CERTIFICATE

OF PARTICIPATION

CNMA 2024
MILA UNIVERSITY CENTER

Centre Universitaire de MILA

This is to certify that

Bilal Basti

Has participated as "Virtual Presenter" and presented the following talk entitled

"Exploring nonlinear effects in fractional reaction-diffusion/wave equations"

during the

4th National Conference of Mathematics and Applications (CNMA – 2024) held at Abdelhafid Boussouf University Center of Mila, Algeria 07-08 December 2024

Co-authors :

Conference Chair

Prof. Dr. Yacine Halim

National Conference of Mathematics and Applications - NCMA 2024 -

Exploring nonlinear effects in fractional reaction-diffusion/wave equations

Bilal Basti[*]

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Abstract

This paper studies the existence and uniqueness of radially symmetric solutions for a multidimensional nonlinear time and space-fractional reaction-diffusion/wave equation that enables treating vibration and control, signal and image processing, and modeling earthquakes, among other physical phenomena. Additionally, applying Schauder's and Banach's fixed point theorems facilitates identifying the existence and uniqueness of solutions for the selected equation.

1 Introduction

In this work, we shall give an example of a class of fractional-order's PDEs, which helps to describe various complex phenomena; it is a multidimensional nonlinear time and space-fractional reaction-diffusion/wave equation and is written as follows:

$$
\begin{cases}
\partial_t^\alpha u - \kappa^2 \Delta u = F\left(t, x, u, \partial_t^\beta u, (-\Delta)^s u\right), & 0 < s \le 1,\ 1 < \beta \le \alpha \le 2 \\
u(0, x) = |x|^\delta u_0,\ \frac{\partial u}{\partial t}(0, x) = 0, & \delta, u_0 \in \mathbb{C},
\end{cases}
\tag{1.1}
$$

where $u = u(t, x)$ is a scalar function of time and space variables $(t, x) \in \Omega = [0, T_\varepsilon] \times [\varepsilon/\sqrt{m}, +\infty)^m$ for $\varepsilon, \ell > 0$, and $T_\varepsilon = \ell \varepsilon^{\frac{2}{\alpha}}$ with $m \in \mathbb{N}$. Also $F : \Omega \times \mathbb{C} \times \mathbb{C} \times \mathbb{C} \to \mathbb{C}$ is a nonlinear function, $\kappa \in \mathbb{R}^*$ is a real constant the symbol $(-\Delta)^s$ defines the fractional Laplacian operator [1].

This paper's contribution regards determining the existence, uniqueness, and main properties of the general solution of stability problems obtained through replacing classical rules with fractional quadrature rules of the radially symmetric solution (see [1, 2, 3]),

$$
u(t, x) = |x|^\delta f\left(|x|^{-\frac{2}{\alpha}} t\right), \text{ for } |x| = \sqrt{x_1^2 + \cdots + x_m^2}, \text{ and } \delta \in \mathbb{C},
\tag{1.2}
$$

the basic profile f is not known in advance and is to be identified.

For the forthcoming analysis, we impose the following hypotheses:

$(hyp.1)$ $F : \Omega \times \mathbb{C} \times \mathbb{C} \times \mathbb{C} \to \mathbb{C}$ is a continuous function that is invariant by the change of scale (1.2). It gives us:

$$
F\left(t, x, u, \partial_t^\beta u, (-\Delta)^s u\right) = |x|^{\delta-2}\left(J\left(\eta, f(\eta), f'(\eta), {}^C\mathcal{D}_{0^+}^\beta f(\eta)\right) - \frac{4\kappa^2}{\alpha^2} \eta^2 f''(\eta)\right),
\tag{1.3}
$$

where $\eta = |x|^{-\frac{2}{\alpha}} t$ and $J : [0, \ell] \times \mathbb{C} \times \mathbb{C} \times \mathbb{C} \to \mathbb{C}$ is a continuous function.

$(hyp.2)$ There exist three positive constants $\omega_1, \omega_2, \omega_3 > 0$ so that the continuous function J given by (1.3) satisfies:

$$
\left|J(\eta, f, g, h) - J\left(\eta, \tilde{f}, \tilde{g}, \tilde{h}\right)\right| \le \omega_1 \left|f - \tilde{f}\right| + \omega_2 |g - \tilde{g}| + \omega_3 \left|h - \tilde{h}\right|,
$$

for any $f, g, h, \tilde{f}, \tilde{g}, \tilde{h} \in \mathbb{C}$.

$(hyp.3)$ There exist four positive functions $a, b, c, d \in C\left([0, \ell], \mathbb{R}_+\right)$ such that the continuous function J given by (1.3) satisfies:

$$|J(\eta, f, g, h)| \le a(\eta) + b(\eta)|f| + c(\eta)|g| + d(\eta)|h|,$$

for any $f, g, h \in \mathbb{C}$ and $\eta \in [0, \ell]$.

λ denotes the positive constant defined by

$$\lambda = \max\left\{\frac{\alpha\ell^{\beta-1}(|q| + c^*) + d^*}{\ell^{\beta-\alpha}\Gamma(\alpha - \beta + 1)}, \frac{\alpha\ell^{\beta-1}(|q| + \omega_2) + \omega_3}{\ell^{\beta-\alpha}\Gamma(\alpha - \beta + 1)}\right\},$$

where $q = -\frac{2\kappa^2}{\alpha^2}(\alpha(2\delta + m + 2) + 2)$ and

$$a^* = \sup_{\eta\in[0,\ell]} a(\eta), \ b^* = \sup_{\eta\in[0,\ell]} b(\eta), \ c^* = \sup_{\eta\in[0,\ell]} c(\eta) \text{ and } d^* = \sup_{\eta\in[0,\ell]} d(\eta).$$

2   Main results

Now, we give the main theorems of this work.

