# ACOMEN 2017

**September 18-22, Ghent, Belgium**


# Conference program

**Editors:**
Marián Slodička, Ghent University
Karel van Bockstal, Ghent University

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S. Pop (UHasselt, Belgium)
K. Van Bockstal (Ghent University, Belgium)

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S. Pop (UHasselt, Belgium)

**Sponsors and partners:**




## Welcome word from Marián Slodička (conference chair)

Dear participants,

First of all, I wish to welcome you to the city of Ghent. We will have more than one hundred talks during this week!

This is already the seventh edition of the international conference on Advanced COmputational Methods in ENgineering. Like the previous editions of the conference, themes are concentrated on mathematical modeling, simulation and numerical methods for solving scientific problems from various engineering disciplines. I would like to thank all of its participants because they turn every ACOMEN into an interesting, learning-full and pleasant event.

Another important factor of the success of ACOMEN are the highstanding invited main lectures given by world-wide recognized experts in their respective research fields: Susanne C. Brenner (Louisiana State University), Zdzisław Brzeźniak (University of York), Martin Burger (University of Münster), Charles Elliott (University of Warwick), Ralf Hiptmair (ETH Zürich), Michael Klibanov (University of North Carolina at Charlotte), Peter Knabner (Universität Erlangen-Nürnberg), and Alfio Quarteroni (Ecole Polytechnique Federale de Lausanne).

I also thank the session chairs and organizers of the mini symposia for their engagement; Markus Bause, Thomas Carrao, Ivan Cimrák, Rob De Staelen, Abdellatif El Badia, Peter Frolkovič, Christophe Geuzaine, Thomas Henneron, Matteo Icardi, Mohammad Issa, Iveta Jančigová, Klaus Kaiser, Serge Nicaise, Florin Adrian Radu, Hendrik Rogier, Ruth V. Sabariego, and Jochen Schütz.

Special thanks goes to the organizational team of this edition, all technical staff working behind the scenes, and in particular Karel van Bockstal, conference secretary. Should you have any questions or specific needs during our meeting, we are more than glad to help you at the conference reception desk.

I hope you will enjoy your stay!

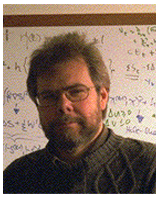
Kind regards,
Marián Slodička

# Plenary speakers

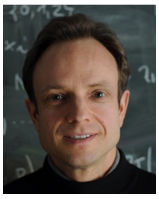
**Susanne C. Brenner**
Louisiana State University

**Zdzisław Brzeźniak**
University of York

**Martin Burger**
University of Münster



**Charles Elliot**
University of Warwick



**Ralf Hiptmair**
ETH Zürich

**Michael Klibanov**
University of North Carolina at Charlotte

**Peter Knabner**
Universität Erlangen-Nürnberg

**Alfio Quarteroni**
École Polytechnique Fédérale de Lausanne

# In memory of Patrick Dular

Our friend and colleague Patrick Dular passed away on September 6th 2017, struck down by a sudden illness at the age of 50. He leaves behind three sons (Julien, Tom and Bruno) and his partner Pascale. Patrick was born on August 28, 1967 in Belgium. After graduating as a power systems electrical engineer in 1990, he obtained his PhD thesis at the University of Liège in 1994. A genuine researcher, his whole career blossomed out at the University of Liège, appointed by the Belgian Fund for Scientific Research (FNRS) successively as Postdoctoral Researcher in 1994, Research Associate in 1996, Senior Research Associate in 2007, and Research Director (the highest grade at FNRS) in 2012.

Patricks research was broadly concerned with the mathematical and numerical modelling of electromagnetic systems. In particular, his interests led him to publish seminal papers on the use of Whitney finite elements for three-dimensional eddy current problems. His recent work focused on advanced techniques to handle the coupling of different physical models and numerical methods. Since 1997, he was developing the open source software environment GetDP for the treatment of such coupled problems in collaboration with his colleague Christophe Geuzaine at the University of Liège, as well as with numerous PhD and post-doctoral students.

