



# CERTIFICATE



The Director of the Laboratory of Applied Mathematics and Modeling (LMAM) hereby certifies that :

**YAHJ Rachid**

participated with an *Oral Presentation* and presented a paper entitled:

**“Lipschitz Factorable  $SP\$$ -Summing Operators”**

at the **2<sup>nd</sup> International Conference Mohand Moussaoui on Applied Mathematics and Modeling (ICMAM'25)**,

held on **December 15–16, 2025**, at the University 8 May 1945, Guelma, Algeria.

*The Laboratory Director*  
**Pr. Hamza GUEBBAI**



*Chairmen of the Scientific Committee*  
**Pr. AISSAOUI Med Zine**



# Lipschitz factorable $p$ -summing operators

Rachid Yahi<sup>1</sup>

<sup>1</sup> Department of Mathematics, Laboratory of Functional Analysis and Geometry of Spaces, University of M'sila,  
University Pole, Road Bourdj Bou Arreiridj, M'sila 28000, Algeria.  
Email: rachid.yahi@univ-msila.dz

## Abstract

This talk introduces a novel class of Lipschitz operator ideals: the Lipschitz factorable  $p$ -summing operators. We present a systematic study of their foundational properties, culminating in a central domination theorem. Furthermore, we precisely characterize the relationship between a Lipschitz operator  $T$  and its linearization  $T_L$  within this class and establish that these new operator ideals are of composition type..

**Keywords:** Lipschitz  $p$ -summing operators, Lipschitz factorable  $p$ -summing operators, operator ideals.  
**AMS Classification:** 45A05, 47H10, 65R20.

## 1 Introduction

Inspired by Farmer and Johnson's work [4], which extends the concept of  $p$ -summing linear operators to the Lipschitz framework. Several researchers have proposed various definitions of Lipschitz operators between pointed metric spaces and Banach spaces. In specific contexts, these concepts broaden different categories of ideals of linear operators between Banach spaces. It is worth mentioning that Achour et al. provide a detailed and systematic study of Lipschitz operator ideals in [1]. Jarchow and Pełczyński outlined a method for generating new Banach operator ideals from a given one, known as the *closed injective hull* (see [5]). Subsequently, Matter in [6], used this method to introduce another procedure that assigns new Banach operator ideals from a given one, known as the *interpolative ideal procedure*.

Our study aims to introduce and study the classes of Lipschitz factorable  $p$ -summing operators, we show some properties (domination Theorem) and study the relationship between a Lipschitz operator  $T$  and its linearization  $T_L$  and we prove that our new classes of operators is of composition type.

## 2 Lipschitz factorable $p$ -summing operators

**Definition 2.1.** Let  $1 \leq p < \infty$ . A mapping  $T \in Lip_0(X, E)$  is called Lipschitz factorable  $p$ -summing if there exist a constant  $C > 0$  such that for any  $x_{ij}, x_{ij'} \in X$ ,  $a_{ij} \in \mathbb{R}$  ( $1 \leq i \leq n$ ,  $1 \leq j \leq s$ ) and all positive integers  $n, m$ , we have

$$\left( \sum_{j=1}^s \left\| \sum_{i=1}^n a_{ij} (T(x^{j_i}) - T(x_{i'}^{j_i})) \right\|^p \right)^{\frac{1}{p}} \leq C \sup_{f \in B_{X^*}} \left( \sum_{j=1}^s \left( \sum_{i=1}^n a_{ij} |f(x^{j_i}) - f(x_{i'}^{j_i})| \right)^p \right)^{\frac{1}{p}} \quad (2.1)$$

The infimum of all such constants  $C \geq 0$  is denoted by  $\mathcal{F}\pi_p^L(T)$ . This class of mappings is denoted by  $\mathcal{F}\Pi_p^L(X, E)$ .

*Remark 2.1.* It is clear that (2.2) is equivalent to

$$\left( \sum_{j=1}^m \|T_L(m^j)\|^p \right)^{\frac{1}{p}} \leq C \sup_{f \in B_{\mathcal{E}(X)^*}} \left( \sum_{j=1}^m |f(m^j)|^p \right)^{\frac{1}{p}} \quad (2.2)$$



where the molecule  $m^j \in \mathcal{A}(X)$  has a representation of the form  $m^j = \sum_{i=1}^n a_i^j m_{x_{ij} x'_{ij}}, 1 \leq j \leq m$ , so we have

$$T \in \mathcal{F}\Pi_{p,L}(X, E) \iff T_L \in \Pi_p(\mathcal{A}(X), E) \quad \text{and} \quad \mathcal{F}\pi_{p,L}(T) = \pi_p(T_L) \quad (2.3)$$

