



2nd International Congress on Applied Mathematics and Artificial Intelligence (ICAMAI'25)

14–17, 2025
Faculty of Sciences Dhar El Mahraz, Fes
Program Schedule

Wednesday, May 14, 2025

09:00 - 18:30	FSDM & CED
08:30 - 09:00 Salle de conférence	Registration and Welcome
09:00 - 10:00 Salle de conférence	Opening Ceremony
10:00 - 10:50 Salle de conférence	Keynote Speaker: Prof. Braumann Carlos. A. Title: Stochastic differential equation modelling of population growth in random environments. Should one use Itô Stratonovich calculus? Chair: Prof. E. Azroul
11:00 - 11:30	Coffee Break
11:30 - 12:20 Salle de conférence	Keynote Speaker: Prof. Gianpaolo Scalia Tomba. Title: Modeling disease spread... Chair: Prof. M. El Khalifi
12:30 - 14:00 Room: Salle de conférence	Parallel Sessions Biomath/Prob/Stat 1. Chair: Pr. H.Hamzaoui/ Pr E. Azroul . A. Elmyr: Estimation of Mathematical Scores from the PISA Test through Partial Identification: The Case of Morocco - Nabyl BAJJA: Thresholds for extinction and persistence in a stochastic tumor-normal-immune model B. daoudi: Arabic word sense disambiguation using fuzzy logic and Naïve Bayes approach Y. Benckekh: A new mathematical model of cerebrovascular accident due to obesity and diabete with optimal control

12:30 - 14:00 Room: Salle 1 (CED)	Parallel Sessions
PDE 1. Chair: Pr. F. Minhos/ Pr. A. Aberqi. • M. Ait Hammou: P(x)-biharmonic problem with Navier boundary conditions • M. El anssari: Nonlinear anisotropic elliptic equations with variable exponents • M. Ouboufettal: Existence results to nonlinear multivalued elliptic problems involving unbounded coefficients and L^1-data • M. Allou: Leray-Schauder's solution for a nonlocal problem in a fractional Musielak-Sobolev space	
12:30 - 14:00 Room: Salle 2 (CED)	Parallel Sessions
Numerical Analysis 1. Chair: Pr. A.Nachaoui/ Pr.M. El massoudi. • Mustapha Bassour: Numerical methods by finite difference schemes for solving Modified Kortweg-de Vries Equation • F.EL Mokhtari : Ahybrid Methode Using Genetic Algorithm and Discrete Quasi-Interpolation for Solving Fredholm Integral Equation • Z.Mellah: The Finite Element Method : From Variational Formulation to Numerical Simulation • M. Ziouane: Optimization Algorithms for Real-World Challenges: A Comparative Analysis of CG, BFGS, and L-BFGS	
12:30 - 14:00 Room: Salle 4 (CED)	Parallel Sessions
Control Theory and Optimization 1. Chair: Pr. A. Khazari/Pr. M. Baddi. • L. Lafhim: Nonconvex Quasi-Variational Inequalities: Stability Analysis and Application to Numerical Optimization • Y. El moubariki: An Accelerated Stochastic Primal-Dual Fixed Point Approach for Image Deblurring • A. Benmoussa: Evolution of Neural Networks in Autonomous Vehicle Control: From Perceptrons to Deep Reinforcement Learning • Y. El yahyaoui: Optimality conditions for a class of nonsmooth semidefinite bilevel optimization problems via convexifications applied to bilevel supply chain under uncertainty	
12:30 - 14:00 Room: Salle 5(CED)	Parallel Sessions
Artificial Intelligence 1. Chair: Pr. A. Barbara/ Pr. F.z. Janane. • F. Gmira: Combinatorial Optimization of Skill-Constrained Project Scheduling through Adaptive Neural Selection • Y. Ettafssaoui: Diabetes Prediction with Longitudinal Sequences using LSTM and Temporal Feature Attention • A. Jebrane: An Integrative Approach to Modeling Pathogen Spread Across Social Settings • A. Ettaouil: A Deep Analysis of Regularization Techniques and Their Impact on Convolutional Neural Networks for Enhanced Computer Vision Performance	

Wednesday, May 14, 2025

16:00 - 18:30
16:00 - 16:50 Salle de conférence Keynote Speaker: Prof. Ben Hamza Abdessamad Title: Deep learning and generative models Chair: Prof. Mohammed Seaid https://meet.google.com/etk-pdwn-wwq

Online Session 1. Chair: Pr. M. Seaid / Pr. A. Ben Hamza .

