11:45 **Jaqueline Godoy Mesquita** (Brazil)
Neutral FDEs with state–dependent delays: linearized instability principle

12:00–14:00 *Lunch*

Room 104 (PDE) Chairman: Gianluca Crippa

10:30–11:05 **Dorin Bucur** (France)
Shape optimization in Stokes fluids

11:10–11:45 **Vincenzo Ambrosio** (Italy)
Fractional periodic problems with critical growth

12:00–14:00 *Lunch*

Room 106 (NAA) Chairman: Barbara Wohlmuth

10:30–11:05 **Daniel Peterseim** (Germany)
Nonlinear eigenvector problems and the simulation of Bose-Einstein condensates

11:10–11:45 **Patrick Farrell** (UK)
New finite elements for extremely high-order FEM

12:00–14:00 *Lunch*

ERC PRESENTATION

Room 102 Chairman: Josef Málek

16:30 ERC presentation

THURSDAY – ODE MINISYMPOSIA

Room 102 Keynote speaker: Josef Diblík

ODE-10 Advanced, delayed and mixed equations. Representation of solutions, boundedness, stability

14:00–14:25 **Josef Diblík** (Czech Republic)
Exponential stability of linear delayed equations

14:30–14:55 **Ferenc Hartung** (Hungary)
Differentiability of solutions with respect to parameters in a class
of neutral differential equations with state-dependent delays

15:00–15:25 **Gergely Röst** (Hungary)
Hopf bifurcation made simple for some scalar DDEs

15:30–15:55 **Abel Garab** (Austria)
Sharp oscillation criteria for first order linear differential equations
with variable delays

16:00–16:30 *Coffee break*

Room 103 Keynote speaker: Guglielmo Feltrin, Elisa Sovrano

ODE-06 Advances for problems with nonlinear differential operators

13:30–13:55 **Elisa Sovrano** (Italy)
Reactive-convective Perona-Malik equations: regular vs. nonregular wavefronts

14:00–14:25 **Maurizio Garrione** (Italy)
Nonlinear diffusions and wave fronts: some recent results

14:30–14:55 **Katarzyna Szymanska-Debowska** (Poland)
Differential equations involving homeomorphism with nonlinear boundary conditions

15:00–15:25 **Eduardo Muñoz-Hernández** (Spain)
Nodal solutions in a class of Sturm-Liouville BVP's with nonnegative degenerate weights

15:30–15:55 **Guglielmo Feltrin** (Italy)
Periodic solutions to a perturbed relativistic Kepler problem

16:00–16:30 *Coffee break*

THURSDAY – ODE CONTRIBUTED TALKS

Room 302a Chairman: Jan Čermák

16:30–16:45 **Petr Hasil** (Czech Republic)
Riccati technique and conditional oscillation of second order equations

16:50–17:05 **Zuzana Pátíková** (Czech Republic)
Neutral half-linear differential equations and the modified Riccati technique

17:10–17:25 **Irena Jadlovská** (Slovensko)
Kneser oscillation theorem for second-order half-linear delay differential equations

19:00 *Conference dinner*

Room 302b Chairman: Davor Dragičević

16:30–16:45 **Ignacio Marquez Albes** (Spain)
Second order Stieltjes derivatives and differential equations

16:50–17:05 **Mónika Polner** (Hungary)
Bifurcations of neural fields on the sphere

17:10–17:25 **Viera Štoudková Růžičková** (Czech Republic)
Discrete Riccati matrix equation and the order preserving property

17:30–17:45 **Gabriela Vážanová** (Czech Republic)
Asymptotic behavior of solutions to an advance-delay differential
equation

19:00 *Conference dinner*

THURSDAY – PDE MINISYMPOSIA

Room 104 Keynote speaker: Milan Pokorný

PDE-06 Analysis of compressible multiphase systems

14:00–14:25 **Milan Pokorný** (Czech Republic)
Two-phase compressible/incompressible Navier–Stokes system with
inflow-outflow boundary conditions

14:30–14:55 **Nilasis Chaudhuri** (UK)
Analysis of generalized Aw-Rascle system

15:00–15:25 **Cheng Yu** (USA)
Infinitely many solutions to the isentropic system of gas dynamics