Theorem 2.1. *Assume the hypotheses $(hyp.1)$–$(hyp.3)$ hold. If we put $\lambda \in (0, 1)$ and*

$$\frac{T_\varepsilon^\alpha\left(\left|\delta\kappa^2(\delta + m - 2)\right| + b^*\right)}{\Gamma(\alpha + 1)(1 - \lambda)} < \varepsilon^2, \tag{2.1}$$

then, there is at least one solution to the problem (1.1) on Ω in the radially symmetric form (1.2).

Theorem 2.2. *Assume the hypotheses $(hyp.1)$, $(hyp.2)$ hold. We give $\lambda \in (0, 1)$ and*

$$\mathcal{K} = \left(\frac{\Gamma(\alpha + 1)(1 - \lambda)}{\left|\delta\kappa^2(\delta + m - 2)\right| + \omega_1}\right)^{\frac{1}{\alpha}}.$$

If we put

$$T_\varepsilon < \varepsilon^{\frac{2}{\alpha}}\mathcal{K}, \tag{2.2}$$

then the problem (1.1) admits a unique solution in the radially symmetric form (1.2) on Ω.

References

[1] B. Basti, R. Djemiat, and N. Benhamidouche, *Theoretical studies on the existence and uniqueness of solutions for a multidimensional nonlinear time and space-fractional reaction-diffusion/wave equation*, Mem. Differ. Equ. Math. Phys., **89** (2023), 1–16.

[2] B. Basti and N. Benhamidouche, *Existence results of self-similar solutions to the Caputo-type's space-fractional heat equation*, Surv. Math. Appl., **15** (2020), 153–168.

[3] R. Djemiat, B. Basti, and N. Benhamidouche, *Cauchy problem for Jordan-Moore-Gibson-Thompson equations of nonlinear acoustics with fractional operators*, An. Stiint. Univ. Al. I. Cuza Iasi. Mat., **69**(2) (2023), 143–161.

Institute of Mathematics and Computer Science
Department of Mathematics

معهد الرياضيات والإعلام الآلي
قسم الرياضيات

4th National Conference of Mathematics and Applications "CNMA – 2024
07-08 December 2024 – Mila – Algeria

Program CNMA2024

First day Saturday 07 December 2024 :

Opening Ceremony

08:30 - 09:00

The Director of the Abdelhafid Boussouf University Center – Mila

Prof. BOUCHELAGHEM Amirouche

Welcome

Plenary Conferences

09:00 - 09:30

Prof. Ali Moussaoui (Tlemcen University)

Title of the Conference

Dynamics of Fish Populations in a Multi-Patch Logistic Model: Impact of Migration and Fishing Efforts on Maximum Sustainable Yield

09:30 – 10 :00

Prof. Mouaffak Benchohra (Sidi Bel Abbes University)

Title of the Conference

Degree of Nondensifiability and Applications

Google Meet Link: https://meet.google.com/geo-ybwv-thi

Parallel sessions

07 December 2024

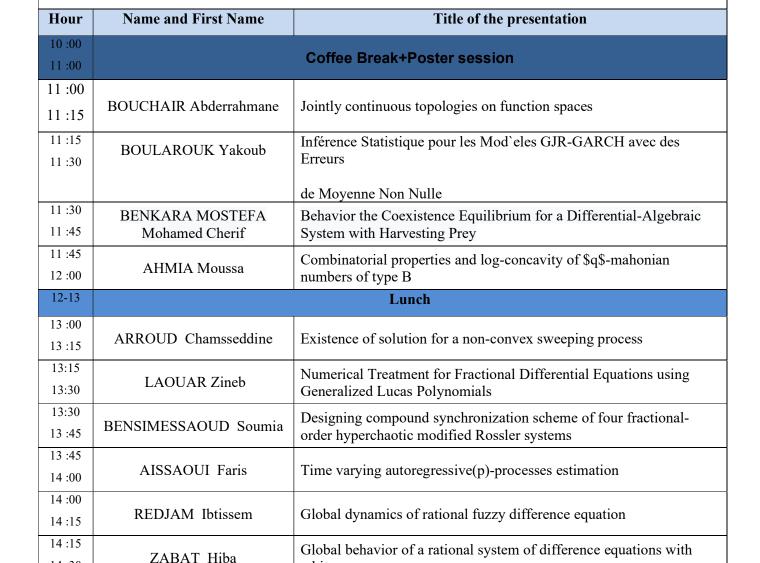| Hour	Name and First Name	Title of the presentation
Session : Mathematics (Face to Face) Chair persons: Pr Tahar BOUDJEDAA – Pr Maamar BENBACHIR Google Meet Link : https://meet.google.com/geo-ybwv-thi		
10 :00 11 :00	Coffee Break+Poster session	
11 :00 11 :15	BOUCHAIR Abderrahmane	Jointly continuous topologies on function spaces
11 :15 11 :30	BOULAROUK Yakoub	Inférence Statistique pour les Mod`eles GJR-GARCH avec des Erreurs de Moyenne Non Nulle
11 :30 11 :45	BENKARA MOSTEFA Mohamed Cherif	Behavior the Coexistence Equilibrium for a Differential-Algebraic System with Harvesting Prey
11 :45 12 :00	AHMIA Moussa	Combinatorial properties and log-concavity of q-mahonian numbers of type B
12-13	Lunch	
13 :00 13 :15	ARROUD Chamsseddine	Existence of solution for a non-convex sweeping process
13:15 13:30	LAOUAR Zineb	Numerical Treatment for Fractional Differential Equations using Generalized Lucas Polynomials
13:30 13 :45	BENSIMESSAOUD Soumia	Designing compound synchronization scheme of four fractional-order hyperchaotic modified Rossler systems
13 :45 14 :00	AISSAOUI Faris	Time varying autoregressive(p)-processes estimation
14 :00 14 :15	REDJAM Ibtissem	Global dynamics of rational fuzzy difference equation
14 :15 14 :30	ZABAT Hiba	Global behavior of a rational system of difference equations with arbitrary powers
14 :30 14 :45		
14 :45 15 :00	BOUZERAIB Meryem	New convolution approaches for bivariate polynomials and well-known numbers and polynomials
15 :00 15 :15	SAIDANE Sara	Numerical solution of Neutral Volterra delay integral equations

