

TALCA NUMÉRICA I

Tenth Meeting on Numerical Analysis of
Partial Differential Equations

P R O G R A M M E

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Universidad Católica de Maule, Talca, Chile, July 2–4

[Morning session. Chairperson: NICOLÁS BARNAFI]

09.00–09.15	OPENING
09.15–09.35	<u>T. FÜHRER</u> , M. SÁNCHEZ: <i>How Much Information Can We Recover From Piecewise Polynomial Approximations?</i>
09.35–09.55	<u>E. ALDANA</u> , R. OYARZÚA, J. VELLOJIN: <i>Numerical Analysis of a Conforming Finite Element Method for a Reverse Osmosis Model</i>
09.55–10.15	A. BUSTOS, S. CAUCAO, G. GATICA, <u>B. VENEGAS</u> : <i>New Fully Mixed Finite Element Methods for the Coupled Convective Brinkman-Forchheimer and Non-linear Transport Equations</i>
10.15–10.45	COFFEE BREAK
10.45–11.05	<u>A. BUSTOS</u> , S. CAUCAO, G. GATICA: <i>Banach Space Mixed Formulations for the Convection-Diffusion-Reaction System Based Upon Brinkman-Forchheimer Equations</i>
11.05–11.25	<u>LADY ANGELO</u> , J. CAMAÑO, S. CAUCAO: <i>A Skew-Symmetric-Based Mixed FEM for Stationary MHD Flows in Highly Porous Media</i>
11.25–11.45	<u>P. HERRERA</u> , K. VAN DER ZEE, I. MUGA, D. PARDO, C. URIARTE: <i>Ritz-Uzawa Neural Networks for Solving Variational Problems</i>
11.45–12.30	PLENARY LECTURE. Julia Novo : <i>POD-ROM Methods: From a Finite Set of Snapshots to Continuous Parametrized Approximations.</i>

[Afternoon session. Chairperson: YISSEDT LARA]

14.30–15.15	PLENARY LECTURE. Paul Vigneaux : <i>Shallow Water Models for Viscoplastic Flows.</i>
15.15–15.45	COFFEE BREAK
15.45–16.05	<u>N. BARNAFI</u> , N. HUYNH: <i>A Monotone Operator Theory for the Generalized Porous Media Equation in Pressure-Mixed Form</i>
16.05–16.25	B. LAMICHHANE, R. RUIZ-BAIER, <u>S. VILLA-FUENTES</u> : <i>New Twofold Saddle-Point Formulations for Biot Poroelasticity With Porosity-Dependent Permeability</i>
16.25–16.45	<u>E. VAN 'T WOUT</u> : <i>FEM-BEM Coupling With OSRC Regularisation for High-Frequency Acoustic Wave Transmission</i>
16.45–17.00	BREAK
17.00–17.20	A. KHAN, <u>F. LEPE</u> , J. VELLOJIN: <i>IPDG Methods for the Nearly Incompressible Elasticity Eigenvalue Problem With Heterogeneous Media</i>
17.20–17.40	J. CAMAÑO, R. OYARZÚA, <u>M. SERÓN</u> , M. SOLANO: <i>A Residual-Based a Posteriori Error Estimator for a Nonisothermal Fluid-Membrane Interaction Problem</i>
17.40–18.00	<u>M. SOLANO</u> : <i>A Hybridizable Discontinuous Galerkin Method for Dissimilar Meshes</i>
18.00	WELCOME RECEPTION

[Morning session. Chairperson: MANUEL SOLANO]

09.15–09.35	<u>I. LABARCA-FIGUEROA</u> , R. HIPTMAIR: <i>Coupled Boundary-Volume Integral Equations for Wave Propagation</i>
09.35–09.55	<u>E. HENRÍQUEZ</u> , J. LEE, S. RHEBERGEN: <i>Parameter-Robust Preconditioning for Hybridizable Symmetric Discretizations</i>
09.55–10.15	<u>J. PINTO</u> , F. HENRIQUEZ: <i>Reduced Basis Model for the Elastic Wave Scattering by Multiple Cracks</i>
10.15–10.45	COFFEE BREAK
10.45–11.05	L. CAMARGO, I. MUGA, S. ROJAS, <u>P. VEGA</u> : <i>Minimum-Residual Based a Posteriori Error Estimates for Mixed Finite Element Discretizations via Superconvergent Local Postprocessed Approximations</i>
11.05–11.25	<u>P. SEPÚLVEDA</u> : <i>Learning-Based Localization of Singularities in PDEs</i>
11.25–11.45	<u>F. FUICA</u> : <i>A Posteriori Error Estimates for a Bang-Bang Optimal Control Problem</i>
11.45–12.30	PLENARY LECTURE. Lise-Marie Imbert-Gérard : <i>Trefftz and Quasi-Trefftz Methods for Time-Harmonic Wave Propagation and Beyond</i> .