15:30–15:55 **Nicola Zamponi** (Austria)
Nonisothermal Richards flow in porous media with cross diffusion

16:00–16:30 *Coffee break*

Room 302a Keynote speaker: Aneta Wróblewska-Kamińska

PDE-05 Analysis of multiscale problems in PDEs

14:00–14:25 **Aneta Wróblewska-Kamińska** (Poland)
Multiscale analysis, low Mach number limit: from compressible to
incompressible system

14:30–14:55 **Matteo Caggio** (Czech Republic)
Low Mach number flows and dimension reduction in fluid mechanics

15:00–15:25 **Tomasz Debiec** (France)
Incompressible limit for a two-species tumour growth model

15:30–15:55 **Václav Mácha** (Czech Republic)
Low stratification of the complete Euler system

16:00–16:30 *Coffee break*

Room 302b Keynote speaker: Sebastian Schwarzacher

PDE-02 Analysis for fluid-structure interactions

14:00–14:25 **Sebastian Schwarzacher** (Czech Republic)
Contactless rebound of elastic bodies in a viscous incompressible fluid

14:30–14:55 **Barbora Benešová** (Czech Republic)
A variational approach to fluid structure interaction

15:00–15:25 **Richard Höfer** (France)
Homogenization of the Navier-Stokes equations in perforated domains in the inviscid limit

15:30–15:55 **Srdan Trifunović** (Serbia)
Time-periodic solutions to a compressible fluid and beam interaction problem

16:00–16:30 *Coffee break*

THURSDAY – PDE CONTRIBUTED TALKS

Room 104 Chairman: Dorin Bucur

16:30–16:45 **Marko Radulovic** (Croatia)
The effects of viscous dissipation on the Darcy–Brinkman flow

16:50–17:05 **Volodymyr Mikhailets** (Ukraine)
Parabolic boundary-value problems in generalized Sobolev spaces

17:10–17:25 **Tomomi Yokota** (Japan)
Stabilization in degenerate parabolic equations in divergence form and application to chemotaxis systems

17:30–17:45 **Phuoc-Truong Huynh** (Austria)
Semilinear nonlocal elliptic equations with source term and measure data

19:00 *Conference dinner*

Room 103 Chairman: Piotr Biler

16:30–16:45 **Tomáš Bárta** (Czech Republic)
Stokes problem with dynamic boundary conditions

16:50–17:05 **Petr Pauš** (Czech Republic)
Analytical and numerical solution of curve dynamics modeling dislocation dynamics and topological changes

19:00 *Conference dinner*

Room 303 Chairman: Masaaki Mizukami

16:30–16:45 **Yuya Tanaka** (Japan)
Blow-up phenomena in a quasilinear chemotaxis system with logistic source

16:50–17:05 **Malte Kampschulte** (Czech Republic)
Variational methods for non-convex problems involving inertia

17:10–17:25 **Yutaro Chiyo** (Japan)
Behavior of solutions to a quasilinear attraction-repulsion chemotaxis system

17:30–17:45 **Djamal Ait-Akli** (Algeria)
Initial-boundary value problem for second order hyperbolic operator with mixed boundary conditions

19:00 *Conference dinner*

THURSDAY – NAA MINISYMPOSIA

Room 106 Keynote speaker: Robert Scheichl

NAA-04 Numerical homogenisation and multiscale methods

14:00–14:25 **Robert Scheichl** (Germany)
Multiscale spectral generalised finite element methods

14:30–14:55 **Jean Bénézech** (UK)
Scalable MS-GFEM applied to composite aero-structures

15:00–15:25 **Philip Freese** (Germany)
Super-localized orthogonal decomposition for convection-dominated diffusion problems

15:30–15:55 **Kathrin Smetana** (USA)
Randomized multiscale methods for heterogeneous nonlinear PDEs

16:00–16:30 *Coffee break*

Room 303 Keynote speaker: Karel Tůma

NAA-11 Mathematical models and numerical methods in solid mechanics

14:00–14:25 **Karel Tůma** (Czech Republic)
Phase-field model for evolution of martensitic microstructure in shape memory alloys: large-scale finite element simulations