Using (2.3) we get the following corollary

**Corollary 2.1.** *For every pointed metric space and every Banach space  $E$  we have*

1.  $\mathcal{F}\Pi_p^L(X, E) \subset \Pi_p^L(X, E)$ , ( $1 \leq p < \infty$ ) with strict inclusion
2.  $\mathcal{F}\Pi_p^L(X, E) \subset \mathcal{F}\Pi_q^L(X, E)$ , whenever  $1 \leq p < q < \infty$

## 2.1 Lipschitz factorable $(p, \sigma)$ -summing operators

Let us introduce the interpolative version of Lipschitz factorable  $p$ -summing operators.

**Definition 2.2.** (Lipschitz factorable  $(p, \sigma)$ -summing) Let  $1 \leq p < \infty$ , and  $0 \leq \sigma < 1$ . A mapping  $T \in \text{Lip}_0(X, E)$  is called Lipschitz factorable  $(p, \sigma)$ -summing if there exist a Banach space  $G$  and a Lipschitz factorable  $p$ -summing operator  $S \in \mathcal{F}\Pi_p^L(X, G)$  such that for any  $x_i, x'_i \in X$ ,  $a_i \in \mathbb{R}$  ( $1 \leq i \leq n$ ) and all positive integer  $n$ , we have

$$\left\| \sum_{i=1}^n a_i (T(x_i) - T(x'_i)) \right\| \leq \left\| \sum_{i=1}^n a_i (S(x_i) - S(x'_i)) \right\|^{1-\sigma} \left( \sum_{i=1}^n |a_i| d(x_i, x'_i) \right)^\sigma \quad (2.4)$$

Let  $\mathcal{F}\pi_{p,\sigma}^L(T)$  denote the infimum of all  $\mathcal{F}\pi_p^L(S)^{1-\sigma}$ , when  $S$  varies over all Lipschitz  $p$ -summing operators defined on  $X$  that fulfill the above condition. Any mapping in  $\mathcal{F}\Pi_{p,\sigma}^L(X, E)$  is Lipschitz and  $\text{Lip}(\cdot) \leq \mathcal{F}\pi_{p,\sigma}^L(\cdot)$ .

**Lemma 2.1.** *Let  $X$  be pointed metric space,  $G$  a Banach space. Let  $S \in \Pi_p(\mathcal{A}(X), G)$  and  $\delta_X : X \rightarrow \mathcal{A}(X)$  be the nonlinear isometric embedding then  $S \circ \delta_X \in \mathcal{F}\Pi_p^L(X, G)$ .*

Our first result concerning Lipschitz factorable  $(p, \sigma)$ -summing relates them with  $(p, \sigma)$ -summing linear operators. This relation is given via the linearization of the Lipschitz mapping, and provides a shortcut for the study of such summability property in the Lipschitz context.

**Theorem 2.1.** *Let  $X$  be pointed metric space,  $E$  be a Banach space Let  $1 < p \leq \infty$ ,  $0 \leq \sigma < 1$ , and  $T \in \text{Lip}_0(X, E)$ . Then  $T_L \in \Pi_{p,\sigma}(\mathcal{A}(X), E)$  if and only if,  $T \in \mathcal{F}\Pi_{p,\sigma}^L(X, E)$ .*

Using Theorem (2.1) and The Pietsch Domination Theorem related to the class of  $\Pi_{p,\sigma}$  we get the following Theorem

**Theorem 2.2.** *Let  $1 \leq p < \infty$ ,  $0 \leq \sigma < 1$  and  $T \in \text{Lip}_0(X, E)$ . The following statements are equivalent.*

- a)  $T \in \mathcal{F}\Pi_{p,\sigma}^L(X, E)$ .
- b)  $T_L \in \Pi_{p,\sigma}(\mathcal{A}(X), E)$
- c) *There exist a constant  $C \geq 0$  and a regular Borel probability measure  $\mu$  on  $B_{X^\#}$  such that for any  $x_i, x'_i \in X$ ,  $a_i \in \mathbb{R}$  ( $1 \leq i \leq n$ ) and all positive integer  $n$ , we have*

$$\left\| \sum_{i=1}^n a_i (T(x_i) - T(x'_i)) \right\| \leq C \left( \int_{B_{X^\#}} \left( \left\| \sum_{i=1}^n a_i f(x_i) - f(x'_i) \right\|^{1-\sigma} \left( \sum_{i=1}^n |a_i| d(x_i, x'_i) \right)^\sigma \right)^{\frac{p}{1-\sigma}} d\mu(f) \right)^{\frac{1-\sigma}{p}}$$