10 :00-11 :00 Poster Session

Chair person: Pr Mohamed Salah ABDELOUAHAB

Name and First Name	Title of the communication
BIREM Fouzia	An Approach to Solving Nonlinear Three-Dimensional Integral Equationsce
KHENNAOUI Cheima	Numerical Analysis of a Class of Partial Integro-Differential Equations in Heat Conduction of Materials
KAOUACHE Smail	Chaos Control of the Chaotic Fractional-Order Satellite System Model via a Linear Feedback Criterion
KHELIFA Amira	An Interconnected system of difference equations with coefficients linked to Fibonacci
HALLOUS Ahlam	Path integral for Dirac particle in the presence of an electric field in a f lat Robertson Walker space-time
GHADRI Amel	Generating functions of stirling numbers of the first kind with some known numbers and polynomials
LESLOUS Aymen	An Investigation of Mild Solutions and Relaxed Conditions in Second-Order Stochastic Differential Equations with Q-Wiener Processes
BOUZEKRIA Fahima	Symmetric and generating functions of Gaussian (p, q)-numbers.
HAMEURLAINE Meriem	Some Exact Bianchi Type I Perfect Fluid Solutions

Parallel sessions (Online)

07 December 2024

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Session   : Algebra and Number Theory

Chair persons: Dr Soheyb MILLES + Dr Salah Eddine RIHANE

Google Meet Link : https://meet.google.com/nxt-tohn-kft

</td></tr>
<tr><th>Hour</th><th>Name and First Name</th><th>Title of the presentation</th></tr>
<tr><td>11 :00
11 :15</td><td>Farida MEKKAOUI</td><td>A new results on the λ-Aluthge transform</td></tr>
<tr><td>11 :15
11 :30</td><td>Sarra BOUDAOUD</td><td>Principal intuitionistic fuzzy ideals and lters on a lattice</td></tr>
<tr><td>11 :30
11 :45</td><td>Mourad CHELGHAM</td><td>Generalization of Catalan's identity for k-Jacobsthal and k-Jacobsthal-Lucas numbers using symmetric functions</td></tr>
<tr><td>11 :45
12 :00</td><td>Soheyb MILLES</td><td>Particular Fuzzy Subsets on Topology Generated by Fuzzy Relation</td></tr>
<tr><td>12-13</td><td colspan="2" align="center">**Lunch**</td></tr>
<tr><td>13 :00
13 :15</td><td>Hakim MOUSSAOUI</td><td>An Analysis of Deformation in Superbialgebras</td></tr>
<tr><td>13:15
13:30</td><td>Dounya HAMEK</td><td>Construction of generating functions of special numbers and Polynomials</td></tr>
<tr><td>13:30
13 :45</td><td>Nesrine HARROUCHE</td><td>Convolution Sums of Spécial Numbers and Polynomials</td></tr>
<tr><td>13 :45
14 :00</td><td>Boualam REZIG</td><td>Log-concavity of Hyper-Leonardo numbers</td></tr>
<tr><td>14 :00
14 :15</td><td>Rokiya SAHALI</td><td>Neovel Generating Functions for Products of Certain Numbers with MultiVariable Symmetric Functions</td></tr>
<tr><td>14 :15
14 :30</td><td>Ahmed BENKAHLA</td><td>Solvable Hom group</td></tr>
<tr><td>14 :30
14 :45</td><td>Khadidja MOUSSAOUI</td><td>Diophantine Triples and Linear Forms in Logarithms</td></tr>
<tr><td>14 :45
15 :00</td><td>Salah Eddine RIHANE</td><td>On repdigits which are sums or deferences of two k-Pell numbers</td></tr>
<tr><td>15 :00
15 :15</td><td>Hassane BOUREMEL</td><td>Characterization of the positive cone of an ordered Hom-group</td></tr>
</table>

Parallel sessions (Online)

Session : Dynamical Systems and Chaos **Chair persons: Pr Tidjani MENACER+ Dr Rabah BOUOUDEN** **Google Meet Link : https://meet.google.com/vqx-yipv-dws**		