Patrick was an avid traveller and, as a globe-trotter scientist, he was a frequent invited researcher in France, Finland and Brazil, and was part of the scientific committees of numerous international conferences and symposiums such as EMF, Numelec, COMPUMAG, CEFC, EPNC, ACOMEN and ISEF. He was officer of the International Compumag Society since 2008 and was co-chairman of the editorial board for COMPUMAG-Aachen in 2007 and COMPUMAG-Budapest in 2013. He was chairman of six editions of the International Symposium on Electric and Magnetic Fields (EMF) between 1996 and 2009.

Over the course of his very active career, Patrick advised or co-advised several PhD theses. He will be fondly remembered by many current and former students and colleagues for his enthusiasm to communicate about his passion not only for science and engineering, but also for adventure, outdoor activities, photography and of course his three beloved kids.

# Important information

## Venue:

All scientific acitivities take place in the congress center 'Het Pand', Onderbergen 1, 9000 Gent.

## Rooms:

The **plenary lectures** take place in room **Refter** (located on the ground floor), except on Wednesday afternoon when it takes place in Room **Rector Vermeylen** (second floor).

The **mini-symposia** and open sessions take place in the rooms

- **Refter** (ground floor)
- **Rector Vermeylen** (second floor)
- **Rector Blancquaert** (third floor)

## Presentations:

The length of an oral presentation is 20 minutes (including 5 minutes of discussion).

The length of a plenary talk is 45 minutes followed by 10 minutes of discussion.

We kindly ask the chairmen to lead the plenary talks and conference sessions.

Please download a copy of your presentations to the computer in the room before the session starts.

## Registration and conference desk:

The conference desk is located in the main hall of the building.
Opening hours:

- Monday: 8:00-19:00
- Tuesday, Wednesday, Thursday: 8:30 - 10:30 and 13:00-14:00

Mobile: +32 483 199 947 (only in case of urgency)

## Wifi:

You can have access to the internet by connecting to the **eduroam** wifi network. You follow your university or institution's login procedure.

If your university or institution is not participating in eduroam, then you can access the **local wifi network** by following the instructions at the conference desk, where a **password** and a **username** will be provided.

## Group photo:

Wednesday, September 20th at 18:50 before the conference dinner at the entrance of the building.

## Welcome reception and conference dinner:

The **welcome reception** takes place in the **Kapittelzaal** (ground floor) on **Monday, September 18th at 19:00**.

The **conference dinner** is scheduled on **Wednesday, September 20th at 19:00** in Room **Refter**. The conference badge serves as proof of entrance.

## Cultural excursion:

The **cultural excursion** is scheduled on **Friday, 22nd of September**.

Program: a boat trip (starting in Temse) along the renewed Antwerp quays, the MAS and the impressive new Havenhuis, Doel, Lillo and the container ports. The tour is guided by an English-speaking guide.

We leave at the congress center **Het Pand at 8:30** sharp and expect to be back in Ghent around **19:30**.

Lunch is included. Drinks are not included and are to be paid on board.

# Monday, September 18th

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| **8:00 - 9:00** | Registration and welcome coffee or tea |
| **9:00 - 9:30** | Opening conference in room Refter:<br>• Roger Van Keer (initiator of the first ACOMEN conference in 1998)<br>• Prof. Dr. Ir. Patrick De Baets (Faculty of Engineering and Architecture UGent)<br>• Practical information |
| **9:30 - 10:25** | **Plenary lecture**<br>**Chair:** Knabner Peter, **room:** Refter<br>*Brenner Susanne C.* - $C^0$ Interior Penalty Methods |
| **10:30 - 12:10** | **MS2(a) - IMEX schemes for hyperbolic problems**<br>**Chair:** Schütz Jochen, **room:** Refter<br>10:30 – 10:50 *Boscarino Sebastiano* - A unified IMEX strategy for hyperbolic systems with multiscale relaxation<br>10:50 – 11:10 *Kaiser Klaus* - A new stable splitting for singularly perturbed equations<br>11:10 – 11:30 *Nigro Alessandra* - High-order accurate implicit time integration methods applied to semidiscrete Discontinuous Galerkin approximations for unsteady low Mach number flows<br>11:30 – 11:50 *Jaust Alexander* - Multiderivative time integrators for a hybridized discontinuous Galerkin method<br><br>**MS6(a) - Novel trends and challenges in electromagnetic full-wave modelling**<br>**Chair:** Rogier Hendrik, **room:** Rector Vermeylen<br>10:30 – 10:50 *Andriulli F. P.* - Calderon Preconditioners for the PMCHWT Integral Equation Based on the Quasi-Helmholtz Projectors<br>10:50 – 11:10 *Casati Daniele* - Coupling of FEM and Multiple Multipole Program for Computational Electromagnetics<br>11:10 – 11:30 *Cools Kristof* - Local Preconditioner for the Maxwell BETI Method<br>11:30 – 11:50 *Gossye Michiel* - A Novel Calderón Preconditioner for the Simulation of Conductive and High-Dielectric Contrast Media |