<https://meet.google.com/etk-pdwn-wwq>

- Jose A. Rodrigues: NEURAL DOMAIN DECOMPOSITION: A PHYSICS-INFORMED ARCHITECTURE FOR PDE LEARNING
- Carla Martinho : STOCHASTIC MODELING OF MORTALITY IN PORTUGAL: APPLICATIONS OF THE VASICEK AND CIR MODELS AT RETIREMENT AGE
- F. Hassan: A Legendre Multiwavelets Solution for Partial Integral Differential Equation of Diffusion Type
- Ilias abdaoui: A practical implementations of the global GMRES for solving the generalized Sylvester equation

PDE 2. Chair: Pr. M. Ait Hammou /Pr. O. Hammouti.

- M. El Massoudi: On Neumann Systems with Singularity applied in Quenching Phenomena in Muscatelli Spaces
- Mohammed Belayachi : Existence of renormalized solutions for some nonlinear elliptic equations with degenerate coercivity.
- EL FATRY MOHAMMED: Renormalized Solutions for Elliptic Problems in Two-Component Domains with Unbounded Heat Conduction and without sign condition
- El Hamri Hassan: Existence of Entropy Solutions for Degenerate Problems with Singular Term in Weighted Sobolev Spaces
- Samira Tatouti: G-2-frames in 2-Hilbert spaces

Artificial Intelligence 2. Chair: Pr. A. Barbara /Pr. M. El Khalifi.

- Lahcen ABBOU: Hybrid policy gradient : integrating on-policy and off-policy approaches in deep RL
- M. FRI: MATHEMATICS-DRIVEN EDGE AI FOR AGILE DIAGNOSTICS IN INDUSTRIAL ELECTRICAL SYSTEMS
- Ali Boufssasse: A Novel Dropout Method for Alleviating Over-Smoothing in Graph Neural Networks
- F.Z. Oujebbour: U-Net and Transfer Learning Approaches for Automatic Segmentation of Multi-Energy X-Ray Computed Tomography Volumes

Applied Analysis . Chair: Pr. F.z. Janane /Pr. O. El Barrimi.

- Mohammad Ahmadi : On S -(m,n)-prime ideals and their extensions
- J. Boutarfass: Approximation of generalized derivations in quasi-Banach algebras via a direct approach
- A.El hyat: Signal recovery and uncertainty principle in quaternion domains
- Larbi RAKHIMI: Dini-Lipschitz conditions for the Fourier Laguerre-Bessel transform

Thursday, May 15, 2025

09:00 - 13:30

CED

09:00 - 09:50 Amphi 1 (CED)

Keynote Speaker: Prof. Omar Bencharef

Title: Generative AI and the Future of Discovery: Transforming Research and Innovation

Chair: Prof. J. Bennouna / Prof. A. Barbara

09:50 - 10:40 Amphi 1 (CED)

Keynote Speaker: Prof. Abdeljalil Nachaoui.

Title: Semi-analytical approach to inverse problems of forager bee losses in spatial environment

Chair: Prof. J. Bennouna / Prof. A. Barbara

10:40 - 11:20

Break

11:30 - 13:30 FSDM

Keynote Speaker: Prof. Driss Yakoubi.

Title: An Introduction to FreeFem

Chair: Prof. M. El Massoudi

11:30 - 13:30

Parallel Sessions

Online Session 2. Chair: Pr. A. Aberqi /pr. C. Yazough.

