16th International Conference on Integral Methods in Science and Engineering

Macaé, 5 to 9 August 2024

Monday, August 5

15:00 – Opening Ceremony
15:30 – Coffee Break

Chair: Viatcheslav Priimenko

16:00 – *Application of the Path Tubes Method to One Test Problem for Ocean Tracer Transport*
Acir SOARES
16:30 – *Angiograms synthetic images from tridimensional analytical modelling*
Caetano WECKER
17:00 – *On the elaboration of an index for identifying SACZ occurrences using a Discrete Valued Bi-dimensional Singular Transform*
Jean SCHMITH

Tuesday, August 6

Chair: Adolfo Pires

10:00 – Plenary Lecture
Dynamic Characterization of Complex Naturally Fractured Reservoirs
Rodolfo CAMACHO

11:00 – *Determination of the Effects of Incrustation on the Permeability of Reservoir Rocks Using Image Analysis Methods*

André BUENO

11:30 – *Effect of maximum Courant number on carbonate acidizing 3D simulations*

Nathalia BRAGA

12:00 – *Numerical simulation of two-component flow in gas reservoirs considering the Barree and Conway's model*

Grazione de SOUZA

12:30 – Lunch

Chair: Alvaro Peres

14:00 – *Numerical simulation of two-component flow in low-permeability gas reservoirs*

Grazione de SOUZA

14:30 – *Numerical simulation of non-Darcy flow in natural gas reservoirs considering horizontal wells*

Diego Aciole Menezes MIGUEZ

15:00 – *Numerical model for thermal injection of CO_2-rich multicomponent systems in wellbores*

Julio Cesar SANTOS NASCIMENTO

15:30 – *Transient thermal compositional simulation of one-dimensional two-phase flow using the drift flux model*

Carlos Enrique PICO ORTIZ

16:00 – Coffee Break

16:30 – *Mathematical analysis of the foam flow in porous media accounting for nanoparticle presence and adsorption effects*

Grigori CHAPIRO

17:00 – *Chromatographic Cycle Solution for Two-Solute Adsorption Considering pH-Dependent Langmuir Isotherm Coefficients*

Thiago RODRIGUES

17:30 – *Rate superposition for multiple-step injection tests*

Danilo OLIVEIRA

Wednesday, August 7

Chair: Massimo Lanza de Cristoforis

10:00 – Plenary Lecture

Wavelet-based integral formula for solving the wave equation and its application

Maria PEREL

11:00 – *An optimization algorithm based on social cooperative and exploitative behaviours*

Luiz Paulo de Oliveira

11:30 – *Solution concepts for Interval-valued optimization problems via combined gradient based algorithm*

Harsha ATRE

12:00 – *On a convergence criterion for numerical solvers of the linear transport equation for neutral particles*

Marcelo SCHRAMM

12:30 – Lunch

Chair: Bardo Bodmann

14:00 – *On a parametrization for the layer thickness depending on the transmissivity in a radiative transfer problem*

Cibele LADEIA

14:30 – *A Finite Element Method for Diffusion Over a Curved Surface*

Paul HARRIS

15:00 – *Asymptotics analysis of high frequencies in thin films*
Delfina GOMEZ

15:30 – *New solutions for the neutron diffusion using Kaniadakis κ -algebra*
Julio Cesar Lombaldo FERNANDES

16:00 – Coffee Break

16:30 – *Generalized Fourier Series Approximation for the Solution of Bending of a Multiply-Connected Finite Plate*
Christian CONSTANDA

17:00 – *Fourier Analysis of the Deformations of a Porous Visco-Elastic Structure With an Application to Syringomyelia*
Paul HARRIS

17:30 – *Solution of the Monoenergetic Neutron Transport Equation using Fourier Transform*
Murilo Ferulio Gomes TEDESCO

Thursday, August 8

Chair: Paul Harris

10:00 – Plenary Lecture
Homogenization for nonlinear boundary conditions on grill-type Winkler foundations
Maria-Eugenia PEREZ-MARTINEZ

11:00 – *On the boundary value problems for functionally graded materials with microstructure*
Stanislav POTAPENKO

11:30 – *A Compact Introduction to a Nonclassical Neutral Particle Transport Model*
Ricardo BARROS

12:00 – *Pollutant Dispersion Problem in Landfills Using the Separation of Variables Method*
Daniela BUSKE

12:30 – Lunch

Chair: Maria Eugenia Perez Martinez

14:00 – *Galerkin physics-informed neural networks for solving the wave equation*
Luis CONSTANTE
14:30 – *Valve state and flow rate estimation for a multi-interval oil production well using machine learning techniques*
Bruno PONTES
15:00 – *Data Assimilation in a Chaotic Lorenz System by Cellular Neural Networks*
Haroldo CAMPOS VELHO
15:30 – *The data-driven ANN-MoC method to neutral particle transport problems in 1D*
Pedro KONZEN

16:00 – Coffee Break

16:30 – *Implementation and evaluation of molecular effects in neutron interactions in a physical Monte Carlo simulator*
Daniel Gustavo BENVENUTTI
17:00 – *Forward and Inverse Problems for Biot/Biot-JKD Equations*
Viatcheslav PRIIMENKO
17:30 – *A nonvariational form of the Neumann problem for the Poisson equation*
Massimo LANZA DE CRISTOFORIS

Friday, August 9

Chair: Christian Constanda

9:00 – Plenary Lecture

The connection of the Continuity, the Diffusion and the Wave equation by the fractional derivative

Bardo BODMANN

10:00 – *Mathematically Modelling Cell Clusters Formation and Substrate Mobility*

Adam FARMER

10:30 – *Aerial drone autonomous navigation over Amazon rainforest by active sensors*

Roberto Neves SALLES

11:00 – Closing Ceremony