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| **10:30 - 12:10** | **OS7**<br>**Chair:** Frolkovič Peter, **room:** Rector Blancquaert<br>10:30 – 10:50 *Crevecoeur Guillaume* - Data-driven discovery of the nonlinear dynamics in an electromechanical drivetrain using mixed norm inverse solver<br>10:50 – 11:10 *Melicher Valdemar* - Adjoint sensitivity for ODE based statistical models<br>11:10 – 11:30 *Slodička Marián* - Moving rigid body with perfect contact with surrounding area: Direct and Inverse source problem<br>11:30 – 11:50 *Vázquez-Méndez Miguel E.* - Optimal management of an urban road network with an environmental perspective<br>11:50 – 12:10 *Van Daele Marnix* - MATSLISE, a Matlab package for solving Sturm-Liouville and Schrodinger equations |
| **12:10 - 14:00** | **Lunch break** |
| **14:00 - 14:55** | **Plenary lecture**<br>**Chair:** Brenner Susanne C., **room:** Refter<br>*Knabner Peter* - Micro-Macro Models for Reactive Flow and Transport Problems in Complex Media |
| **15:00 - 16:20** | **MS2(b) - IMEX schemes for hyperbolic problems**<br>**Chair:** Kaiser Klaus, **room:** Refter<br>15:00 – 15:20 *Schütz Jochen* - On the stability of IMEX methods<br>15:20 – 15:40 *Zeifang Jonas* - Investigation of a novel splitting scheme for the weakly compressible Euler equations<br>15:40 – 16:00 *Shin Jaemin* - Energy stable and high-order methods for gradient flows based on the Convex Splitting Runge–Kutta methods<br><br>**MS6(b) - Novel trends and challenges in electromagnetic full-wave modelling**<br>**Chair:** Cools Kristof, **room:** Rector Vermeylen<br>15:00 – 15:20 *Rogier Hendrik* - Stochastic Framework to Quantify Variability and Uncertainty in Wireless Links<br>15:20 – 15:40 *Vande Ginste Dries* - A Leapfrog Alternating-Direction Hybrid Implicit-Explicit FDTD Method for Local Grid Refinement<br>15:40 – 16:00 *Galba Michal* - Determination of a time-dependent convolution kernel from a boundary measurement |

**15:00 - 16:20**

**MS8(a) - Inverse source problems : recent developments**
**Chair:** El Badia Abdellatif, **room:** Rector Blancquaert
15:00 – 15:20 *Grimmonprez Marijke* - Full discretization of an inverse source problem

15:20 – 15:40 *Mukanova Balgaisha* - GPR data interpretation problem and ISP

15:40 – 16:00 *Diallo Malal* - Electroencephalography inverse problem in neonates

16:00 – 16:20 *Van Bockstal Karel* - The identification of a space-dependent load source in isotropic thermoelastic systems: numerical experiments

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**16:20 - 16:50** **Coffee break**

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**16:50 - 18:10**

**MS3 - Numerical methods for evolving surfaces**
**Chair:** Frolkovič Peter, **room:** Refter
16:50 – 17:10 *Frolkovič Peter* - Semi-implicit methods for numerical solution of level set advection equation

17:10 – 17:30 *Hahn Jooyoung* - Semi-implicit method with inflow-based gradient for the G-equation model on a polyhedron mesh

17:30 – 17:50 *Urbán Jozef* - Atlas based image segmentation

17:50 – 18:10 *Ambróz Martin* - Numerical modelling of forest fire propagation

**OS2**
**Chair:** Pop Iuliu Sorin, **room:** Rector Vermeylen
16:50 – 17:10 *Ait-Ali Takfarines* - Implementing adequate subsonic boundary conditions in the Spectral Difference Method for the compressible Navier-Stokes equations