14:30–14:55 **Pablo Alexei Gazca Orozco** (Czech Republic)
Numerical computations for a novel description of rate-type inelastic responses in solids

15:00–15:25 **Mohsen Rezaee Hajidehi** (Poland)
A coupled phase-field and crystal plasticity model for deformation twinning and plastic slip

15:30–15:55 **Miroslav Frost** (Czech Republic)
Numerical implementation of constitutive models of materials with strongly coupled dissipative processes

16:00–16:30 *Coffee break*

Room 304 Keynote speaker: Marie-Therese Wolfram

NAA-08 **Structure preserving methods for evolution equations**

14:00–14:25 **Marie-Therese Wolfram** (UK)
Lagrangian schemes for Wasserstein Gradient Flows

14:30–14:55 **Bertram Düring** (UK)
On a structure-preserving variational scheme for nonlinear diffusion equations

15:00–15:25 **Nora Marie Philippi** (Germany)
A structure preserving discretization scheme for gas transport in pipe networks

16:00–16:30 *Coffee break*

THURSDAY – NAA CONTRIBUTED TALKS

Room 106 Chairman: Carola-Bibiane Schönlieb

16:30–16:45 **Miloslav Feistauer** (Czech Republic)
Theory and applications of the DGM in time dependent domains

16:50–17:05 **Vít Dolejší** (Czech Republic)
Discontinuous Galerkin method for nonlinear partial differential equations: goal-oriented error estimates

17:10–17:25 **Scott Congreve** (Czech Republic)
Iterative discontinuous Galerkin finite element method for strongly monotone quasi-linear PDEs

19:00 *Conference dinner*

FRIDAY – JULY 15

FRIDAY – PLENARY LECTURES

Aula Chairman: Zuzana Došlá

9:00–9:55 **Barbara Kaltenbacher** (Austria)
Mathematics of nonlinear acoustics: modeling, analysis and inverse problems

10:00–10:30 *Coffee break*

FRIDAY – INVITED LECTURES

Room 102 (ODE) Chairman: Robert Hakl

10:30–11:05 **Pedro J. Torres** (Spain)
Periodic solutions of the Lorentz force equation

Room 104 (PDE) Chairman: Šárka Nečasová

10:30–11:05 **Philippe Laurencot** (France)
The thin film Muskat problem

Room 106 (NAA) Chairman: Daniel Peterseim

10:30–11:05 **Carola-Bibiane Schönlieb** (UK)
Machine learned regularization for solving inverse problems

FRIDAY – ODE CONTRIBUTED TALKS

Room 102 Chairman: Masakazu Onitsuka

11:20–11:35 **Swaroop Nandan Bora** (India)
New asymptotic stability conditions for linear time-varying fractional systems

11:40–11:55 **Maria Guadalupe Morales Macias** (Czech Republic)
Almost oscillatory fractional differential equations

12:30–12:40 *Closing ceremony*

12:45 *Lunch*

Room 103 Chairman: Jan Tomeček

11:20–11:35 **Piotr Stefaniak** (Poland)
Periodic solutions to symmetric Newtonian systems in neighborhoods of orbits of equilibria

11:40–11:55 **Věra Krajščáková** (Czech Republic)
Multiplicity results for bouncing solutions of generalized Lazer-Solimini equation

12:00–12:15 **Michaela Zahradníková** (Czech Republic)
Fisher–Kolmogorov equation with discontinuous density dependent diffusionbulli

12:30–12:40 *Closing ceremony*

12:45 *Lunch*

FRIDAY – PDE CONTRIBUTED TALKS

Room 104 Chairman: Volodymyr Mikhailets

11:20–11:35 **Rakesh Arora** (Czech Republic)
Existence and regularity results for a class of parabolic problems
with double phase flux of variable growth

11:40–11:55 **Buddhika Priyasad Sembukutti Liyanage** (Czech Republic)
The existence and dimension of the attractor for the 3D flow of a
non-Newtonian fluid subject to dynamic boundary conditions

12:00–12:15 **Hana Levá** (Czech Republic)
Travelling wave solutions of the suspension bridge type equation