Hour	Name and First Name	Title of the presentation
11 :00 11 :15		
11 :15 11 :30	Louiza DIABI	Fractional Form of Financial Market Map Based On the Caputo-like Difference Operator
11 :30 11 :45	Abed MAKRELOUFI	Some Contributions on Controllability for Irregular Descriptor Systems
11 :45 12 :00	Sara DRIDI	The Controllability Tree for regional controllability of Non-linear Cellular Automata
12-13	**Lunch**	
13 :00 13 :15	Imane KOUADRA	Chaotic Encryption-Based Multi Biometric Recognition through an Improved Nonlinear Function
13:15 13:30	Sabah BENADOUANE	Existence of two non algebraic limit cycles for a class of quartic polynomial differential system
13:30 13 :45	Safia BellaBaci	New method for edge detection in images processing using fractional derivative
13 :45 14 :00	Rabah BOUOUDEN	The Effect of Probability Density on the Chaotic Optimization Process
14 :00 14 :15	Mimia BENHADRI	Nonnegative periodic solutions for first order nonlinear functional differential equations with distribay delay
14 :15 14 :30	Amira AIBECHE	Fractional order differential equation
14 :30 14 :45	Sara SMAIL	A characterization of the Schechter essential pseudospectrum for 3×3 block operator matrices
14 :45 15 :00		

Parallel sessions (Online)

Session : Modelling and Optimisation
Chair persons: Pr Rebiha BENTERKI + Dr Assma LEULMI
Google Meet Link : https://meet.google.com/kha-sxiu-gga

Hour	Name and First Name	Title of the presentation
11 :00 11 :15	Ahmed HAMIDAT	Contact Problem Analysis in Thermo-Electro-Elastic-Viscoplastic Materials Considering Damage
11 :15 11 :30	Mohamed DELLAL	Impact of Substrate Inhibition on Coexistence in Chemostat Models with Allelopathic Interactions
11 :30 11 :45	Hayat ISSAADI	Distinguishing number of some split graphs
11 :45 12 :00	Chahinez IMINE	Number of colors needed to break symmetries of a graph by an arbitrary vertex coloring
12-13	Lunch	
13 :00 13 :15	ZIADI Raouf	A limited memory BFGS algorithm for bound-constrained global optimization via stochastic perturbation
13:15 13:30	Samia DJEMAI	Reduction of bounded variables in convex quadratic programming problem
13:30 13 :45	Asma MAIZA	A new hybrid(RMIL-BRB) conjugate gradient method for unconstrained optimization
13 :45 14 :00	Assma LEULMI	A new conjugate gradient algorithm for nonlinear unconstrained optimization
14 :00 14 :15	Choubeila SOULI	An efficient hybrid conjugate gradient method for unconstrained optimization and image restoration problems
14 :15 14 :30	Youcef Elhamam HEMICI	Numerical comparison between a modified PRP and LS methods using a diagonal Hessian approximation approach
14 :30 14 :45	Randa CHALEKH	Complexity analysis of large-update IPMs for $P_*(\kappa)$-HLCP based on a new parametric kernel function
14 :45 15 :00	Ahlem ZAARAT	Simplex-like trajectories on semi infinit optimization

Parallel sessions (Online)

Session   : Probability and Statistics

Chair persons: Dr Hacen CHRAITIA+ Dr Yakoub BOULAROUK

Google Meet Link : https://meet.google.com/pka-agfo-esk

Hour	Name and First Name	Title of the presentation
11 :00 11 :15	Sylia ABDOUN	Impact of Partial Information on a Markovian Queue with Distinct Vacations
11 :15 11 :30	Soulef BOUGUEROUA	Numerical Comparisons of Different Imaging Algorithms
11 :30 11 :45	Abdelkader BENKHALED	On the positive part of the James-Stein estimator
11 :45 12 :00	Hayat RAMDANI	Modeling and analysis of multi-server queueing systems with Feedback, catastrophic events, and repair dynamics
12-13	Lunch	
13 :00 13 :15	Isma DEBBAH	Comparative of Different Competitive Methodes Estimators
13:15 13:30	Meriem BENHACHICHE	Testing the Pattern Informatics and Relative Intensity forecasts for Zagros region
13:30 13 :45	Abdel Hakim AZZEDINE	Probabilistic and Statistical control of dynamic industrial processes
13 :45 14 :00	Karima BOUALAM	On Least Squares Estimation of the Exponential Tail Coefficient for Dependent Data
14 :00 14 :15	Aicha BARECHE	Operator method for approximating ruin probability in risk models : Application to insurance data
14 :15 14 :30	Souheyla CHEMIKH	Robust Local Linear M-Estimators in a Nonparametric Functional Framework
14 :30 14 :45	Razika GRINE	Distribution de Lindley Modifiée Biaisée
14 :45 15 :00	ARIOUI Fatima Zahra	Solutions Sets for Stochastic Differential Equations and Inclusions

Parallel sessions (Online)

Session   : Partial Differential Equations (PDEs)