- d) *there exist a constant  $C \leq 0$  such that for any  $x_{ij}, x'_{ij} \in X$ ,  $a_i^j \in \mathbb{R}$  ( $1 \leq i \leq n$ ,  $1 \leq j \leq s$ ) and all positive integers  $n, s$ , we have*

$$\left( \sum_{j=1}^s \left\| \sum_{i=1}^n a_{ij} (T(x_i^j) - T(x'_{ij})) \right\| \right)^{\frac{p}{1-\sigma}} \leq C \sup_{f \in B_{X^\#}} \left( \sum_{j=1}^s \left( \left\| \sum_{i=1}^n a_{ij}^j f(x_i^j) - f(x'_{ij}) \right\| \right)^{\frac{p}{1-\sigma}} \left( \sum_{i=1}^n |a_{ij}^j| d(x_i^j, x'_{ij}) \right)^\sigma \right)^{\frac{1-\sigma}{p}}$$

Furthermore, the infimum of the constants  $C \geq 0$  in (2) and (3) is  $\mathcal{F}\pi_{p,\sigma}^L(T)$ .



## References

- [1] D. Achour, P. Rueda, E.A. Sánchez-Pérez and R. Yahi, Lipschitz operator ideals and the approximation property. *Math. Anal. Appl.* 436 (2016), 217–236
- [2] R. F. Arens and J. Eells Jr. On embedding uniform and topological spaces, *Pacific J. Math* 6 (1956), 397–403.
- [3] J. Diestel, H. Jarchow and A. Tonge, Absolutely summing operators. *Cambridge Studies in Advanced Mathematics*, 43. Cambridge University Press, Cambridge, 1995.
- [4] J. D. Farmer and W. B. Johnson, Lipschitz  $p$ -summing operators, *Proc. Amer. Math. Soc.* 137, 9 (2009) 2989-2995.
- [5] H. Jarchow, Locally convex spaces, B. G. Teubner, Stuttgart, 1981.
- [6] U. Matter, Absolutely continuous operators and super-reflexivity, *Math. Nachr.* 130 (1987), 193-216.
- [7] Yahi, R., Achour, D., and Dahia, E, Lipschitz closed injective hull ideals and Lipschitz interpolative ideals. *Quaestiones Mathematicae*, 48, 4 (2024) 685–701.



# People's Democratic Republic of Algeria



Ministry of Higher Education and Scientific Research University  
of 08 Mai 1945 – Guelma

Faculty of Mathematics and Computer Science and Material Sciences Laboratory  
of Applied Mathematics and Modeling (LMAM)

## Intervention Program

**2<sup>nd</sup> International Conference Mohand  
Moussaoui on Applied Mathematics  
and Modeling**

**Organized by**

**Laboratory of Applied  
Mathematics and Modeling**

**(LMAM)**

**University 8 Mai 1945  
Guelma**

**Guelma, 15-16<sup>th</sup> Dec, 2025**



**2<sup>nd</sup> International Conference Mohand Moussaoui on Applied  
Mathematics and Modeling**



# First Day Program

---

2<sup>nd</sup> International Conference **Mohand Moussaoui** on Applied  
Mathematics and Modeling



# First day, 15<sup>th</sup> December 2025

---

08h30–09h30    **Opening ceremony**    Google meeting link: <https://meet.google.com/foy-dxxt-adf>

---

In memory of the late Mr. Moussaoui Mohand

---

09h30–14h30    **Plenary Sessions**    Google meeting link: <https://meet.google.com/foy-dxxt-adf>

---

## Plenary Sessions Program

	<u>Chairman:</u> Pr. Guebbai Hamza
09h30–10h30	<b>Pr. Muhammet Kurulay:</b> The Mathematical Background of Artificial Intelligence and Disease Diagnosis from Medical Imaging
10h30–11h00	<b>Break + Poster Session</b>
	<u>Chairman:</u> Pr. Aissaoui Med Zine
11h00–12h00	<b>Pr. Fatma Zohra Nouri:</b> Flow Dynamics: Modeling, Analysis and Simulation
12h00–13h00	<b>Lunch Break</b>
	<u>Chairman:</u> Pr. Chaoui Abderrazek
13h00–14h00	<b>Pr. Aymen AMMAR:</b> Demicompact Linear Relations.





