

WCMNA 2019

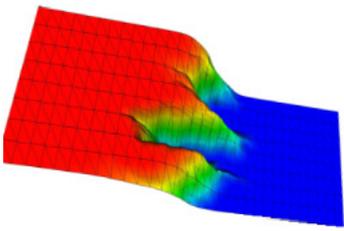
Workshop on Computational Modeling and Numerical Analysis

February 25 - 28, 2019 - LNCC

Program At a Glance

| | Monday 02/25 | Tuesday 02/26 | Wednesday 02/27 | Thursday 02/28 |
|--------------|------------------|-------------------|--------------------|-------------------|
| 08:30-09:00 | | CONF3 | CONF6 | |
| 09:00-09:30 | OPENING | | | |
| 09:30-10:00 | CONF1 | CONF4 | CONF7 | CONF9 |
| 10:00-10:30 | | | | |
| 10:30-11:00 | BREAK | BREAK | BREAK | BREAK |
| 11:00-12:30 | MC1 | MC1 | MC1 | MC1 |
| 12:30-14:00 | LUNCH | LUNCH | LUNCH | LUNCH |
| 14:00 -16:00 | MC2 | MC2 | MC2-JOHN | MC2 |
| 16:00-16:30 | Poster Section I | Poster Section II | Poster Section III | CLOSURE |
| 16:30-17:00 | | | | |
| 17:00-17:30 | CONF2 | CONF5 | CONF8 | |
| 17:00-18:00 | | | | |

MC1- Mini-Course 1, MC2- Mini-Course 2, CONF - Conference



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FULL PROGRAM

02/25/2019 (Monday)

09:00–09:30 **Opening**

09:30–10:30 **CF1** - Algebraic Finite Element Stabilizations for Convection-Diffusion Equations, Volker John, Weierstrass Institute.

10:30–11:00 **Coffee-break**

11:00–12:30 **MC1** - Hybrid High-Order Methods, Alexandre Ern, Université Paris-Est.

12:30–14:00 **Lunch**

14:00–16:00 **MC2** - Finite Element Methods for Incompressible Flows, Volker John, Weierstrass Institute.

16:00–17:00 **Poster Section I** see page 3

17:00–18:00 **CF2** - Transversally Enriched Pipe Element Method: Speeding-up Blood Flow Simulations, Pablo J. Blanco, LNCC.

02/26/2019 (Tuesday)

08:30–09:30 **CF3** - The MHM-Method on Non-Conforming Polygonal Meshes, Frederic Valentin, LNCC.

09:30–10:30 **CF4** - Low-order Divergence-Free Finite Element Methods in Incompressible Fluid Dynamics, Gabriel Barrenechea, University of Strathclyde.

10:30–11:00 **Coffee-break**

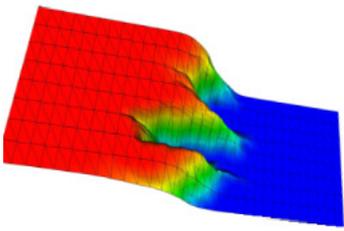
11:00–12:30 **MC1** - Hybrid High-Order Methods, Alexandre Ern, Université Paris-Est.

12:30–14:00 **Lunch**

14:00–16:00 **MC2** - Finite Element Methods for Incompressible Flows, Volker John, Weierstrass Institute.

16:00–17:00 **Poster Section II** - see page 4

17:00–18:00 **CF5** - Experiences in Finite Element Mixed Formulations, Phillippe Devloo, Unicamp.



WCMNA 2019

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02/27/2019 (Wednesday)

08:30–09:30 **CF6** - Going high (contrast) with LSD (Localized Spectrum Decomposition), Alexandre Madureira, LNCC.

09:30–10:30 **CF7** - Goal Oriented a Posteriori Error Estimates in High Order Discontinuous Galerkin Finite Element Methods, Igor Mozolevski, UFSC.

10:30–11:00 **Coffee-break**

11:00–12:30 **MC1** - Hybrid High-Order Methods, Alexandre Ern, Université Paris-Est.

12:30–14:00 **Lunch**

14:00–16:00 **MC2** - Finite Element Methods for Incompressible Flows, Volker John, Weierstrass Institute.

