



الجمهورية الجزائرية الديمقراطية الشعبية
Democratic and Popular Republic of Algeria
وزارة التعليم العالي والبحث العلمي
Ministry of Higher Education and Scientific Research
جامعة ميله
University of Mila



مجلة الرياضيات والإعلام الآلي

5th National Conference on Mathematics and Applications « NCMA – 2025 »
03-04 December 2025 – Mila – Algeria

Program NCMA - 2025

First day: Wednesday 03 December 2025:

Opening Ceremony

08:30 - 09:00

Rector of Mila University

Prof. BOUCHELAGHEM Amirouche

Welcome

Plenary Conferences

09:00 - 09:45

Prof. Nasserline Kechkar (Univ. Oum Bouaghi)

Title of the Conference

Nonlinear diffusion fractional boundary-value problems:

Theory and numerical approximation

09:45 – 10:30

Prof. Samir Ladaci (Polytechnic School of Algiers)

Title of the Conference

**Fractional - Order Adaptive Observers Design For Secure
Communication Based on Chaos Control Using**

Google Meet Link : <https://meet.google.com/ham-hjkv-zsz>

03 December 2025

Poster Session

**Chairmen: Pr. BENCHEIKH LE HOCINE MOHAMED EL AMINE
Dr. KAOUACHE ISMAIL**

Name

Title of the communication

10 : 30 -11 : 00

Wissam Ghoul	On the Stability Properties of Stochastic Fractional Differential Systems with Delays
AZioune Samir	Dynamical Transitions and Chaos Control in a Discrete Predator-Prey Model with Gompertz Growth and Holling Type III Response
Benslimane Hocine	Adaptive Backstepping Control of Strict Feedback Nonlinear Systems with Full States Constraints
Hallous Ahlam	Pair production by an time-dependent electric field in a flat Robertson Walker space-time
Nadjiba Moures	The modified Compton formula for the scattering of two photons on an electron in monolayer graphene
Sahnoune Nor	An Efficient Strategy for the Global Optimization of Hölder Continuous Functions
Dib Fatima	Variational approach for impulsive delay differential equations
Arar Hadil	the Laplacian quasi-maximum likelihood estimator of affine causal processes

13 : 00 - 14 : 00

Asma Bouaziz	Advanced Modeling of Competing Risks Using the Alpha-Power Transformed Extended Exponential Distribution
Lahcene Selma	Beyond Autocorrelation: Distance Covariance for Nonlinear Time Series Analysis
Aymen Leslous	On the Approximate Controllability of Second-Order Stochastic Systems with Non-Lipschitz Coefficients
Ahmed -Yahia Rakia	Garch models for modeling and forecasting: Empirical study
Sabrine Nedjar	Existence and uniqueness in stochastic differential equations
Hennous Chahinaz	Solving Pantograph-Type 2D Integral Equations by Taylor Collocation
Harik Sara	Mathematical Analysis of Visceral Leishmaniasis Dynamics under the Influence of Chronic Comorbidities : A Discrete-Time Approach.
Larkem Manel	Stability and Hopf bifurcation of a generalized differential-algebraic biological economic system with the Hybrid functional response and predator harvesting

Parallel sessions
03 December 2025

Session 01 : Algebra and Geometry - Optimization		
Chairmen: Mohamed Cherif Benkara Mostefa, Bouchair Abderrahmane		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Bouchair Abderrahmane	Some topological properties of function spaces
11 :20 11 :40	Fedala Dyhia	LLL reduction algorithm
11 :40 12 :00	Guettaï Ghania	New results on Appell-type polynomials
12 :00 12 :20	Bencheikh Ali	Branch-and-Cut and Augmented epsilon-Constraint Algorithms for Optimization over Efficient Sets in Multi-Objective Integer Quadratic Programming
12 :20 12 :40	Souli Choubeila	Theoretical and numerical results for nonlinear optimization problems
12 :40 13 :00	Boukrouk Wafiya	A further study for a differential inclusion
13 :00	Lunch	