Chair persons: Pr Ahcene MERAD + Pr Med Lamine BENCHEIKH LE HOUCINE

Google Meet Link : https://meet.google.com/nsd-ayme-agw

Hour	Name and First Name	Title of the presentation
11 :00 11 :15	ARAR Nouria	Operational Matrix Method for Solving Multi-Order Fractional Differential Equations
11 :15 11 :30	BERRIGHI Fatma	Existence of Mild Solutions in Second-Order Impulsive Evolution Equations
11 :30 11 :45	LAKEHAL Aymen	Mathematical analysis and Epidemic Modeling of the Nonlinear SEIAR System with Caputo Fractional Derivatives
11 :45 12 :00	OTMANI Sadok	ON THE STUDY THE RADIUS OF ANALYTICITY FOR KORTEWEG-DE-VRIES SYSTEM
12-13	Lunch	
13 :00 13 :15	BOUSSERHANE Reda Soufiane	On the local existence and uniqueness of a solution for wave equations with nonlinear memory term
13:15 13:30	CHELLAOUA Houria	Global Existence and Exponential Decay of Nonautonomous Delayed Evolution Equations with Nonlinear Source Terms
13:30 13 :45	ARAOUR Meriem	On fuzzy integro-differential equation with the Cauchy kernel
13 :45 14 :00	ALLAOUI Nour Elhouda	Regularity of entropy solution for degenerate Laplacian problem
14 :00 14 :15	HOUD khireddine	On the solution of variational inequality for contact problem with friction
14 :15 14 :30	BOULKHELOUA Chaima	Exponential Stability Of Lord Shulman Thermoelastic System With Porous Damping And Delay Term
14 :30 14 :45	GARTI Ines	Analyzing the Cauchy Problem for the Generalized Double Dispersion Equation Featuring Logarithmic Nonlinearity
14 :45 15 :00		

Parallel sessions (Online)

Session   : Ordinary Differential Equations (ODEs)

Chair persons: Dr Nadjat ABADA + Dr Hafida LAIB

Google Meet Link : https://meet.google.com/hnv-oetv-hqx

Hour	Name and First Name	Title of the presentation
11 :00 11 :15	MOUHOUS Amirouche	New criteria for the existence of solution in first-order boundary value
11 :15 11 :30	IKHLEF Nadia	Asymptotically Almost Automorphic Mild Solutions for Some Stochastic Integro-differential Equations
11 :30 11 :45	Kettaf Ishak	Existence result for a sublinear second order Dirichlet boundary value problem on the real half-line
11 :45 12 :00	MESKINE Abdellah	Stability and Boundedness of Solutions for Certain Nonlinear System of Second-Order Delay Differential Equations of Neutral Type
12-13	Lunch	
13 :00 13 :15	CHOUADER Rima	A CLASS OF KOLMOGOROV DIFFERENTIAL SYSTEM WITH TWO HYPERBOLIC ALGEBRAIC LIMIT CYCLES
13:15 13:30	ALLOUCH Nadia	Solvability and Stability of Fractional q-Difference Equations With Nonlinear Integral Conditions
13:30 13 :45	DJIBAOUI Meriem	Existence of solutions to a second order differential system via variational approach
13 :45 14 :00	BELLAMOUCHI Chahinez	Existence and uniqueness of positive solution to a new class of nonlocal elliptic problem
14 :00 14 :15	BENMEHIDI Hammou	Analysis of a Coupled System Using Fractional Caputo and Riemann-Liouville Operators
14 :15 14 :30	ADOUI Ahlem	On a q-Difference Fractional Boundary Value Problem with Nonlocal Boundary Conditions
14 :30 14 :45	BOUKROUK Wafiya	The solutions set of an abstract evolution problem
14 :45 15 :00	KAREK Mohamed	Study of a non-linear Volterra integro-differential equation with a non-linear unknown source term

Parallel sessions (Online)

07 December 2024

Session : Mathematical Methodes for Physics

Chair persons: Pr Khireddine NOUICER + Pr Salah HAOUAT

Google Meet Link : **https://meet.google.com/syc-iyqg-tmv**

Hour	Name and First Name	Title of the presentation
11 :00 11 :15	Fekrache Imane	Graphical solution for a Klein-Gordon particle deformed radial Rosen-Morse-type potentials
11 :15 11 :30	BOUCHEFRA Djahida	Exact bound states of the Dirac equation with generalized Cornell potential plus a novel angle-dependent potential
11 :30 11 :45	Benhellal Badreddine	On Neumann-Poincaré operators and self-adjoint transmission problems
11 :45 12 :00	Kirat Soulaf	Hawking radiation in Noncommutative geometry; second order correction
12-13		**Lunch**
13 :00 13 :15	LADJEROUD Amal	Approximate eigensolutions for Schrödinger equation for the generalized Cornell plus Hulthen potential
13:15 13:30	BENSLIMAN Said	A note on inversion of Toeplitz matrices of type Sedlock
13:30 13 :45	Kehal Youcef	Stars solutions in teleparallel scalar tensor gravity
13 :45 14 :00	BOUZERAIB Yassine	Modelisation and phenomenology of vector-like quarks within left-right
14 :00 14 :15	Mohammed Abdelmalek	A new characterization of the round sphere
14 :15 14 :30	Arab Nabil	Effects of adiabatically trapped non-thermal polarization force on dressed dust acoustic solitary waves in non-Maxwellian plasma
14 :30 14 :45	Kehal Abir	Particle creation in five-dimensional Gauss-Bonnet cosmology
14 :45 15 :00	Belkhir Naziha	Well possdness and energy estimate of a truncated pourous thermolastic systeme with Gurtin-pipkin thermal low