## Ordinary Sessions Program

### Room1: Integral & Differential Equations, Optimization, Numerical Methods, Ai

Chairwoman: Dr. Belhireche Hanane

Chairwoman: Dr. Kamouche Somia

<b>14h00– 14h15</b>	<b>Meriem HAMAMDA:</b> Limit Cycles of a Third Order (p, q)-Generalized Polynomial Liénard System Via Averaging Method
<b>14h15– 14h30</b>	<b>Samia MAMAR:</b> SVM for outlier detection in binary classification
<b>14h30–14h45</b>	<b>Mohammed MESSOUS :</b> On The Solvability Of Nonlinear $\Phi$ -Caputo Fractional Differential Equations In Banach Spaces
<b>14h45–15h00</b>	<b>Hamida Leila ACHOURA:</b> Improved Iterative–Nyström Approach for Fredholm Integral Equations on Large Intervals
<b>15h00–15h30</b>	<b>Coffee break</b>
<b>15h30–15h45</b>	<b>Aymen HOUAMED:</b> Wave Front Tracking for an Hyperpolic Triangular System
<b>15h45–16h00</b>	<b>Hamza REZIG:</b> IG-BS-LS: An Iterated Greedy Algorithm with Beam Search Reconstruction for the Permutation Flow Shop Problem
<b>16h00–16h15</b>	<b>Rabiaa OUAHABI:</b> Analysis of A Modified Three-Dimensional Continuous Chaotic System With Applications
<b>16h15–16h30</b>	<b>Samah NEZZAR:</b> New Stability Criteria of Linear Singular Systems
<b>16h30–16h45</b>	<b>Bachir BARROUK:</b> On The Encapsulation Of The New Xlindley Distribution
<b>16h45–17h</b>	<b>Hamouda MESSAADIA:</b> Volume and Area via of Submanifolds the Rotation Method
<b>17h00–17h15</b>	<b>Soumia KAMOUCHE:</b> Analytical And Numerical Study of Coupled Nonlinear Volterra Systems with Weakly Singular Kernels
<b>17h15–17h30</b>	<b>Hanane BELHIRECHE:</b> Numerical Treatment of the Volterra Equation with Delay



## Room2: Operator Theory, Probability and Statistics

Chairman: Dr. Segni Sami

Chairman: Dr. Dida Rida

<b>14h00– 14h15</b>	<b>Nassima KHALDI:</b> Stability Of Essential Spectra Of Closed Operators Under T-Compact Equivalence And Perturbation
<b>14h15– 14h30</b>	<b>ABIR Yakoub:</b> The Solvability of Generalized Riccati Operator Equation
<b>14h30– 14h45</b>	<b>Aicha BOUAKA:</b> Weak Brownian Motions
<b>14h45–15h00</b>	<b>Sana BOUZIDI:</b> Invariance of Some Essential Spectra of the Sum of Two Blocks of Operators Matrices via Relatively Fredholm Perturbations
<b>15h00–15h30</b>	<b>Coffee break</b>
<b>15h30–15h45</b>	<b>Ahmed BENSALMA:</b> Fractional Augmented Dickey-Fuller Test
<b>15h45–16h00</b>	<b>Moussa TAZEROUTI:</b> A Large-Step Monte Carlo Method with Geometric Boundary Correction for Elliptic PDEs
<b>16h–16h15</b>	<b>Khaled HAMIDI:</b> On Factorable Strongly P-Summing Bloch Maps
<b>16h15–16h30</b>	<b>Houssam Eddine BENCHABANE:</b> Nilpotent and Quasinilpotent Linear Relations (Multivalued Operator)
<b>16h30–16h45</b>	<b>Dorsaf KOUAS:</b> SVEP and Bishop's Property of Quaternionic Right Linear Operators
<b>16h45–17h00</b>	<b>Mohamed ZAMIME :</b> Global Alliances In Some Graphs
<b>17h00–17h15</b>	<b>Randa CHAKAR:</b> Analyse Théorique Et Méthodes Numériques Pour Les Equations Intégrales De Volterra Non Linéaires A L'aide Des $\rho$ -F-Contractions.
<b>17h15–17h30</b>	<b>Sami SEGNI:</b> A Hybrid Backward Finite Difference–Nyström Method for Efficient Numerical Solution of Linear Fredholm Integro-Differential Equation



