
LA SERENA NUMÉRICA II

OCTAVO ENCUENTRO DE ANÁLISIS NUMÉRICO DE ECUACIONES DIFERENCIALES PARCIALES

Departamento de Matemáticas, Universidad de La Serena
La Serena, Chile, Enero 14 - 16, 2015

PROGRAM

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1 INTRODUCTION

The **Octavo Encuentro de Análisis Numérico de Ecuaciones Diferenciales Parciales** has been organized in sequential talks of **45 and 30 minutes** length (40 and 25 minutes of presentation, respectively, and 5 minutes for questions and comments). All the talks will be given at SALÓN MULTIUSO, CETECFI (3TH FLOOR), **Facultad de Ingeniería**, Universidad de la Serena.

In the following pages we describe the corresponding program. In case of a multi-authored contribution, the speaker is underlined.

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- Centro de Modelamiento Matemático (CMM), Universidad de Chile, and
- Centro de Investigación en Ingeniería Matemática (CI²MA), Universidad de Concepción.

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ORGANIZING COMMITTEE
Raimund Bürger
Gabriel N. Gatica
Ricardo Oyarzúa
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La Serena, January 2015

2 WEDNESDAY, JANUARY 14

8.30-9.15 REGISTRATION

9.15-9.30 WELCOME SPEECH

[Chairman: N. HEUER]

9.30-10.15 ALEXANDRE ERN, MARTIN VOHRALÍK: *Polynomial-degree-robust a posteriori estimates in a unified setting.*

10.15-10.45 DANTE KALISE: *High-order semi-Lagrangian schemes for static Hamilton-Jacobi-Bellman equations.*

10.45-11.15 COFFEE BREAK

11.15-11.45 SEBASTIAN U. ANGEL, NELSON O. MORAGA, MAURICIO J. GODOY: *A Darcy-Brinkman-Forchheimer porous model for alloys convective-diffusion solidification in molds.*

11.45-12.15 MICHAEL FEISCHL, THOMAS FÜHRER, DIRK PRAETORIUS, ERNST P. STEPHAN: *Multilevel methods for the hypersingular integral equation on locally refined triangulations.*

12.15-12.45 SEBASTIANO BOSCARINO, RAIMUND BÜRGER, PEP MULET, GIOVANNI RUSSO, LUIS M. VILLADA: *Linearly implicit IMEX Runge-Kutta methods for a class of degenerate convection-diffusion problems.*

12.45-15.00 LUNCH

[Chairman: R. BÜRGER]

15.00-15.45 BORIS ANDREIANOV, MOSTAFA BENDAHMANE, ALFIO QUARTERONI, RICARDO RUIZ-BAIER: *Modelling, analysis, and numerical approximation of cardiac electromechanical interactions.*

15.45-16.15 GIORDANO TIERRA, JUAN P. PAVISSICH, ROBERT NERENBERG, ZHILIANG XU, MARK S. ALBER: *Mathematical modeling of bacterial communities: Mechanical behavior of biofilms.*

16.15-16.45 BENJAMÍN BARÁN: *Motherboard heat dissipation design using the Parareal method in PETSc.*

16.45-17.15 COFFEE BREAK

17.15-17.45 JESSIKA CAMAÑO, RICARDO OYARZÚA, GIORDANO TIERRA: *Analysis of an augmented mixed-FEM for the Navier-Stokes problem.*

17.45-18.15 MICHAEL KARKULIK, JENS MARKUS MELENK: *Local high-order regularization and applications to hp-methods.*

18.15-18.45 ELIGIO COLMENARES, GABRIEL N. GATICA, RICARDO OYARZÚA: *Analysis of an augmented mixed-primal formulation for the stationary Boussinesq problem.*

19.30 WELCOME COCKTAIL

3 THURSDAY, JANUARY 15

[Chairman: G. GATICA]