16:00–17:00 **Poster Section III** - see page 5

17:00–18:00 **CF8** - Edge finite element approximation of Maxwell's equations with low regularity solutions, Alexandre Ern, Université Paris-Est,

02/28/2019 (Thursday)

09:30–10:30 **CF9** - A New Class of Computational Schemes for Solving Flow in Deformable Porous Media Incorporating Geological Complexity, Marcio A. Murad, LNCC.

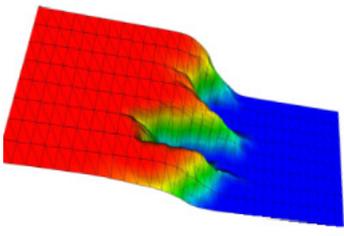
10:30–11:00 **Coffee-break**

11:00–12:30 **MC1** - Hybrid High-Order Methods, Alexandre Ern, Université Paris-Est.

12:30–14:00 **Lunch**

14:00–16:00 **MC2** - Finite Element Methods for Incompressible Flows, Volker John, Weierstrass Institute.

16:00–16:30 **Closure**



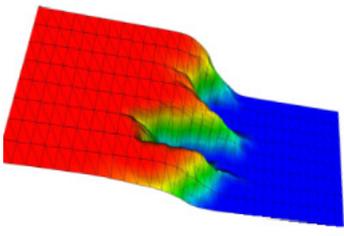
WCMNA 2019

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02/25/2019 (Monday) - Poster Section I

- Numerical Analysis of a Multiscale Finite Element Method for Approximating the Cancer Cell Proliferation in the Colon, Geovan Carlos Mendonça Campos (Unicamp), Giuseppe Romanazzi (unicamp), and José Augusto Ferreira (Universidade de Coimbra)
- Projection in Negative Norms and the Regularization of Rough Linear Functionals, Felipe Millar (Pontificia Universidad Católica de Valparaíso), Ignacio Muga (Pontificia Universidad Católica de Valparaíso), Diego Paredes (Pontificia Universidad Católica de Valparaíso), Kristoffer G. Van der Zee (University of Nottingham)
- RBF-FD Aproximations Based on Polyharmonic Splines Basis with Supplementary Polynomials Applied in the Simulation of Incompressible Viscous Flows Around a Circular Cylinder, L. G. C. Santos (Unicamp) , E. Abreu (Unicamp), N. Manzaneres-Filho (Unifei)
- isogeometric Residual Minimization (iGRM), Maciej Paszyński (AGH University of Science and Technology) , Marcin Łoś (AGH University of Science and Technology), Ignacio Muga (Pontifical Catholic Univeristy of Valparaíso), Victor M. Calo (Curtin University)
- Hybridizable Discontinuous Galerkin Method in Curved Domains via Extensions from Subdomains, Manuel Solano (Universidad de Concepción)
- Numerical and computational analysis of time-dependent advection - diffusion - reaction equation with anisotropic diffusion, in atmospheric pollution, María A. Alvarado (Universidad Técnica Federico Santa María), Erwin Hernández (Universidad Técnica Federico Santa María)
- A posteriori Error Analysis of HDG Methods in Fluid Mechanics, Rodolfo Araya (Universidad de Concepción), Manuel Solano (Universidad de Concepción), Patrick Vega (Universidad de Concepción)
- $\mathbf{H}(\text{div})$ -Conforming Approximations on Pyramids for Mixed Methods Based on Hybrid Meshes, Mark Ainswoth (Brown University), Philippe R. B. Devloo (Unicamp), Omar Durán (Unicamp), Sônia M. Gomes (Unicamp)
- New results on the MHM for Linear Elasticity, Wesley Pereira (LNCC), Antônio Tadeu Gomes (LNCC), Frédéric Valentin (LNCC)



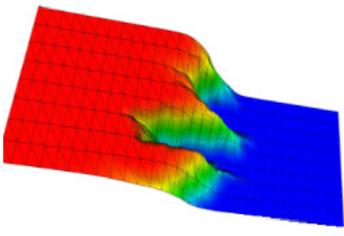
WCMNA 2019

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02/26/2019 (Tuesday) - Poster Section II