## Room3: Fixed Point and Fractional Theory

Chairman: Dr. Amer Mesbahi

Chairwoman : Dr. Ghomrani Sarra

<b>14h00– 14h15</b>	<b>Ghania REBIAI:</b> A No-Conformable Fractional Dervative
<b>14h15– 14h30</b>	<b>Hana AOUDJIA:</b> Qualitive Analysis of Mild Solution for Iterative Fractional Differential Equations
<b>14h30–14h45</b>	<b>Zeineb KEBIR:</b> Hadamard Fractional Differential Equations: Existence and Positivity Results
<b>14h45–15h00</b>	<b>Abdellah DJAOUT:</b> Solvability of the System Involving the Mixed Derivative and Integral Erdélyi–Kober Equations of Fractional Order
<b>15h00–15h30</b>	<b>Coffee break</b>
<b>15h30–15h45</b>	<b>Salim BENCHIKH:</b> Banach Fixed-Point Theorem for Boundary Value Problems Via Riemann–Liouville Derivatives And Integrals
<b>15h45–16h00</b>	<b>SOLTANI Nor Elhouda:</b> Existence And Multiplicity Of Nontrivial Positive Solutions For Singular Fractional Elliptic System
<b>16h00–16h15</b>	<b>Kharoubi Mohammed El Amin:</b> Coincidence points for mappings defined on $(q_1, q_2)$ -quasimetric space
<b>16h15–16h30</b>	<b>Safia BAZINE:</b> Recent results on fixed points of nonlinear mappings
<b>16h30–16h45</b>	<b>Safia HIMRI :</b> Study of Molecular Assemblies with Quantum Methods
<b>16h45–17h00</b>	<b>Allaoua MEHRI:</b> Numerical Analysis of a Multi-Term Time-Fractional Convection-Diffusion Equation with a Nonlinear Source Term
<b>17h00–17h15</b>	<b>Souheil YAKHLEF:</b> The main uses of SPSS in demography
<b>17h15–17h30</b>	<b>Amer MESBAHI :</b> Non-Simultaneous Or Simultaneous Quenching In A Nonlinear Parabolic System Of Three Equations

## Room4: Other Topics

Chairman: Dr. Benrabia Noureddine

Chairman: Dr. Guebbai Hamza

<b>14h00– 14h15</b>	<b>Saliha DJENAOUI:</b> Equicontinuous Totally Disconnected Factors of Cellular Automata
<b>14h15– 14h30</b>	<b>Dyhia FEDALA:</b> The Diophantine Equations $T_x \pm T_y = P^n$
<b>14h30–14h45</b>	<b>SIF Eddine BELKADI :</b> A Blow-Up Phenomenon for Nonlinear Heat Equations with Variable Exponent Diffusion
<b>14h45–15h00</b>	<b>Adel SEDDIKI:</b> Une Etude Qualitative D'un Système Dynamique Non Linéaire Avec Des Dérivées Généralisées
<b>15h00–15h30</b>	<b>Coffee break</b>
<b>15h30–15h45</b>	<b>Oumkeltoum BENHAMOUDA :</b> Stability of a One-Dimensional Wave–Heat Coupled System Governed by Fourier’s Law of Heat Conduction
<b>15h45–16h00</b>	<b>Rachid LEMDANI:</b> Quelques Résultats Sur Le Nombre Chromatique De Packing De Quelques Graphes
<b>16h00–16h15</b>	<b>Redha SAKRI:</b> Upper-Bound Characterization of Generalized Petersen Graphs $P(2m+1,2)$ Under Locating–Coloring
<b>16h15–16h30</b>	<b>Abdelhamid TALLAB:</b> Some Properties of $\tau(P,Q)$ -Summing Bloch Maps
<b>16h30–16h45</b>	<b>Saadia MAHIDEB :</b> Common Fixed Point Results In Quasi-Partial Metric Spaces Via Simulation Functions With An Application
<b>16h45–17h00</b>	<b>Mohammed Es-Salih ARIES :</b> Stabilisation Des Quelques Problèmes D'evolutions
<b>17h00–17h15</b>	<b>Noureddine BENRABIA:</b> An Adaptive Hybrid Conjugate Gradient Method with Guaranteed Global Convergence
<b>17h15–17h30</b>	<b>Hamza GUEBBAI:</b>