17:10 – 17:30 *Singh Vikram* - p-adaptation strategies for a Flux Reconstruction based Compressible Navier Stokes solver

17:30 – 17:50 *Hokpunna Arpiruk* - Development of two dimensional Finite Surface Discretization for Fluid Flows

17:50 – 18:10 *Hocine Safia* - Quality of the ruin probabilities approximation using the regenerative processes approach regarding to large claims

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| **16:50 - 18:10** | **OS1**<br>**Chair:** Radu Florin Adrian, **room:** Rector Blancquaert<br>16:50 – 17:10 *Arrarás Andréas* - Multipoint flux mixed finite element methods for slightly compressible flow in porous media<br>17:10 – 17:30 *Fernández Francisco* - Water artificial circulation for eutrophication control<br>17:30 – 17:50 *Mihala Patrik* - Determination of transmission and matrix heat conduction coefficients at heat exchange in unsaturated porous media<br>17:50 – 18:10 *Kačur Jozef* - Numerical modeling of heat exchange in unsaturated porous media |
| **19:00** | **Welcome reception with poster session in Kapittelzaal** |

# Tuesday, September 19th

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| **9:00 - 9:55** | **Plenary lecture**<br>**Chair:** Burger Martin, **room:** Refter<br>*Quarteroni Alfio* - Mathematical and numerical modelling of multiphysics problems, with application to the cardiovascular system |
| **10:00 - 10:25** | **Coffee break** |
| **10:30 - 12:10** | **MS4(a) - Recent advances on model order reduction techniques**<br>**Chair:** Sabariego Ruth , **room:** Refter<br>10:30 - 10:50 *Evcin Cansu* - Model Order Reduction on Control Problems of Navier-Stokes Equations<br>10:50 - 11:10 *Farzam Far Mehrnaz* - Proper orthogonal decomposition-based model reduction of a synchronous machine<br>11:10 - 11:30 *Henneron Thomas* - Off-line/On-line approach based on POD and (D)EIM for the Model Order Reduction of Low frequency Electromagnetic devices based<br>11:30 - 11:50 *Karasözen Bülent* - Model Order Reduction for Pattern Formation in Reaction-Diffusion Systems<br>11:50 - 12:10 *Fiorina Carlo* - A reduced order accelerator for time-dependent reactor physics calculations<br><br>**MS1(a) - Poromechanics: advances in numerical simulation and applications**<br>**Chair:** Radu Florin Adrian , **room:** Rector Vermeylen<br>10:30 - 10:50 *Bause Markus* - Space-time finite element approximation of the Biot poroelasticity system with iterative coupling<br>10:50 - 11:10 *Both Jakub W.* - Robust iterative schemes for unsaturated poromechanics<br>11:10 - 11:30 *Gaspar Francisco* - A new iterative algorithm based on the fixed-stress split scheme for solving the Biot's problem<br>11:30 - 11:50 *Pop Iuliu Sorin* - Numerical methods for porous media flow models Iterative schemes and domain decomposition approaches |

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| **10:30 - 12:10** | **MS12 - Computational methods in fractional PDEs**<br>**Chair:** De Staelen Rob , **room:** Rector Blancquaert<br>10:30 - 10:50 *Guidetti Davide* - Time fractional derivatives and maximal regularity results for evolution equations<br>10:50 - 11:10 *Karova Fatimat* - Numerical methods for solving of the Dirichlet boundary value problem for the fractional Allers' equation<br>11:10 - 11:30 *Macías-Díaz Jorge Eduardo* - Structure-preserving methods to solve a nonlinear parabolic equation with fractional diffusion and advection<br>11:30 - 11:50 *Serna-Reyes Adan Jair* - An explicit and dissipative method to solve a Riesz space-fractional wave equation with damping<br>11:50 - 12:10 *De Staelen Rob* - Analysis of $L1$-difference methods for time-fractional nonlinear parabolic problems with delay |
| **12:10 - 14:00** | **Lunch break** |
| **14:00 - 14:55** | **Plenary lecture**<br>**Chair:** Quarteroni Alfio , **room:** Refter<br>*Burger Martin* - Undersampled Dynamic Tomography and Motion Estimation |
| **15:00 - 16:20** | **MS11(a) - Fast Helmholtz solvers for acoustics, electromagnetics and elastodynamics**<br>**Chair:** Geuzaine Christophe, **room:** Refter<br>15:00 - 15:20 *Bériot Hadrien* - Recent advances in High-Order FEM for acoustics applications<br>15:20 - 15:40 *Thierry Bertrand* - Optimized Schwarz Methods for Electromagnetic Time-Harmonic Wave Propagation Problems<br>15:40 - 16:00 *Lahaye Domenico* - Considerations on the Magnitude of the Shift in the Shifted Laplace Preconditioner for the Helmholtz Equation Combined with Deflation<br>16:00 - 16:20 *Marsic Nicolas* - Performance study of the Beyn method for the solution of lossy electromagnetic cavity problems |