Parallel sessions (Online)

07 December 2024

Session : Application of Mathematics **Chair persons: Pr Moussa AHMIA+ Dr Samia KHELLADI** **Google Meet Link : https://meet.google.com/inu-vckn-bwn**		

Hour	Name and First Name	Title of the presentation
11 :00 11 :15	Salah ADOUI	Algebraic Curves to Encrypt Digital Images
11 :15 11 :30	Sarra GAOUIR	A new class of differential inclusions
11 :30 11 :45	Billal LEKDIM	Adaptive stabilization of an Euler-Bernoulli beam with internal disturbances
11 :45 12 :00	Nadjet CHETTIH	Hyperparameter Tuning for Adaptive Boosting Using GridSearch Cross-Validation Method
12-13	**Lunch**	
13 :00 13 :15	Abderrazak Mehellou	Numerical solution of Fredholm Integral Equations using Chebyshev Wavelets Method
13:15 13:30	Imane MEHIDI	A New Hybrid Method for Retinal Blood Vessel Segmentation
13:30 13 :45	Khelifa BERKANE	Analyzing Disease Dynamics with a Fractional SIRV3S Stochastic Model
13 :45 14 :00	Cheyma AZZI	A mathematical fishery model with variable stock
14 :00 14 :15	Nadjet CHETTIH	Exploring Classification Performance: A Comparison of Multi-Layer Perceptron and Traditional Machine Learning Algorithms
14 :15 14 :30	RADJAI abir	Numerical solution of the Hemmerstien integral equations
14 :30 14 :45	Asma SENHADJI	Multiplicity of solutions for a critical equation involving the fractional Laplacian
14 :45 15 :00	Oussama MEZOUAR	Mathematical Modeling of Satellite Image Orthorectification Through the Rational Function Model
15 :00 15 :15	MESSAOUDI Hassan	The time-fractional Oldroyd-B fluid equations with generalized fractional derivatives: Existence and uniqueness

Parallel sessions (Online)

07 December 2024

Session : Functional Analysis		
Chair persons: Pr Abrehmane BOUCHAIR + Dr Ali BOUSAYOUD		
Google Meet Link : https://meet.google.com/irb-zrff-mxs		

Hour	Name and First Name	Title of the presentation
11 :00 11 :15	Amar GHRIS	Refinements of Numerical Radius Inequalities for Bounded Linear Operators
11 :15 11 :30	Meryem CHETTI	On the Growth of Analytic Solutions of Linear Differential Equations near a Singular Point
11 :30 11 :45	Said ATALLAOUI	New Geraghty-type fixed point results in b-metric spaces with an application
11 :45 12 :00	Ismail LAKEHAL	Some results on C-normal operators
12-13	**Lunch**	
13 :00 13 :15	Aissa Djeriou	Boundedness of commutator of fractional maximal operator on Lorentz-Herz spaces
13:15 13:30	Bochra GHERIBI	Functional characterizations of homogeneous Besov spaces
13:30 13 :45	BENGHIA Fatima Zohra	The generalized Szegő condition and orthogonal polynomials
13 :45 14 :00	Souhaib Djaballah	On Local Spectral Properties of m-symmetric Operators
14 :00 14 :15	Seddik MERDACI	Fixed point theorems for multi-valued mappings in b-metric spaces
14 :15 14 :30	Fawzi MENIA	The norm of a linear combination of two orthogonal projections in a Hilbert space
14 :30 14 :45	Oussama Djeribia	Intermediate class of Bloch mappings
14 :45 15 :00	Khaoula Chabane	The class of D-θ operators on Hilbert spaces

Plenary Conferences

09:00 - 09:30

Prof. Maamar Benbachir (National Higher School of Mathematics)

Title of the Conference

What Kind of Research Are We Doing in Fractional Analysis?

Google Meet Link: https://meet.google.com/geo-ybwv-thi

Parallel sessions

Session : Mathematics (Face to Face)		
Chair persons: Pr Ali Moussaoui + Pr Mouffak Benchohra		
Google Meet Link : https://meet.google.com/geo-ybwv-thi		

Hour	Name and First Name	Title of the presentation
09:30 10 :00	**Coffee Break+Poster session**	
10 :00 10 :15	CHENNAF Bouchra	Controlling multidrug-resistant and extensively drug-resistant tuberculosis in Russia and India through discrete-time epidemic modeling with chemoprophylaxis
10 :15 10 :30	BELLOUT Aida	Dynamics of h-difference system with fractional order
10 :30 10 :45	AMIRA Rami	Dynamical Analysis and Control of a Fractional Order Game
10 :45 11 :00	Assia Derbouche	Adaptive lag Synchronization of an Epedimic Model
11 :00 11 :15	Issam BOUSAFSAF	Exact solutions of Dirac equation for non-central potential: Pseudoharmonic potential plus a modified double ring potential
11 :15 11 :30	ALLAM Asma	Solvability of a multidimensional close-to-cyclic system of difference equations
11 :30 11 :45	MESKINE Rayene Abir	Advanced Control of the Wang-Chen Chaotic System via Backstepping Dynamic Surface Method
11 :45 12 :00	BERKAL Messaoud	Bifurcation Analysis and Chase control for Prey-Predator Model
12-13	**Lunch**	
13 :00 13 :15	AZIOUNE Mourad	Dynamic Analysis in a Bertrand Triopoly Game and Chaos Control Using the OGY Method
13:15 13:30	Asma SAHRAOUI	The Radial Schrodinger Equation with the sextic Power Potential
13:30 13 :45		
14:30	**Closing Session**	