## Poster Session

- **Mohamed Lamine SAADA KHELKHAL:** Thermoelasticity with Infinite Memory and Delayed Damping: Well-Posedness and Energy Decay
- **Karima BOUIBED:** Optimization of the Transportation Plan for Dry Products of Cevital
- **Doursaf ZARAOULIA:** Regularized Projection Approach for Solving Ill-Posed Fredholm Integral Equations with Weakly Singular Kernels
- **Ibtissam KERMICHE:** Solving Unconstrained Minimization Problems with A New Hybrid Conjugate Gradient Method
- **Nada ROUABHIA:** Application Of the Hille–Yosida Theorem to a Poro-Thermal System with Distributed Delay
- **Djamel AAID:** An Efficient Coupled Alienor–Branch-and-Bound Method for Multivariate Global Optimization Problems
- **Ahlam ROUAG:** Monte Carlo Simulations of Matrix Field Theory
- **Khaoula MEKALFA:** Étude Comparative Entre Deux Modèles Sismiques Basés Sur Des Equations Intégrales De Volterra
- **Djihane BOURESSACE:** Approche Intégrale Pour Le Traitement Du Modèle Brusslator
- **Ghania HADJI :** A Hybrid Conjugate Gradient Algorithm Based on a Convex Combination of PRP and RMIL+ Formulas
- **Saleh SADI:** Existence de solutions  $L^p$  presque périodiques pour des équations différentielles stochastiques à coefficients périodiques
- **Wafa SAYOUD:** Analytical Study for an Integro-Differential Nonlinear Volterra Equation
- **Amira HAMDI:** A New Conjugate Gradient Method for Unconstrained Optimization and Training Neural Networks for Heart Disease Prediction
- **Imane ZOUAK:** Nonlinear Dynamics of Discrete-Time Model for Computer Virus Propagation: Chaos, Complexity, Stabilization and Synchronization
- **CHIBI Mouhamed Amine:** An Adaptive Hybrid Nonlinear Conjugate Gradient Method with Global Convergence Guarantee
- **Nabil HANECHÉ:** Chaos Analysis and Control in a Discretized Fractional-Order Financial System



- **Raouia HAMIS:** Existence and Uniqueness of Positive Solutions for Multi-Order Fractional Nonlinear Systems with Variable Delays
- **Bochra LAMRI:** Some Results On Lyapunov-Type Inequalities for Certain Fractional Boundary Value Problems
- **Lamia HARKAT:**  $\gamma$ -Compactness and Set-Open Topologies On  $C(X, Y)$
- **Elhachmi HAMIDATOU:** Equations Aux Dérivées Partielles Fractionnaires, Existence D'attracteurs.
- **Wassim MERCHELA :** Results on  $b$ -metric space
- **Mohamed Lamine MERIKHI:** A New Fractional Modeling of a Nonlinear Reaction–Diffusion System Supported by Numerical Simulation
- **Chabna Halima:** Recherche Des Zéros D'une Fonction Non Linéaire Dans Un Espace De Dimension Infinie
- **Abdallah MEDJOURI:** Sur Les Equations Intégro-Différentielles Issues Des Modèles Électrodynamiques
- **Mohammed KHEMIS:** Linear Volterra Integro-Differential Equations With Delay Terms .

# Second Day Program



2<sup>nd</sup> International Conference **Mohand Moussaoui** on Applied  
Mathematics and Modeling



Second day, 16<sup>th</sup> December 2025

---

Online Day

08h45–09h00 Opening ceremony

In memory of the late Mr. Moussaoui Mohand

---



2<sup>nd</sup> International Conference **Mohand Moussaoui** on Applied  
Mathematics and Modeling





## Room1: Integral & Differential Equation, Optimization, Numerical Methods, Ai

Integral & Differential Equation: Ordinary session (Morning 8h45-12h15)

Chairman: Pr. Ellaggoune Fateh

Chairman: Dr. Aries Mohammed Es-Salih

Google meeting link: <https://meet.google.com/jtx-hpdv-cae>

<b>09h–09h15</b>	<b>Houria KAMACHE:</b> General Decay of Solution for A Viscolastic Equation with Dynamic Boundary Conditions and Delay Terms
<b>09h15–09h30</b>	<b>Abdellah MESKINE:</b> Boundedness ,Square Integrability and Uniform Stability Result for the Solutions of Neutral Type Fourth-Order Vector Differential Equation with Multiple Delay
<b>09h30–09h45</b>	<b>Abed YFRAH:</b> Convergence and Stability of Semi- And Fully-Discrete Approximations for a Nonlinear Wave Equation
<b>09h45–10h00</b>	<b>Amel ATMANI:</b> Local and Global Well Posedness for a Coupled System of Generalized Kdv Equations
<b>10h00–10h15</b>	<b>Hamour BOUSSAD:</b> Some Existence Results for a Nonlinear Problem with Source Term in Zygmund-Space
<b>10h15–10h30</b>	<b>Abdelmoumene MOHAMDI:</b> Existence of Solutions of P-Kirchhoff Type Problem Involving a Hardy Potential
<b>10h30–10h45</b>	<b>Moufida AMIOUR:</b> Viability Result for Caratheodory Non-Convex Differential Inclusion in Finite Dimensional Setting
<b>10h45–11h00</b>	<b>Nadjla ABIDAT:</b> A Qualitative Study of TB–HIV Co-Dynamics in a Compartmental Model
<b>11h00–11h15</b>	<b>Break</b>
<b>11h15–11h30</b>	<b>Ibtissam FEKRACHE:</b> On the Stability of a Nonlinear Viscoelastic Timoshenko System
<b>11h30–11h45</b>	<b>Khadidja BENZERROUG:</b> Existence Result of an Elliptic Problem with a Singular Term
<b>11h45–12h00</b>	<b>Abdelkader TAMI:</b> Coefficients in the Asymptotic Expansion of Solutions to the Heat Equation in Polygonal Domains
<b>12h00–12h15</b>	<b>Abdelaziz HELLAL:</b> Schrödinger-Maxwell-Type System Involving Variable Exponents