**MS1(b) - Poromechanics: advances in numerical simulation and applications**
**Chair:** Bause Markus , **room:** Rector Vermeylen
15:00 - 15:20 *Radu Florin Adrian* - Newton based iterative methods for non-linear poromechanics

15:20 - 15:40 *Kanschat Guido* - Finite element discretization Biot's consolidation model with strong mass conservation

15:40 - 16:00 *Mitra Koondanibha* - A Globally Convergent Scheme for Non-equilibrium Models for Flow in Heterogeneous Porous Media

16:00 - 16:20 *Hamada Rinako* - Assessing solute macrodispersion in heterogeneous porous formations using random walk particle tracking

**15:00 - 16:20**

**OS6**
**Chair:** Kucera Radek, **room:** Rector Blancquaert
15:00 - 15:20 *De Gersem Herbert* - Accurate Field Reconstruction by Kirchhoff Integrals on Unstructured Finite-Element Meshes

15:20 - 15:40 *Mbehou Mohamed* - Numerical methods of a mixed problem for a nonlinear Kirchhoff model with moving boundary

15:40 - 16:00 *Rowan Thomas* - A fast solver for two-dimensional shallow water equations over erodible beds with multiple sediments

16:00 - 16:20 *Motyčková Kristina* - Analysis of the semi-smooth Newton method for 3D contact problems with the Tresca friction

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**16:20 - 16:50** **Coffee break**

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# Wednesday, September 20th

**9:00 - 9:55**

**Plenary lecture**
**Chair:** Brzeźniak Zdzisław, **room:** Refter
*Elliot Charles* - Numerical solution of PDEs on surfaces and evolving domains

**10:00 - 10:25** **Coffee break**

**10:30 - 12:10**

**MS4(b) - Recent advances on model order reduction techniques**
**Chair:** Henneron Thomas, **room:** Refter
10:30 – 10:50 *Mumtaz Faisal* - Approximation of Functions in Unbounded Domain by High Order Mapped Basis Sets using Double Exponential Transformation

10:50 – 11:10 *Pels Andreas* - Multirate partial differential equations for the solution of field-circuit coupled problems

11:10 – 11:30 *Tertrais Hermine* - Using the Proper Generalized Decomposition to solve Maxwell equations in thin laminated composites

11:30 – 11:50 *Jain Shobhit* - Adaptive reduced-order modeling of thermo-mechanical systems

**MS9 - A priori and a posteriori error analysis for the time-harmonic Maxwell's systems**
**Chair:** Nicaise Serge, **room:** Rector Vermeylen
10:30 – 10:50 *Creusé Emmanuel* - About the gauge conditions arising in finite element eddy current problems

10:50 – 11:10 *Le Menach Yvonnick* - A method to take into account a short-circuit in lamination stack

11:10 – 11:30 *Tittarelli Roberta* - Two guaranteed equilibrated error estimators for the eddy current problems solved by the finite element method

11:30 – 11:50 *Valli Alberto* - Optimal voltage control of non-stationary eddy current problems

**OS8**
**Chair:** De Gersem Herbert , **room:** Rector Blancquaert
10:30 – 10:50 *Livingston E.* - A Framework for the Generation and Descritization of Heterogeneous Polydisperse Material Microstructures

10:50 – 11:10 *Ruas Vitoriano* - Accuracy enhancement for higher order non isoparametric finite-element simulations in curved domains

11:10 – 11:30 *Badri M. A.* - Mixed finite element solution of radiative transfer equation

11:30 – 11:50 *Oberhuber Tomáš* - TNL: Framework for numerical computing on modern parallel architectures

11:50 – 12:10 *Geuzaine Christophe* - Gmsh 3.0: Gmsh goes boolean!