Session 02 : Dynamical Systems		
Chairmen: Tidjani Menacer, Tarek Houmor, khaled khalfaoui		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Sellami Nabil	Zero-double Hopf bifurcation of periodic orbits in a class of fifth-order differential equations
11 :20 11 :40	Mohamed Cherif Benkara Mostefa	Explicit formulas for the solutions of three dimensional system of difference equations with arbitrary powers
11 :40 12 :00	Meskine Rayene Abir	Projective lag synchronisation and dynamics analysis of a fractional-order chaotic system
12 :00 12 :20	Azioune Mourad	Complex dynamics and Chaos via Neimark-Sacker and Flip bifurcations in a time-delayed Cournot model
12 :20 12 :40	Ouahabi Rabiaa	Enhancing chaotic synchronization performance through the development of a new fixed-time synchronization control scheme
12 :40 13 :00	Daas Khadidja	The use of chaotic dynamical systems in modern cryptography
13 :00	Lunch	
14 :00 14 :20	Bensimessaoud Soumia	Combination synchronization of the generalized Lotka-Volterra three-species biological model
14 :20 14 :40	Redjam Ibtissem	Dynamics of a higher order three dimensional rational difference equations system
14 :40 15 :00	Bellout Aida	Modeling chaotic dynamics via a fractional gauss map of fixed memory length

03 December 2025

Session 03 : Fractional Calculus - Mathematical Modeling - PDE		
Chairmen: Samir Ladaci, Abdelfatah CHAREF		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20 11 :20 11 :40	Abdelfatah CHAREF	Realization and Numerical Evaluation of the Linear Variable Order Fractional Differential Equations using Dynamical Systems
11 :40 12 : 00	Saadi Faiza	Practical resolution of two fractional differential equations of Bagley-Torvik by ANNs
12 : 00 12 : 20	Bouridah Mohammed salah	A novel chaos synchronization-based approach for secure image cryptosystem
12 : 20 12 : 40	AMIRA Rami	Analysis and circuit design of a 4D hyperchaotic
12 : 40 13 : 00	Chennaf Bouchra	Modeling the Spatial Dynamics of Monkeypox Using a Reaction–Diffusion Approach
13 : 00	Lunch	
14 : 00 14 : 20	Bouzit Selma	Enhanced Radial Basis Functions for Interpolation Challenges
14 : 20 14 : 40	Nemsi Aicha	On the stability of a double porous elastic system with visco-porous damping
14 : 40 15 : 00	Douaifia Redouane	Existence result for a class of reaction-diffusion systems with fractional diffusion coming out of reversible chemistry
15 : 00 15 : 20	Aimene Imad	A study on the qualitative properties of solutions to nonlinear plate equations

Session 04: Numerical Analysis – ODE		
Chairmen: Nasserdine Kechkar, Azzeddine Bellour, Abdelwahab ZAROUR		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Arafa Djihene	Numerical Resolution of the Fractional $K(m,n)$ Equation by Lie Symmetry Reduction and Spectral Collocation
11 :20 11 :40	Zeghdane Rebiha	A Meshfree Approach for Solving Two-Dimensional Volterra–Fredholm Integral Equations Using Radial Basis Functions
11 :40 12 : 00	Chafika Sekhane	Taylor Collocation Method for Delayed 2D Volterra Integral Equations
12 : 00 12 : 20	Saidane Sara	A Collocation Algorithm for Solving Two-Dimensional Delay Volterra Integro-Differential Equation
12 : 20 12 : 40	Bouakkaz Mouaad	Spectral Approach for Solving a Fractional Nonlinear Oscillation Model
12 : 40 13 : 00	Boukhari Soumaya	A High-Accuracy Bernoulli Polynomial Spectral Collocation Scheme for Delay Differential Equations with Additive Stochastic Noise
13 : 00 13 : 20	Merchela Wassim	Existence of coincidence points in dislocated metric spaces
13 : 00	Lunch	