12:30–12:40 *Closing ceremony*

12:45 *Lunch*

FRIDAY – PDE+NAA CONTRIBUTED TALKS

Room 106 Chairman: Miloslav Feistauer

11:20–11:35 **Jiří Vala** (Czech Republic)
Numerical approaches to the modelling of fracture in quasi-brittle
materials

11:40–11:55 **Jana Radová** (Czech Republic)
Identification of material parameters for Gao beam

12:00–12:15 **Michael Zelina** (Czech Republic)
On the uniqueness of the solution and finite-dimensional attractors
for the 3D flow with dynamic boundary condition

12:30–12:40 *Closing ceremony*

12:45 *Lunch*

MONDAY, JULY 11

Plenary lectures

	Aula
9:00–9:15	*Opening Ceremony*
Chairman	Fonda
9:15–10:10	Siegmund
10:15–10:45	*Coffee break*
Chairman	Wei
10:45–11:40	Lukáčová-Medviďová

Invited lectures

	Room 102	**Room 104**	**Room 106**
	ODE SESSION	PDE SESSION	NAA SESSION
Chairman	Andres	Ambrosio	Nürnberg
11:50–12:25	Braverman	Swierczewska-Gwiazda	Praetorius
12:30–14:00	*Lunch*		

MONDAY, JULY 11

ODE minisymposia

	Room 102	Room 302a	Room 302b
	ODE MS-11	ODE MS-01	ODE MS-08
14:00–14:25	Tomeček*	Nishiguchi	Manojlović*
14:30–14:55	Atlasiuk	Fujimoto	Djordjević
15:00–15:25	Andres	Hakl	Kapešić
15:30–15:55	Tvrdý	Matsunaga*	Rasvan
16:00–16:30	*Coffee break*		

*Keynote speaker

ODE contributed talks

	Room 102	Room 302a	Room 302b
Chairman	Godoy Mesquita	Ivanov	Faria
16:30–16:45	Huzak	Burkotová	López-Somoza
16:50–17:05	Zemánek	Ficek	Suda
17:10–17:25	Nechvátal	Balázs	Homs-Dones
17:30–17:45	Gidoni	Jekl	Srivastava
19:00–	*Welcome party*		

MONDAY, JULY 11

PDE minisymposia

	Room 104	**Room 103**	**Room 303**
	PDE MS-04	PDE MS-08	PDE MS-11
14:00–14:25	Bulíček*	Biler	Franca*
14:30–14:55	Lear	Laurencot	Colasuonno
15:00–15:25	Málek	Esteve Yague	Bae
15:30–15:55	Rodriguez	Souplet*	Dalbono, Franca
16:00–16:30	*Coffee break*		

*Keynote speaker

PDE contributed talks

	Room 104	**Room 103**
Chairman	Drábek	Laurencot
16:30–16:45	Mizukami	Rizzi
16:50–17:05	Nguyen	Maringová
17:10–17:25	S. Erbay	Kossowski
17:30–17:45	Hajduk	Klinikowski
19:00–	*Welcome party*	

MONDAY, JULY 11

NAA minisymposia

	Room 106	Room 304
	NAA MS-09	NAA MS-10
14:00–14:25	Nürnberg*	Richter*
14:30–14:55	Binz	Heinlein
15:00–15:25	Stinner	Jendersie
15:30–15:55	Bachini	
16:00–16:30	Coffee break	

*Keynote speaker

NAA contributed talks

	Room 106
Chairman	Farell
16:30–16:45	Beneš
16:50–17:05	H. A. Erbay
17:10–17:25	Kunkel
17:30–17:45	Kalita
19:00–	Welcome party

TUESDAY, JULY 12

Plenary lectures

	Aula
Chairman	Feireisl
9:00–9:55	Wohlmuth
10:00–10:30	*Coffee break*

Invited lectures

	Room 102	**Room 104**	**Room 106**
	ODE SESSION	PDE SESSION	NAA SESSION
Chairman	Pituk	Świerczewska-Gwiazda	Praetorius
10:30–11:05	Onitsuka	Stefanelli	Fjordholm
11:10–11:45	Čermák	Crippa	
12:00–14:00	*Lunch*		