<https://meet.google.com/etk-pdwn-wwq>

- CHABLA Karim: Existence of Nontrivial Weak Solutions for Problems Involving the $p(x)$ -Laplacian Operator with Non-local Boundary Conditions
- SALIMA ABAYDI: Handling Robin Boundary Conditions: A Renormalized Approach to Elliptic Equations on Disconnected Domains
- Taghi Ahmedatt: Weak solutions for a unilateral double-phase equation with Hardy type singularity
- Ahmed AHMED: Weak Solutions in Anisotropic $((z), (z))$ -Laplacian Kirchhoff Models
- M. Bahadi: Analysis of a Singular Dirichlet Problem Arising in Nonlinear Elliptic Equations with Variable Exponent

11:30 - 13:30 Room: Amphi 1 (CED)

Parallel Sessions

Numerical analysis 2. Chair: Pr. F. El Mokhtari/ Pr. A. Zafrar.

- Hafida Hamdi: Optimization-based Resolution of the Cauchy Problem for Elliptic Equations: Theory and Implementation
- A.OBBADI: A stable second-order splitting method for incompressible Navier-Stokes equations using the scalar auxiliary variable approach
- Y.Laabassi: A finite volume method for the heat equation on deforming domains
- Salaheddine MAAQOUL: Time Splitting method for a generalized Burgers equation
- Mouhssine Zakaria : Computational spectral method for solving time-space fractional diffusion equation
- Adnane Gebli: An efficient adaptive primal-dual mixed finite volume approximation problem with discontinuous coefficient of A monolithic of solid-liquid phase change problem
- Omar Rhouni: Birkhoff Polynomial Interpolation Computation Algorithm
- Yassine DOUICH: A Lattice Boltzmann Method for Image Inpainting Inspired by Fluid Dynamics
- Lahcen EL OUADEFLLI: On the numerical resolution of the Navier-Stokes equations on complex geometries
- Y. Khouldi: Numerical aspects and simulation of stress using a mathematical model

Artificial Intelligence 3. Chair: Pr. O. Bencharef/ Pr. M. El Khalifi.

- A. Malih: Managing Tourist Fear through Explainable NLP: A Multi-Agent System Leveraging PESTEL Analysis
- IDRIS BARBARA: Adaptive sampling for solving PDEs using deep learning
- ZAKARIAE DRABECH: Change Point Detection in Discontinuous Piecewise Linear Signals Using a Recursive Approach
- Adil Alami: An End-to-End Big Data Architecture for Arabic Media Sentiment Analysis: A Case Study on Moroccan Content
- SAJIB IBTISSAM: Reducing Downtime through Predictive Models: Maximizing Efficiency with Minimal Data
- Otmane Mallouk: A Selective model for transfer learning in CNNs based on fine-tuning layer optimization
- Meriem Chibani: Attention U-NET for Skin Cancer Segmentation

Biomath/Prob/Stat 2. Chair: Pr. D. Kiouach/Pr. F.z. Janane.

- L. Khammich: Analysis of a stochastic HTLV-I model using Ornstein-Uhlenbeck process
- Lahcen Koujane: Stability and Bifurcation Analysis of a Ratio Dependent Discrete Prey-Predator Model with Chaos-Control.
- Nassira Madani: The Dynamics of an Age-Structured Measles Disease Population in the Presence of Vaccinated Individuals
- EL-MJIDI EL-MEHDI: Imputation of Missing Data for Mixed Data
- Samia MOUSTAID: Switching problem and reflected backward stochastic differential equation
- MOSTAPHA BAKHOUYA: Probabilistic neural network
- A.Aarab: Uncertainty modelling of the nonlinear black-scholes equation using fuzzy logic

Control theory and Optimization 2. Chair: Pr. L. Lafhim/Pr. A. Khazari

- Y. Afdidid: Controllability of Nonlocal Semilinear Systems Governed by -Caputo Fractional Derivatives in Banach Spaces
- Redouane El Mezgueldy: First- and second-order optimality conditions for some abstract bilinear control problems
- R. El idrissi: Applying Lagrangian-type algorithm for solving multiobjective generalized Nash equilibrium problems
- Zakarya Dardour: First- and Second-Order Optimality Conditions for Generalized Bilevel Optimization Programs via Approximations
- H.OUKASSOU: Regional optimal control problem of R-L time fractional bilinear systems with final state constraint in infinite time horizon
- Abdelali IDRISSE: Observer for Kermack-Mckendrick model with time-varying delays in latency and observation

PDE 3 . Chair: Pr. A. Barbara / Pr. M. Mekour.