09 :30-10 :00 Poster Session

Chair person: Dr Widad LAOUIRA

Name and First Name	Title of the communication
ROUIBAH Khaoula	Iterative Continuous Collocation Method for Solving Nonlinear Volterra Integral Equations
KRARIA Aicha	Numerical study of interior point method for convex programming based on algebraic transformation
HIBER Nour el islam	Hybrid Evtushenko Method with α-Dense Curves
BRAGDI Mabrouk	Discrete Approximation Techniques for Solving Fractional Differential Equations with Time Delays
ZERARI Amel	On periodic time-varying bilinear processes
ROUABHIA Nader	Spinless oscillator in Dunkl formalism
BENHABILES Hanane	A primal-dual interior-point method for linear programming based on a new kernel function with a trigonometric barrier term
LAOUIRA Widad	Synchronization of the Rössler System with a New Non-Shilnikov Chaotic System

Parallel sessions (Online)

08 December 2024

Session : Probability and Statistics **Chair persons: Pr Mokhtar HAFAYED+ Dr Samira BOUKAF** **Google Meet Link : https://meet.google.com/pka-agfo-esk**		

Hour	Name and First Name	Title of the presentation
10 :00 10 :15	Salima DOUBBAKH	The Numerical Schemes for Quadratic-BSDEs
10 :15 10 :30	Abd elbasset DJENIAH	The asymptotic properties of the conditional variance estimator for functional stationary ergodic data with missing at random
10 :30 10 :45	Roumaissa ELBAY	The asymptotic normality of kernel type estimator of smooth distribution function under double truncation data
10 :45 11 :00	Sarra Leulmi	Asymptotic normality of the local linear functional conditional density based upon censored data
11 :00 11 :15	Boustila Ranya	Strong uniforme consistancy of the functional conditional density for right censored data
11 :15 11 :30	Kahina BEDDOUHENE	Semiparametric von Mises kernel circular density estimator.
11 :30 11 :45	Cheraitia hassen	A Peaks Over Threshold (POT) approach to Estimate the Value-at-Risk
11 :45 12 :00	Elias Taki Eddine MOHAMMED CHIKOUCHE	Advanced Mathematical Model in the Financial Market
12 :00 12 :15	BOUKAF Samira	The second-order necessary conditions of optimal stochastic control for McKean-vlasov systems in Wasserstein space
12-13	**Lunch**	
13 :00 13 :15	Samia TEGHRI	Using a New Two-Parameter Lindley Frailty Model in Survival Analysis Applications
13:15 13:30	Abba Khedidja	Partially Observed Optimal Control:A Stochastic Maximum Principle Approach
13:30 13 :45	Ghada ARAFA	On DAGs modeling using Copula functions
13 :45 14 :00	Ferial SAIHI	Rate of strong consistency for nonparametric estimators based on twice censored data
14:30	**Closing Session**	

Parallel sessions (Online)

Session : Partial Differential Equations PDEs		
Chair persons: Pr Mohamed HAIOUR + Pr Mabrouk MEFLAH		
Google Meet Link : https://meet.google.com/nsd-ayme-agw		

Hour	Name and First Name	Title of the presentation
10 :00 10 :15	LAYATI Abderrahmane	Existence of Positive Solutions for Elliptic Problems with Critical Hardy-Sobolev Exponent and Neumann Boundary Conditions
10 :15 10 :30	CHETTOUH Ahlem	Numerical solution of transport-diffusion equation by using Taylor collocation method
10 :30 10 :45	BOUREGHIDA Remissa	On the exponential stabilisation of electromagneto-elastic system with Wentzell conditions
10 :45 11 :00	RIAHI Mohammed El Amine	Problem of Control for Stationary Marguerre-von Kármán Equations Shallow Shell
11 :00 11 :15	BOUTARA Ghada	A spectral method for a backward heat conduction problem
11 :15 11 :30	BENAISSI Brahim	LOCAL EXISTENCE FOR AN INTEGRO-DIFFERENTIAL DIFFUSION EQUATION WITH NONLOCAL NONLINEARITIES
11 :30 11 :45	HASEK Abeer M. M.	Optical Solitons Described by the Stochastic RKL Equation with Multiplicative White Noise Utilizing the G`\G-Expansion Method
11 :45 12 :00	SAADI Douha	Approximate solution of one-dimensional diffusion equation with a nonlocal boundary condition
12-13	**Lunch**	
13 :00 13 :15	BEN ALIA Sabira	Nonlocal model for seamless cloning
13:15 13:30	BASTI Bilal	Exploring nonlinear effects in fractional reaction-diffusion/wave equations
13:30 13 :45	BOUCHERIKHA Ahlem	A numerical resolution of climat model in tropical zon
13 :45 14 :00	ABDELHADI Soumia	Blow up in finite time for the nonlinear wave equation with damping, source and nonlinear first order perturbation terms
14:30	**Closing Session**	

Parallel sessions (Online)