**12:10 - 14:00** **Lunch break**

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**14:00 - 14:55**

**Plenary lecture**
**Chair:** Elliot Charles, **room:** Rector Vermeylen
*Brzeźniak Zdzisław* - Finite element method approximation of stochastic Landau-Lifshitz-Gilbert Equations

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**15:00 - 16:40**

**MS11(b) - Fast Helmholtz solvers for acoustics, electromagnetics and elastodynamics**
**Chair:** Geuzaine Christophe, **room:** Rector Vermeylen
15:00 - 15:20 *Darbas Marion* - Analytic preconditioners for 3D high-frequency elastic scattering problems

15:20 - 15:40 *Mattesi Vanessa* - Transmission Conditions for Non-Overlapping Schwarz Domain Decomposition Methods Applied to Elastic Waves

15:40 - 16:00 *Modave Axel* - High-order absorbing boundary conditions with edge and corner compatibility for the Helmholtz equation

16:00 - 16:20 *Chaillat Stéphanie* - On the efficiency of an $\mathcal{H}-$matrix based direct solver for the Boundary Element Method in 3D elastodynamics

**MS10 - Numerical methods in electromagnetism**
**Chair:** Issa Mohammad , **room:** Rector Blancquaert
15:00 - 15:20 *Chovan Jaroslav* - Global solution of a mathematical model for the induction hardening

15:20 - 15:40 *Tsukerman Igor* - Nonasymptotic and Nonlocal Homogenization of Electromagnetic Metamaterials

15:40 - 16:00 *Smirnov Alexey* - Application of a hybrid numerical technique for solving direct and inverse problems of light diffraction on multilayer gratings

16:00 - 16:20 *Petukhov Andrey* - Gradient-based optimization of the multilayer diffraction grating profile

16:20 - 16:40 *Issa Mohammad* - Asymptotic Modelling for 3D Eddy Current Problems with a Conductive Thin Layer

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**16:40 - 17:10** **Coffee break**

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**19:00** **Conference dinner in Room Refter**

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# Thursday, September 21st

**9:00 - 9:55**

**Plenary lecture**
**Chair:** Klibanov Michael , **room:** Refter
*Hiptmair Ralf* - Operator Preconditioning: Theory and Applications

**10:00 - 10:25** **Coffee break**

**10:30 - 12:10**

**MS7(a) - Electrokinetic and electrochemical flows for batteries and fuel cells: analysis, simulation, upscaling**
**Chair:** Icardi Matteo , **room:** Refter
10:30 – 10:50 *Carraro Thomas* - Adaptive finite element approaches for microscopic and macroscopic simulations of battery electrodes
10:50 – 11:10 *Feierabend Lukas* - Numerical Simulation of Flowing Slurry Electrodes
11:10 – 11:30 *Hofmann Tobias* - Stress simulation of phase-separating cathode materials
11:30 – 11:50 *Magri Marco* - A chemo-mechanical model of the response of electrode particles in Li-ion batteries

**MS5(a) - 3rd Symposium on modelling of biological cells, fluid flow and microfluidics**
**Chair:** Cimrák Ivan , **room:** Rector Vermeylen
10:30 – 10:50 *Adi-Kusumo Fajar* - Numerical Computation of the Immunotherapy Model Involving the Cervical Cancer Cells, Effector Cells, and IL-2 Compounds with Reaction-Diffusion
10:50 – 11:10 *Jančigová Iveta* - Force-free and torque-free elasticity in cell models
11:10 – 11:30 *Kucera Radek* - Interior point method for the Stokes flow with stick-slip boundary conditions
11:30 – 11:50 *Kudryashova Tatiana* - Magneto-Hydrodynamic Model for Simulation of Water Purification

**OS5**
**Chair:** Ruas Vitoriano , **room:** Rector Blancquaert
10:30 – 10:50 *Miclăuş Dan* - The implementation of a new method for the approximation of integrals using Bernstein operators
10:50 – 11:10 *Atisattapong Wanyok* - A $1/t$ Algorithm with the Density of Two States for Estimating Multidimensional Integrals
11:10 – 11:30 *Califano Giovanna* - Strong stability preserving transformed GLMs with RK stability
11:30 – 11:50 *Melman Aaron* - Localization of polynomial eigenvalues