- Rachid el harch: The obstacle problem for nonlinear degenerate elliptic equations
- Aberqi Ahmed: $p(x, \cdot)$ -kirchhoff double phase problems via potential theory
- Mohammed Bouziani: Existence of solutions for some quasilinear elliptic problems of infinite order involving blowing-up terms and variables exponents
- A. kasmi: -Fractional Orlicz Spaces on the Real Line: A New Approach and Applications
- Driss Baghba: Existence of Solutions for a Nonlocal Problem in the New $s(\hat{u}, \hat{u})$ -Fractional MusielakSobolev Space $Ws(x, y)Lx, y(W)$
- Hamza RIAHI: Existence of Solutions For a Class of Coupled $(p(u), q(v))$ Laplacian System
- R. Messaoudi: A Pseudo-Quadratic Galerkin Basis for Solving a Low-Regularity Elliptic PDE

Friday, May 16, 2025

09:00 - 12:00		CED
09:00 - 09:50 Amphi 1 (CED)		Keynote Speaker: Prof. Feliz Minhós.
Title: Coupled systems: periodic solutions and the impulsive case		
Chair: Prof. A. Aberqi / Prof. M. Elmassoudi		
10:00 - 10:50 Amphi 1 (CED)		Keynote Speaker: Prof. Mohammed Seaid.
Title: Stochastic PDEs and uncertainty quantification for modelling in complex fluid flows		
Chair: Prof. A. Aberqi / Prof. M. Elmassoudi		

Saturday, May 17, 2025

09:00 - 12:30		FSDM
09:30 - 11:00 Room: Salle de conférence		Sessions 1
Session 1 Chair: Pr. A. Azzouzi/ Pr. A. Zafrar/ Pr. C. Yazough		
• Ayoub Cheddour: Finite Volume Method Applied to the Heat Equation • M. Kriche: Dynamic behavior of a class of delayed equations with lack of compactness • S. Hammani: Application of the SIRI Model to the Study of Tuberculosis Spread • M. Touibi: A Posteriori Error Estimation for the Discrete Duality Finite Volume Method • Elaiss Fatima Zahra: Analysis of Nonlinear Hyperbolic Equations with Variable Exponent $p(x, t)$-Laplacian Operators • A. Bousmaha: EMBEDDING THEOREM AND FRACTIONAL $p(x, \cdot)$-LAPLACIAN PROBLEM IN UNBOUNDED DOMAINS		
11:00 - 11:20		Break
11:20 - 13:00 Room: Salle de conférence		Parallel Sessions
Session 2 Chair: Pr. A. Akdim/ Pr. M. Ait Hammou/ Pr. A. Barbara		
• S. Bencheikhe : The fuzzy fractional epidemic model of computer virus using Caputo Atangana-Baleanu derivatives • F.Z. Benchakria: A Fractional Derivative Framework for Tumor-Immune System Interactions • D. Rachiq: Modeling Neuronal Dynamics with Fractional Calculus: A NSFDM-Based Approach to the Hodgkin-Huxley Model • H. Ouchicha: Numerical study of an inverse problem for the hyperbolic telegraph equation • C. Sabbane : A Mathematical Study of Epileptic Brain State Transitions via Continuation and Bifurcation Methods • AJERD AZEGGAGH Mohamed: OPTIMIZATION METHODS FOR UPDATING THE WEIGHTS OF ARTIFICIAL NEURAL NETWORKS : THEORY AND APPLICATIONS		