Session: Application of Mathematics

Chair persons: Pr Azeddine BELLOUR+ Dr Nouria ARAR

Google Meet Link : https://meet.google.com/inu-vckn-bwn

Hour	Name and First Name	Title of the presentation
10 :00 10 :15	Asma HADJOU BELAID	An analytical and numerical study of a Matrix Population Model by introducing the Brownian motion
10 :15 10 :30	Nabil Hamidi	Mathematical study of the competition model in a Chemostat with an internal lethal inhibitor
10 :30 10 :45	Ahlem ABDELOUAHAB	A free boundary problem for discontinuous semilinear elliptic equations.
10 :45 11 :00	Khedoudja Sirine Ghermoul	Comprehensive dynamics of a combined reaction-diffusion-difference system with distributed delay and non-monotonic bistable nonlinearity
11 :00 11 :15	KHEIRA ATTAR	Analysis of the Existence of Traveling Waves in a Reaction-Diffusion System Coupled to a Difference Equation
11 :15 11 :30	Slimane Benmahmoud	Fractional Calculus in the Service of Information Theory
11 :30 11 :45	Elbahi Amel	Existence, Uniqueness and Stability Results on Periodic Positive Solutions for an Iterative Neutral Nonlinear LEVIN-NOHEL INTEGRO-Differential Equations with Impulse Effects
11 :45 12 :00	Allaeddine HADDARI	Application of the maximum entropy method to determine the credibility premium
12-13	**Lunch**	
13 :00 13 :15	Fatiha KORICHI	Partially observed optimal control for mean-field stochastic systems
13 :15 13 :30	Tayeb Hamlat	Nonparametric Estimation of Performability in Homogeneous Continuous-Time Semi-Markov Processes.
13 :30 13 :45	Abir Kadi	The Analysis Of A Finite Markovian Queue Under Discouragement And N-Policy
13 :45 14 :00	Sakina BENKADDOUR	Stochastic differential equation driven by the Rosenblatt process
14:30	**Closing Session**	

Parallel sessions (Online)

08 December 2024

Session : Mathematical Methodes for Physics		
Chair persons: Pr Salah HAOUAT + Pr Tahar BOUDJEDAA		
Google Meet Link : https://meet.google.com/syc-iyqg-tmv		

Hour	Name and First Name	Title of the presentation
10 :00 10 :15	BOKHARI Ahmed	Projectile motion in view of MABC fractional operator
10 :15 10 :30	Cheriet Loubna	Ermakov-Lewis Invariant and particle creation in an anisotropic universe
10 :30 10 :45	KHANOUL Boubakeur	Exact solutions for time-dependent complex symmetric potential well
10 :45 11 :00	REDJAIMIA Ikram	Numerical simulation of the aspect ratio effect on the forced convection
11 :00 11 :15	Halima Boudada	Asymptotic properties of the conditional mode under random left truncation and functional dependent model
11 :15 11 :30	BOUDAOUD Miloudi	Unicity of Entire Functions concerning Difference Operators
11 :30 11 :45	Souhaib BOUDJELDA	An efficient parametric approach for the large-scale portfolio selection problem
11 :45 12 :00	Abdelhamid Bensalem	Second-Order Delay Integro-Differential Equations : Existence and Approximate Controllability
12:00 12 :15	Bilel MADJOUR	General decay of solutions for the Kirchhoff Plate Equations with a general type of relaxation function on the boundary
12-13	**Lunch**	
13 :00 13 :15		
13 :15 13 :30		
13 :30 13 :45		
13 :45 14:00		
14:30	**Closing Session**	

Parallel sessions (Online)

Session : Modelling and Optimization + ODEs		
Chair persons: Dr Mourad AZI + Dr Ibrahim BOUFELGHA		
Google Meet Link : https://meet.google.com/kha-sxiu-gga		
Hour	**Name and First Name**	**Title of the presentation**
10 :00 10 :15	KAREK Chafia	A Note on Homogenization of the Hyperbolic-Parabolic Equations in Domains with Holes
10 :15 10 :30	BOUDEFLA Chahrazed	Controllability of Mild Solutions for Nonlocal Neutral Evolution Problems with Finite State-Dependent Delay
10 :30 10 :45	RAKAH Mahdi	Uniqueness and stability of solutions for nonlinear fractional differential equations fourth-order
10 :45 11 :00	DAOUDI Aimen	Well-Posedness for Fracional Fourth-Order Nonlinear Caputo Viscoelastic Equations
11 :00 11 :15	BOUKOUBA Chayma	Coupled parabolic systems with non local boundary conditions
11 :15 11 :30	GUENDOUZ Hafida	Solving One-Dimensional Hyperbolic Equation With variable Coefficients
11 :30 11 :45	BOUDRISSA Imane	Image Denoising trough Fractional Nonlinear Diffusion with Caputo Derivatives and Gaussian Kernel
11 :45 12 :00	Abdelkrim REZZAG	Reduction of the bounds for ILP problems
12 :00 12 :15	Samar CHEBBAH	Schwarz Method For HJB Equation
12-13		
13 :00 13 :15	El Ouahma BENDIB	On the global phase portraits of linear differential systems with cubic homogeneous polynomial nonlinearities
13:15 13:30	Leyla SOUDANI	Existence of solutions for hybrid fractional differential inclusion with hybrid boundary conditions
13:30 13 :45	KHASSANI Mokhtar	Solve elliptic problem with coefficient operator
13 :45 14 :00		
14:30	**Closing Session**	