TUESDAY, JULY 12

ODE minisymposia

	Room 102	**Room 302a**	**Room 302b**
	ODE MS-07	ODE MS-05	ODE MS-04
14:00–14:25	Matucci*	Fabbri*	Malinowska*
14:30–14:55	Malaguti	Šepitka	Girejko
15:00–15:25	Rubbioni	Garab	Mozyrska
15:30–15:55	Řehák*	Sanz	Wyrwas
16:00–16:30	*Coffee break*		

*Keynote speaker

ODE contributed talks

	Room 102	**Room 302a**	**Room 302b**
Chairman	Tvrdý	Diblík	Minhós
16:30–16:45	Kisela	Veselý	Rodríguez-López
16:50–17:05	Monteiro	Kajimoto	Pavlačková
17:10–17:25	Chang	Šišoláková	Dilna
17:30–	*Poster session*		

TUESDAY, JULY 12

PDE minisymposia

	Room 104	**Room 103**
	PDE MS-01	PDE MS-07
14:00–14:25	Hupkes	Shvydkoy*
14:30–14:55	Švígler	Lear
15:00–15:25	Slavík*	Leslie
15:30–15:55	Stehlík*	Peszek
16:00–16:30	*Coffee break*	

*Keynote speaker

PDE contributed talks

	Room 104	**Room 103**	**Room 303**
Chairman	Stefanelli	Avalos	Rodriguez
16:30–16:45	Drábek	Eisner	Bašić-Šiško
16:50–17:05	Benedikt	Khrabustovskyi	Kolář
17:10–17:25	Kotrla	S. Arora	
17:30–	*Poster session*		

TUESDAY, JULY 12

NAA minisymposia

	Room 106	**Room 303**	**Room 304**
	NAA MS-03	NAA MS-07	NAA MS-05
14:00–14:25	Fellner*	Jensen*	Vero-Grepl*
14:30–14:55	Kniely	Chowdhury	Lie
15:00–15:25	Brokate	Gallistl	Dashti
15:30–15:55	Tang	Smears	
16:00–16:30	*Coffee break*		

*Keynote speaker

NAA contributed talks

	Room 106
Chairman	Beneš
16:30–16:45	Tomášek
16:50–17:05	Kaya
17:10–17:25	Sakić
17:30–	*Poster session*

WEDNESDAY, JULY 13

Plenary lectures

	Aula
Chairman	Lukáčová
8:30–9:25	Wei
9:30–10:00	*Coffee break*

ODE minisymposia

	Room 102	**Room 103**	**Room 303**
	ODE MS-03	ODE MS-02	ODE MS-09
10:00–10:25	Pituk*	Domoshnitsky*	Cabada*
10:30–10:55	Dragičević	Ivanov	Dimitrijević
11:00–11:25	Faria	Dzhalladova	Minhós
11:30–11:55	Krisztin		
12:00–13:15	*Lunch*		

*Keynote speaker

13:15	*Trip – meeting*
13:30	*Trip – boarding*
13:40	*Trip – departure*

WEDNESDAY, JULY 13

PDE minisymposia

	Room 104	**Room 302a**	**Room 302b**	**Room 304**
	PDE MS-03	PDE MS-12	PDE MS-09	PDE MS-10
10:00–10:25	Nečasová*	Isernia*	Průša*	
10:30–10:55	Webster	Bieganowski	Farina	
11:00–11:25	Muha	Baldelli	Martin Witkowski	Goreac*
11:30–11:55	Avalos	Crespo-Blanco	Boulle	Rotenstein
12:00–13:15	*Lunch*			

*Keynote speaker

NAA minisymposia

	Room 106	**Room 304**
	NAA MS-01	NAA MS-02
10:00–10:25	Vohralík*	Kovtunenko*
10:30–10:55	Vejchodský	Ngoc
11:00–11:25	Lederer	
11:30–11:55	Miraçi	
12:00–13:15	*Lunch*	