- Conservative Finite Volume Lagrangian-Eulerian Framework for Approximating Hyperbolic Models with Source Terms, Arthur Santo (Unicamp), Eduardo Abreu (Unicamp), Wanderson Lambert (Unifal), John Pérez (Institución Universitaria Medellín)
- Mixed Fem Based on Mapping Method for a Singular Problem, Denise de Siqueira (UTFPR), Phillippe R.B. Devloo (Unicamp), Sônia M. Gomes (Unicamp), Agnaldo M. Farias (IFNMG)
- Gauss-Legendre Quadrature Over Triangles: A Practical Approach, D.C.Lobão (UFF)
- Goal Oriented Dynamic Mesh Adaptation for Space-Time Discontinuous Galerkin finite Element Discretization of Linear Parabolic Problems, Edson L. Valmorbidia (UTFPR), Igor Mozolevski (UFSC)
- A Runge-Kutta Discontinuous Galerkin Method for Hyperbolic Conservation Laws on Quadrilateral Meshes, Felipe A. G. Silva (Unicamp), Eduardo Abreu (Unicamp), Maicon R. Correa (Unicamp)
- Space-time adaptivity schemes for the Cahn-Hilliard Equation, Gabriel F. Barros (UFRJ), Adriano M. A. Côrtes (UFRJ), Alvaro L. G. A. Coutinho (UFRJ)
- Numerical Simulations with Proper Generalized Decomposition and Discontinuous Galerkin Method, Luciane I. A. Schuh (UFSC), Igor Mozolevski (UFSC)
- Enriched Mixed Finite Element Methods for Linear Elasticity with Weak Symmetry, Thiago O. Quinelato (UFJF), Todd Arbogast (University of Texas), Maicon R. Correa (Unicamp), Phillippe R. B. Devloo (Unicamp), Sônia M. Gomes (Unicamp), Abimael F. D. Loula (LNCC), Shudan Tian (Peking University)
- Hydrodynamics Stability Analysis of a Compressible Viscous Flow by Density Variations along Deforming Domains, Yoissell Rodríguez-Núñez (UFF), Panters Rodríguez-Bermúdez (UFF), Gustavo Benitez Alvarez (UFF), Diomar C. Lobão (UFF)



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02/27/2019 (Wednesday) - Poster Section III

- $H(\text{div})$ Finite Elements Based on Non-affine Meshes for Three Dimensional Mixed Formulations of Flow problems with Arbitrary High Order Flux Divergence Accuracy, Philippe R. B. Devloo (Unicamp), Omar Durán (Unicamp), Aginaldo M. Farias (IFNMG) and Sônia M. Gomes (Unicamp)
- A New Pairing Function for Mesh Multiplication in Large Scale Simulations, Benaia S. J. Lima (UFRJ), Romulo M. Silva (UFRJ), Jose J. Camata (UFJF), Renato N. Elias (UFRJ) and Alvaro L. G. A. Coutinho (UFRJ)
- A Comparative Study of Numerical Schemes for Solving Navier Stokes Equations Using Flow Problems Benchmarks, Evandro D. Gaio (UFJF), Rafael A.B. de Queiroz (UFJF) and José J. Camata (UFJF)
- The Dynamic Diffusion Method for Advection-Diffusion-Reaction Problems, Andrea M. P. Valli (UFES), Regina C. C. de Almeida (LNCC), Isaac P. Santos (UFES), Lucia Catabriga (UFES), Sandra M. C. Malta (LNCC), Alvaro L. G. A. Coutinho (UFRJ)
- A Recursive Parallel Implementation of the Multiscale Mixed Method for Incompressible Two-Phase Flow, Paola Ferraz (Unicamp), Eduardo Abreu (Unicamp), Het Mankad (The University of Texas at Dallas), Felipe Pereira (The University of Texas at Dallas) and Fabrício Sousa (USP)
- A variational Multiscale Method for Solving Incompressible Navier-Stokes Equations, Riedson Baptista (UFES), Sérgio S. Bento (UFES), Leonardo M. Lima (UFES), Andrea M.P. Valli (UFES), Lúcia Catabriga (UFES), Isaac P. Santos (UFES)
- $H(\text{div})$ -conforming Spaces Based on General Meshes with Interface Constraints for Multiscale Mixed Simulations, Omar Durán (Unicamp), Philippe R. B. Devloo (Unicamp), Sônia M. Gomes (Unicamp), Frederic Valentin (LNCC)
- A Graphic Tool for Structural Analysis of Linear Element Models with an OOP Approach, Rafael L. Rangel (PUC-RJ), Pedro C. Lopes (PUC-RJ) and Luiz Fernando Martha (PUC-RJ)