03 December 2025

Session 05 : Operators theory - Mathematical Physics.		
Chairmen: Tahar Boudjedaa, Khireddibe Nouicer, Kerkouche El hillali		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Merdj Nadjat	Solvability of the Riccati operator equation via generalized Drazin-Riesz inverses
11 :20 11 :40	Bouhafna Amel	Numerical radius inequality and operator transform
11 :40 12 :00	Benmakhlouf Ahlem	On the Hilbert-Schmidt Numerical Radius of 3 x 3 Operator Matrices
12 :00 12 :20	Yakoub Abir	On the operator equation $AY - XB = D$ with bounded subnormal operators
12 :20 12 :40	Abdelkader Bourebai	Near-Resonance Spectral Asymptotics for Schrödinger Operators Using Semiclassical Birkhoff–Gustavson Theor
12 :40 13 :00	Boukhrouf Hadjer	Applications of mathematics in the composite Higgs models
13 :00 13 :20	Bousafsaf Issam	Solution of Schrödinger equation for non-central potential in the Global Monopole Space-time
13 :00	Lunch	

Session 06 : Probability and statistics		
Chairmen: Khelfallah Nabil, Imad Eddine Lakhdari		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Hafayed Dahbia	Optimal control of forward-backward doubly stochastic Volterra equations with jump
11 :20 11 :40	Douas Ryma	Adaptive Wavelet–Neural Network Framework for Nonparametric Regression Estimation under Mixed Censoring
11 :40 12 :00	Ahmed Hamimes	The bayesian Cox-gamma model with informative priors for multiple sources
12 :00 12 :20	Aouati Khaoula	Local Asymptotic Normality for GARCH Models with Generalized Gaussian Innovations of Non-Zero Mean
12 :20 12 :40	BOULAROUK Yakoub	Quasi-\$-\$maximum likelihood estimator for GARCH Processes with Asymmetric Laplace Innovations
12 :40 13 :00	Bourezaz Houda	Deep Network Learning: A Nonparametric Regression Estimator for Censored Model
13 :00	Lunch	
14 :00 14 :20	Djebar AHLEM	Around Poisson New XLindley Process: Comparison and Application in Actuarial Science
14 :20 14 :40	Berkane Khelifa	Modelling Long-Memory and Random Perturbations in Epidemic Processes: A SIRDS Model.

Second day Thursday 04 December 2025

Plenary Conferences

08:30 - 09:15

Prof. Boumediene Abdellaoui (Univ. Tlemcen)

Title of the Conference

New regularity results for the fractional heat equation and applications

Google Meet Link:

09:15 - 10:00

Prof. Khireddine Nouicer (Univ. Jijel)

Title of the Conference

Dynamical Systems Methods in Modern Cosmology

Google Meet Link: <https://meet.google.com/ham-hjkv-zsz>

04 December 2025

Poster Session

**Chairmen: Pr. BENCHEIKH LE HOCINE MOHAMED EL AMINE
Pr. BOUDJEDAA BADREDINE**

Name

Title of the communication

10 : 30 -11 : 00

Ouakouak Yassine

Existence and Uniqueness of a thermoelastic shear beam model with Gurtin-Pipkin law

Nabil Haneche

Nonlinear dynamics, chaos, and stabilization of a fractional-order discretized energy-saving and emission-reduction system

Bekakra Youssouf

A Stable Implicit Difference Scheme for the Time-Fractional Diffusion Equation

Djebili Mohammed

Fractional Super-Twisting Algorithm Sliding Mode Controller For a Class Of Fractional Order Nonlinear Systems Synchronization

Oussama Bouanane

Analytical Solution Of Systems Of Time-Fractional Coupled Burgers Équations Using Homotopy Perturbation Method