*Keynote speaker

13:15	*Trip – meeting*
13:30	*Trip – boarding*
13:40	*Trip – departure*

THURSDAY, JULY 14

Plenary lectures

	Aula
Chairman	Kaltenbacher
9:00–9:55	Fonda
10:00–10:30	*Coffee break*

Invited lectures

	Room 102	**Room 104**	**Room 106**
	ODE session	PDE session	NAA session
Chairman	Braverman	Crippa	Wohlmuth
10:30–11:05	Lessard	Bucur	Peterseim
11:10–11:45	Godoy Mesquita	Ambrosio	Farrell
12:00–13:30	*Lunch*		

THURSDAY, JULY 14

ODE minisymposia

	Room 102	**Room 103**
	ODE MS-10	ODE MS-06
13:30–13:55		Sovrano*
14:00–14:25	Diblík*	Garrione
14:30–14:55	Hartung	Szymańska-Dębowska
15:00–15:25	Röst	Muñhoz-Hernández
15:30–15:55	Garab	Feltrin*
16:00–16:30	*Coffee break*	

*Keynote speaker

ODE contributed talks

	Room 302a	**Room 302b**
Chairman	Čermák	Dragičević
16:30–16:45	Hasil	Marquez Albes
16:50–17:05	Pátíková	Polner
17:10–17:25	Jadlovská	Štoudková Růžičková
17:30–17:45		Vážanová
19:00–	*Conference dinner*	

	Room 102
Chairman	Málek
16:30	*ERC presentation*

THURSDAY, JULY 14

PDE minisymposia

	Room 104	**Room 302a**	**Room 302b**
	PDE MS-06	PDE MS-05	PDE MS-02
14:00–14:25	Pokorný*	Wróblewska-Kamińska*	Schwarzacher*
14:30–14:55	Chaudhuri	Caggio	Benešová
15:00–15:25	Yu	Dębiec	Höfer
15:30–15:55	Zamponi	Mácha	Trifunović
16:00–16:30	*Coffee break*		

*Keynote speaker

PDE contributed talks

	Room 104	**Room 103**	**Room 303**
Chairman	Bucur	Biler	Mizukami
16:30–16:45	Radulovic	Bárta	Tanaka
16:50–17:05	Mikhailets	Pauš	Kampschulte
17:10–17:25	Yokota		Chiyo
17:30–17:45	Huynh		Ait-Akli
19:00–	*Conference dinner*		

	Room 102
Chairman	Málek
16:30	*ERC presentation*

THURSDAY, JULY 14

NAA minisymposia

	Room 106	**Room 303**	**Room 304**
	NAA MS-04	NAA MS-11	NAA MS-08
14:00–14:25	Scheichl*	Tůma*	Wolfram*
14:30–14:55	Bénézech	Gazca Orozco	Düring
15:00–15:25	Freese	Rezaee Hajidehi	Philippi
15:30–15:55	Smetana	Frost	
16:00–16:30	*Coffee break*		

*Keynote speaker

NAA contributed talks

	Room 106
Chairman	Schönlieb
16:30–16:45	Feistauer
16:50–17:05	Dolejší
17:10–17:25	Congreve
17:30–17:45	
19:00–	*Conference dinner*

	Room 102
Chairman	Málek
16:30	*ERC presentation*

FRIDAY, JULY 15

Plenary lectures

	Aula
Chairman	Došlá
9:00–9:55	Kaltenbacher
10:00–10:30	*Coffee break*

Invited lectures

	Room 102	**Room 104**	**Room 106**
	ODE session	PDE session	NAA session
Chairman	Hakl	Nečasová	Peterseim
10:30–11:05	Torres	Laurencot	Schönlieb

FRIDAY, JULY 15

Contributed talks

	Room 102	**Room 103**	**Room 104**	**Room 106**
	ODE SESSION	ODE SESSION	PDE SESSION	PDE+NAA
Chairman	Onitsuka	Tomeček	Mikhailets	Feistauer
11:20–11:35	Bora	Stefaniak	R. Arora	Vala
11:40–11:55	Morales Macias	Krajščáková	Sembukutti	Radová
12:00–12:15		Zahradníková	Levá	Zelina
12:30–12:40	*Closing ceremony*			
12:45–	*Lunch*			