[Afternoon session. Chairperson: THOMAS FÜHRER]

14.30–15.15	PLENARY LECTURE. Enrique Otárola : <i>Numerical Methods for Fractional Diffusion</i> .
15.15–15.45	COFFEE BREAK
15.45–16.05	<u>J. BARAJAS-CALONGE</u> , R. BÜRGER, P. MULET, L. VILLADA: <i>A Positivity Preserving CWENO Scheme for the Simulation of Polydisperse Sedimentation in Inclined Channels</i>
16.05–16.25	<u>M. SEPÚLVEDA</u> : <i>Conservative Numerical Scheme for Dissipative Wave Equation With Fractional Derivative Damping</i>
16.25–16.45	G. ALBUJA, <u>A. ÁVILA</u> , M. MURILLO: <i>Global Superlinear Linearization Schemes Based on Adaptive Strategies for Solving Richards' Equation</i>
16.45–18.00	POSTER SESSION
	<u>F. ÁLVAREZ</u> , P. SEPÚLVEDA, S. JARA, S. ROJAS: <i>A Hybrid Variational Formulation for Robust VPINNs With Localized Norms</i>
	E. COLMENARES, R. OYARZÚA, <u>F. LÓPEZ PIÑA</u> : <i>A Discontinuous Galerkin Method for the Stationary Boussinesq System</i>
	I. MUGA, <u>J. PERERA</u> , S. ROJAS, R. RUIZ-BAIER: <i>Residual Minimization Techniques for Solving Nonlinear Partial Differential Equations in Banach Spaces</i> .
	<u>E. OLIVARES</u> , M. SOLANO, S. RHEBERGEN: <i>A Conservative HDG Method for the Coupled Navier-Stokes and Transport Equations</i>
	L. FIGUEROA, <u>B. SANDOVAL</u> : <i>Weighted Schur and Markov Inequalities on the d-Simplex</i>
	N. BARNAFI, M. SÁNCHEZ, <u>D. VERA</u> : <i>A Mixed Formulation for the Landau-De Gennes Equations in Liquid Crystals Modelling</i>
18.30	CONFERENCE DINNER

[Morning session. Chairperson: PATRICK VEGA]

09.15–09.35	A. ALONSO-RODRÍGUEZ, <u>J. CAMAÑO</u> , R. OYARZÚA: <i>Analysis of a FEM With Exactly Divergence-Free Magnetic Field for the Stationary MHD Problem</i>
09.35–09.55	J. CAMAÑO, <u>R. OYARZÚA</u> , K. ROJO: <i>A Momentum and Mass Conservative Pseudostress-Based Mixed Finite Element Method for Fluid Flow Problems</i>
09.55–10.15	<u>D. MALDONADO MONTIEL</u> , V. ESCALONA: <i>Solving Hyperbolic Partial Differential Equations Using CUDA</i>
10.15–10.45	COFFEE BREAK
10.45–11.05	<u>F. SEPÚLVEDA SOTO</u> , L. SOTO BARRIOS: <i>Nouvelle Model for Fingerprint-Like Pattern Formation Based on Schnakenberg PDE Equations</i>
11.05–11.25	I. ARROCHA, R. BÜRGER, <u>M. GÓMEZ</u> , Y. VÁSQUEZ: <i>Modeling and Simulation of the Growth and Dispersion of Plant Growth Promoting Bacteria in the Rhizosphere</i>
11.25–11.45	G. ACOSTA, F. BERSETCHE, E. OTÁROLA, <u>D. QUERO</u> : <i>A Nonlocal Coupled System: Analysis and Discretization</i>
11.45–12.30	PLENARY LECTURE. Sônia Gomes : <i>Exploring Traces Versus Bubbles in the Design of Multiscale $H(\text{div})$-Conforming Finite Elements.</i>

[Afternoon session. Chairperson: NICOLÁS BARNAFI]

14.30–15.15	PLENARY LECTURE. Ziqhiang Cai : <i>Efficient Physics-Preserved Neural Network (P^2NN) Methods for Interface Problems.</i>
15.15–15.20	CLOSING
15.20–15.50	COFFEE BREAK