Boulatiour Yacine

Existence Results For A Fractional System of Beam-Type

Oualid Djouabi

Generating functions for the product of Gaussian Padovan and Gaussian Pell-Padovan numbers with some third-order polynomials

Omar Abdelhak

A proof of a conjecture on double Roman domination edge critical graphs

13 : 00 - 14 : 00

Bouyelli Antar

Extended Spectrum of Drazin-Invertible Bounded Linear Operators

Rezig Hamza

IG-BS-LS: An Iterated Greedy Algorithm with Beam Search Reconstruction for the Permutation Flow Shop Problem

ZERKI Ali

Localization of solutions for nonlinear systems of Jerk equations

Boulfoul Bilal

On the Third-Order Nonlinear ϕ -Laplacian Impulsive

Faiza Boulham

Regularization of a nonhomogeneous ill-posed parabolic Cauchy problem via a two-parameter method with stability analysis

Guenoune Chahira

Variational analysis of visco-elastic problem with a long memory and thermal effect

Seyyid ali Saiah

The global (long-term) existence of weakly coupled semi-linear fractional σ -evolution equations with mass and nonlinear memory

Keddali Meriem

Bayesian Inference for the the Upper Truncated XLindley Model:Estimation and Simulation

Parallel sessions 04 December 2025

Session 01 : Algebra and Geometry - Optimization		
Chairmen: Mohamed Cherif Benkara Mostefa, Bouchair Abderrahmane		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Belkhelfa Mohamed	Totally umbilical, parallel, Codazzi hypersurfaces in The four -dimensional Thurston Geometry \$Sol_1^4\$
11 :20 11 :40	Ahmia Moussa	Combinatorics of Motzkin polyominoes of Catalan words avoiding \$(\geq, \geq)\$
11 :40 12: 00	Guettal Djaouida	Multivariate Global Optimization via Lower-Bounding Tangent Minorants
12 : 00 12 : 20	SAID Imad Eddine	Impact of Efficient Allocation of Virtualized Network Functions on Energy Efficiency and Quality of Service in Operator Data Centers
12 : 20 12 : 40	Derbal Louiza	An Efficient Interior-Point Algorithm for Quadratic Programming
12 : 40 13 : 00	Aissa Lamri Zeggar	Q-Learning Enhanced Particle Swarm Optimization for Dynamic Optimization: A Moving Peaks Benchmark Study
13 : 00 13 : 20	Zermani Manel	The new cobalancing polynomials and their properties
13 : 00	Lunch	
14 : 00	Closing Session	
Session 02 : Dynamical Systems		
Chairmen: Tidjani Menacer, Tarek Houmor, Toufik BOUDEN		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Fouad Khireddine	Coexistence of Three Limit Cycles for a Class of Planar Differential Systems
11 :20 11 :40	Saoudi Bilal	Dynamical systems of the p-adic (4,1)-rational functions with four fixed points
11 :40 12 : 00	Rezaiki Nabil	Limit cycles appearing from the perturbation of a linear center
12 : 00 12 : 20	Brik Abdallah	Limit cycles in a cubic Kolmogorov system
12 : 20 12 : 40	Rebiai Achouak	Modeling and Stability of Neural Electrical Activity
12 : 40 13 : 00	Houmor Tarek	Analysis of a Prey-Predator System using a Consumption Threshold
13 : 00	Lunch	
14 : 00	Closing Session	
Session 03 : Fractional Calculus - Mathematical Modeling – DPE		
Chairmen: Abdelhamid Ayadi, Haiour Mohamed		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	BEROUDJ Mohammed Elamine	An Inverse Problem for Space and Time Fractional Equation with Involution
11 :20 11 :40	Abidi Khedidja	On a Plate-Type Problem with Fractional Diffusion and Variable Exponent Nonlinearity
11 :40 12: 00	Bouchelil Dounia	A Polynomial Stability Result for Nonlinear Waves system
12: 00 12: 20	Bouguerroumi Mohamed	The uniform stability of a Von Kármán model with thermo-viscoelastic damping
12: 20 12: 40	Soumia Abdelhadi	Well-posedness of solution for a coupled system of nonlinear wave equations
12 : 40 13: 00	Garti Ines	On the Qualitative Properties of Solutions to a Generalized Boussinesq Problem
13 : 00	Lunch	
14 : 30	Closing Session	