- 9.30-10.15** NORBERT HEUER, MICHAEL KARKULIK: *DPG analysis: adjoint problems and test norms.*
- 10.15-10.45** FERNANDO HENRÍQUEZ, CARLOS JEREZ-HANCKES, FERNANDO ALTERMATT: *Boundary integral formulation for the electrical response of biological cells to external electrical stimulations.*
- 10.45-11.15** COFFEE BREAK
- 11.15-11.45** ALEXIS JAWTUSCHENKO, ARIEL L. LOMBARDI: *Anisotropic estimates for $H(\mathbf{curl})$ - and $H(\mathbf{div})$ -conforming elements on prisms and applications.*
- 11.45-12.15** FERNANDO MORALES: *A discussion on the transmission conditions for saturated fluid flow through porous media with fractal microstructure.*
- 12.15-12.45** BERNARDO COCKBURN, WEIFENG QIU, MANUEL SOLANO: *A priori error analysis for HDG methods in curved domains using extensions from polyhedral subdomains.*
- 12.45-15.00** OFFICIAL PICTURE/LUNCH
- [Chairman: M. SOLANO]
- 15.00-15.45** JOHNNY GUZMÁN, MANUEL SANCHEZ-URIBE, MARCUS SARKIS: *Higher-order finite element methods for elliptic problems with interface.*
- 15.45-16.15** GUNDOLF HAASE, MANFRED LIEBMANN, AUREL NEIC, GERNOT PLANK: *Many-core parallelization of AMG.*
- 16.15-16.45** FERNANDO BETANCOURT, RAIMUND BÜRGER, STEFAN DIEHL, CAMILO MEJÍAS: *Flux identification and efficient numerical simulation of clarifier-thickener units.*
- 16.45-17.15** COFFEE BREAK
- 17.15-17.45** GABRIEL N. GATICA, FILÁNDER A. SEQUEIRA: *Analysis of the HDG method for the Stokes-Darcy coupling.*
- 17.45-18.15** ERNESTO CÁCERES, GABRIEL N. GATICA: *A mixed virtual element method for the Stokes problem.*
- 18.15-18.45** ROMMEL BUSTINZA: *An a priori error analysis of the HDG method for linear Stokes problem using a pseudostress-velocity formulation.*

20.30 CONFERENCE DINNER

4 FRIDAY, JANUARY 16

[Chairman: R. OYARZÚA]

- 9.30-10.15** ANTONIO BAEZA, PEP MULET, DAVID ZORÍO: *High order boundary extrapolation techniques for finite difference WENO schemes on complex domains.*
- 10.15-10.45** MARIO ÁLVAREZ, GABRIEL N. GATICA, RICARDO RUIZ-BAIER: *Mixed-primal finite element approximation of a steady sedimentation-consolidation system.*
- 10.45-11.15** COFFEE BREAK
- 11.15-11.45** MARÍA DEL CARMEN MARTÍ, PEP MULET: *Some computational techniques to improve component-wise finite-difference WENO schemes.*
- 11.45-12.15** NICOLE SPILLANE, VICTORIA DOLEAN, et. al.: *Achieving robustness in domain decomposition methods.*
- 12.15-12.45** DILBERTO DA S. ALMEIDA JÚNIOR, MAURICIO SEPÚLVEDA C.: *Uniform stabilisation for a finite difference of the 1-d Timoshenko system.*
- 12.45-15.00** LUNCH

[Chairman: P. MULET]

- 15.00-15.45** DMITRY KOLOMENSKIY, JEAN-CHRISTOPHE NAVE, KAI SCHNEIDER: *Space-time adaptive multiresolution techniques with a gradient-augmented level set method for advection equations.*
- 15.45-16.15** GABRIEL N. GATICA, IVANA ŠEBESTOVÁ: *Reconstruction-based a posteriori error estimation for the coupled Stokes-Darcy problem.*
- 16.15-16.45** SUDARSHAN K. KENETTINKARA, PRAVEEN CHANDRASHEKHAR, VEERAPPA GOWDA: *A finite volume method for a two-phase multicomponent polymer flooding.*
- 16.45-17.15** COFFEE BREAK
- 17.15-17.45** RAIMUND BÜRGER, PEP MULET, LIHKI RUBIO: *High-resolution schemes with polynomial viscosity matrices for multi-species kinematic flow models.*
- 17.45-18.15** RAIMUND BÜRGER, RICARDO RUIZ-BAIER, KAI SCHNEIDER, HÉCTOR TORRES: *Numerical methods for multidimensional sedimentation models.*

18.15 CLOSING WORDS