## Integral & Differential Equation: Ordinary session (Afternoon 13h30-16h30)

Chairwoman: Dr. Naima Hamel

Google meeting link: <https://meet.google.com/jtx-hpdv-cae>

<b>13h30–13h45</b>	<b>Tayeb LAKROUMBE:</b> Existence and Decay Rates of Semilinear Wave Equation with General Strong Dissipation by A Variable Coefficient
<b>13h45–14h00</b>	<b>Nadji TOUIL:</b> Critical Energy Levels and Blow-Up Estimates in Kirchhoff-Type Parabolic Equations
<b>14h00–14h15</b>	<b>Abdelhaq ALIOUAT:</b> Energy Blow-Up in a Nonlinear Biharmonic Wave Model with Variable Exponents and Mixed Boundary Conditions
<b>14h15–14h30</b>	<b>Nihad MIMOUNI:</b> On the Dynamics at Infinity in Classes of Liénard-Duffing Systems
<b>14h30–14h45</b>	<b>Faissal Mansouri:</b> Optical Similarities in Nonlinear Fiber Amplifiers: Self-Similar Evolution and Analytical Modeling
<b>14h45–15h00</b>	<b>Nabila SEGHIRI:</b> Operational Matrices of Genocchi Polynomials for Solving Linear Fredholm Integral Equations



## Integral & Differential Equation: Ordinary session (Morning 8h45-12h15)

Chairwoman: Dr. Labadla Amel

Google meeting link: <https://meet.google.com/brx-ubmh-uhb>

<b>09h00-09h15</b>	<b>Sarra HADI:</b> Allencahn Equation in Cylindrical and Non-Cylindrical Domains: an Asymptotic Study
<b>09h15-09h30</b>	<b>Yassine BENIA:</b> Existence of Solutions to Burgers-Huxley Equation in Domains That Can Be Transformed Into Rectangles
<b>09h30-09h45</b>	<b>Affaf REZIG:</b> Asymptotic Stability and Numerical Analysis for A Timoshenko System Under Viscoelastic Damping
<b>09h45-10h00</b>	<b>Aymene KHELAIFA:</b> A Review of Nonlinear Age-Structured Tumor Cell Populations Model
<b>10h00-10h15</b>	<b>Meriem DJIBAOUI:</b> Variational Methods to Second-Order Dirichlet Boundary Value Problems on The Half-Line
<b>10h15-10h30</b>	<b>Kamilia Chettouh:</b> Analysis of an Age-Structured Tumor Growth Model
<b>10h30-10h45</b>	<b>Abdelaziz DOUAH:</b> $H^2$ -Convergence of Solutions to a Biharmonic Problem on a Truncated Non-Convex Sector as the Angle Approaches $\pi$
<b>10h45-11h00</b>	<b>Dounia BOUCHELIL:</b> On the Kelvin–Voigt Wave Equation with a Viscoelastic Term
<b>11h00-11h15</b>	<b>Break</b>
<b>11h15-11h30</b>	<b>Louiza MERZOUGUI:</b> Dimension Reduction Method and Error Estimates
<b>11h30-11h45</b>	<b>Mohamed BOUGUERROUMI:</b> Well-Posedness and Stability of a Nonlinear Beam
<b>11h45-12h00</b>	<b>Asma MAADADI:</b> Numerical Solution of Nonlinear Fredholm Integro-Differential Equations Using Chebyshev
<b>12h00-12h15</b>	<b>Nadia BENGOUGA:</b> Decomposition of a Beam Displacement and Error Estimates