Session 04: Numerical Analysis - ODE		
Chairmen: Mohamed Dalah, Ahcene Merad		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Barrouk Bachir	A New Variant of the Three-Term PRP Conjugate Gradient Algorithm for Optimization
11 :20 11 :40	Birem Fouzia	An Efficient Algorithm for Solving Multi-Dimensional Integral Equations
11 :40 12 : 00	Khenissa Hadil	Spectral Approximation of Elliptic Equation on the Real Line Using Arar--Boulmezaoud Functions
12 : 00 12 : 20	Bellour Yousra	A θ -Scheme Galerkin Finite Element Approach to the Dirichlet Problem for Parabolic Variational Inequalities with Nonlinear Source Terms
12 : 20 12 : 40	Zenkhrri Kaoutar	Numerical Resolution of Nonlinear Volterra Integral Equations
12 : 40 13 : 00	Redouane Kelthoum Lina	A novel CBS-finite difference hybrid method for hyperbolic wave equations
13 : 00 13 : 20	Rehouma Abdelhamid	Orthogonal polynomials on the unit circle of the second kind and their properties
13 : 00	Lunch	
14: 00	Closing Session	
Session 05 : Mathematical Physics		
Chairmen: Tahar Boudjedaa, Issam Bousafsaf		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Kecita Farouk	Unitary Transformations for a Class of Time-Dependent Non-Hermitian Systems
11 :20 11 :40	Achab Hamid	On the Mathematical Modeling of Thermo-Viscoplastic Contact with Time-Fractional Derivatives
11 :40 12 : 00	Riougui Rabie	Existence and Global Exponential Stability of Solutions of a Hopfield Neural Network in an Ordered Banach Space
12 : 00 12 : 20	Meskine Abdellah	Analysis of some qualitative behavior concepts for Vector Fourth-Order delayed Differential Equations of neutral type
12 : 20 12 : 40	Benelmir Nesserine	Stability in 4D Chaotic System with Tangent Hyperbolic Nonlinearity
12 : 40 13 : 00	Yakhlef Othman	Numerical procedure for fluid-structure interaction evolution with a fixed-point algorithm.
13 : 00	Lunch	
14 : 00	Closing Session	
Session 06 : Probability and statistics		
Chairmen: Khelfallah Nabil, Imad Eddine Lakhdari		
Hour	Name	Title of the presentation
10 :30 11 :00	Coffee Break + Poster session	
11 :00 11 :20	Baghezza Feyrouz	Some approximation results for renewal reward process based on moments
11 :20 11 :40	Guermah Toufik	Spatial extreme values modeling by Smith and Brown-Resnick max-stable processes (Case study: maximum yearly rainfall in Chlef region)
11 :40 12 : 00	Benatmane Chaabane	Modeling Extremes with Self-Switching and Composite Distributions: Applications to Seismicity and Insurance Losses
12 : 00 12 : 20	Haneche Mohamed	Parameter Estimation In A Black Scholes Model Using Mixed Method
12 : 20 12 : 40	Grimes Welid	A weighted-path following interior-point algorithm for monotone linear complementarity problems based on modified search directions
12 : 40 13 : 00	Menasri Abdellah	Planar Projection Approach to a Three-Dimensional Quadratic System
13 : 00 13 : 20	Kentache Sarra	An innovative technique for solving Multi-Objective Stochastic Integer Linear Programs
13 : 00	Lunch	
14: 00	Closing Session	

Closing Ceremony
14:00 - 14:30