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| **12:10 - 14:00** | **Lunch break** |
| **14:00 - 14:55** | **Plenary lecture**<br>**Chair:** Hiptmair Ralf, **room:** Refter<br>*Klibanov Michael* - Phaseless Inverse Scattering and Global Convergence for Coefficient Inverse Problems |
| **15:00 - 16:20** | **MS7(b) - Electrokinetic and electrochemical flows for batteries and fuel cells: analysis, simulation, upscaling**<br>**Chair:** Carraro Thomas , **room:** Refter<br>15:00 – 15:20 *Icardi Matteo* - Spectral analysis and model reduction of Newman-type battery models for improved calibration and control<br>15:20 – 15:40 *Müller Rüdiger* - Consistent coupling of charge transport and fluid flow with application to nanopores<br>15:40 – 16:00 *Rave Stephan* - MULTIBAT – Reduced Order Modelling of Lithium-Ion Battery Models with Resolved Electrode Geometry<br>16:00 – 16:20 *Schardt Simon* - Optimal Control of Ion Transport in Solid Electrolytes<br><br>**MS5(b) - 3rd Symposium on modelling of biological cells, fluid flow and microfluidics**<br>**Chair:** Jančigová Iveta , **room:** Rector Vermeylen<br>15:00 – 15:20 *Oliveira Diana* - Bicuspid aortic valve: A patient-specific modeling approach<br>15:20 – 15:40 *Kongnuan Supachara* - Analytical Solution for a 3D model of the airflow in the human upper respiratory tract<br>15:40 – 16:00 *Cimrák Ivan* - Relation between parameters of spring network model of red blood cell and membrane's bulk properties<br><br>**MS8(b) - Inverse source problems : recent developments**<br>**Chair:** Mukanova Balgaisha , **room:** Rector Blancquaert<br>15:00 – 15:20 *Šisková Katarína* - Recognition of a time-dependent source in a time-fractional wave equation<br>15:20 – 15:40 *Salehi Shayegan Amir Hossein* - Inverse Coefficient Problem for a Time Fractional Diffusion Equation<br>15:40 – 16:00 *Wang Ran* - The reconstruction of a time-dependent source from a surface measurement for full Maxwell's equations by means of the potential field method |
| **16:20 - 16:50** | **Coffee break** |

**16:50 - 18:10**

**MS7(c) - Electrokinetic and electrochemical flows for batteries and fuel cells: analysis, simulation, upscaling**
**Chair:** Icardi Matteo , **room:** Refter
16:50 - 17:10 *Becker-Steinberger Katharina* - Theoretical and Computational Investigation of Charge Transport in All-Solid-State Thin Film Cells

17:10 - 17:30 *Dörfler Willy* - An Elliptic Problem with Strongly Nonlinear Interface Condition

**OS4**
**Chair:** Crevecoeur Guillaume , **room:** Rector Vermeylen
16:50 - 17:10 *Ren Jian* - A robust Riemann solver without artificial intervention

17:10 - 17:30 *Shmerling Efraim* - Acceptance Tail Method for Sampling from Univariate and Multivariate Distributions

17:30 - 17:50 *Chaudhry Qasim Ali* - In Silico Modeling for the Risk Assessment of Toxicity in Cells

17:50 - 18:10 *Hang Xudeng* - A pyramid scheme for three-dimensional diffusion equations on general polyhedral meshes

**OS3**
**Chair:** Cimrák Ivan , **room:** Rector Blancquaert
16:50 - 17:10 *Devolder Brecht* - Accelerated numerical simulations of a heaving floating body by coupling a motion solver with a two-phase fluid solver

17:10 - 17:30 *Senel Pelin* - DRBEM Solution of MHD Flow in Pipes with Partly Insulated Partly Perfectly Conducting Slipping Walls

17:30 - 17:50 *Shilnikov Evgeny* - Use of QGD-based parallel program complex for hypersonic flows simulation

17:50 - 18:10 *Yu Yunlong* - Parallel iteration algorithms for 3T equations

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