## Integral & Differential Equation: Ordinary session (Afternoon 13h30-16h30)

Chairwoman: Dr. Bouazila Nada

Chairwoman: Dr. Chakar Randa

Google meeting link: <https://meet.google.com/brx-ubmh-uhb>

<b>13h30–13h45</b>	<b>khadidja DAAS:</b> Employing Chaotic Dynamical Systems for Advanced Contemporary Cryptographic Techniques
<b>13h45–14h00</b>	<b>Madani DOUIB:</b> On the Exponential Stabilization of a Flexible Structure with Delay
<b>14h00–14h15</b>	<b>Hocine AYADI :</b> On Weighted P(.)-Laplacian Problems with Singular Nonlinearities and Variable Exponents
<b>14h15–14h30</b>	<b>Wafiya BOUKROUK:</b> Une Question Portant Sur Les Solutions De Deux Problèmes Liés
<b>14h30–14h45</b>	<b>Imane BAZINE :</b> Numerical and Analytical Study of a Weakly Singular Volterra–Fredholm Equation  <b>Sarra Ghomrani:</b> Nonlinear Fredholm Integral Equations in Economic Model with Intertemporal Spillovers
<b>14h45–15h00</b>	



## Optimization: Ordinary session (Morning 8h45-12h15)

Chairwoman: Dr.Benssaad Meryem

Google meeting link: <https://meet.google.com/cgn-wttj-gcr>

<b>09h00–09h15</b>	<b>Maroua HAKIM:</b> An Hybrid Algorithm to Solve the Fixed Charge Transportation Problem
<b>09h15–09h30</b>	<b>Islem BENNADJA:</b> A Multi-Objective Optimal Control Framework for Infectious Disease Management
<b>09h30–09h45</b>	<b>Welid GRIMES:</b> A Quadratically Convergent Full-Newton Primal-Dual Interior-Point Algorithm for Convex Quadratic Optimization
<b>09h45–10h00</b>	<b>Youcef Elhamam HEMICI:</b> A New Combined Conjugate Gradient Method Applied to Image Restoration
<b>10h00–10h15</b>	<b>Sarah BOUDA:</b> An Adapted Ant Super Colony Algorithm to Solve Bus University Routing Problem(op)
<b>10h15–10h30</b>	<b>Dounia BAHALI:</b> SDDes with Finite Horizon
<b>10h30–10h45</b>	<b>Selma KALLIL:</b> Multi-Objective Coalition Formation in Heterogeneous Uavs Using an Mopso Algorithm
<b>10h45–11h00</b>	<b>Louiza DEHBI:</b> Prey-Predator in Two and Three Species Cases
<b>11h00–11h15</b>	<b>Break</b>
<b>11h15–11h30</b>	<b>Amira AIBECHE:</b> Dynamic of a Second-Order Variational Inequality
<b>11h30–11h45</b>	<b>Adlane BAAZIZ:</b> Bi-Objective Two-Agent Single-Machine Total Weighted Tardiness Scheduling
<b>11h45–12h00</b>	<b>Nadia Amal MESSAOUDI:</b> Parameter Identification in an Hiv Dynamics Model via Chaotic Optimization Algorithms
<b>12h00–12h15</b>	<b>Ouafa BELGUIDOUM:</b> A Projection-Type Algorithm for Generalized Variational Inequalities Problem

## Optimization: Ordinary session (Afternoon 13h30-16h00)

Chairwoman: Dr. Belhireche Hanane

Google meeting link: <https://meet.google.com/cgn-wttj-gcr>

<b>13h30–13h45</b>	<b>Ayache BENHADID:</b> Studies on General And Extended General Variational Inequalities
<b>13h45–14h00</b>	<b>Nour El Islem HIBER:</b> Approximation Solution Set of Lipschitz Nonlinear Equations Using Concave Support Functions and $\alpha$ -Dense Curves
<b>14h00–14h15</b>	<b>Imane MANCER:</b> Risk-Sensitive Optimal Control in Wasserstein Space: a Stochastic Maximum Principle with Impulse Effects
<b>14h15–14h30</b>	<b>Boualem SLIMI:</b> Quasi-Monte Carlo Methods for Calculating European Call Options
<b>14h30–14h45</b>	<b>Ilias BADAoui:</b> Acceleration of the L-Shaped Method: Stochastic Optimization
<b>14h45–15h00</b>	<b>Nadia LACHEMI:</b> A Network-Based Approach for Generating Efficient Solutions to the Bi-Objective 0/1 Knapsack Problem
<b>15h00–15h15</b>	<b>Bochra ZEGHAD:</b> Modified Extragradient Algorithm Using Bregman Distance
<b>15h15–15h30</b>	<b>Djamel ZERROUKI:</b> Improved Convex Lower Bound Function for Univariate Nonconvex Functions
<b>15h30–15h45</b>	<b>Amira LAHMER:</b> Integro- Differential Inclusion Associated with Primal Lower Regular Functions
<b>15h45–16h00</b>	<b>BENDJEDI Akram :</b> A DC-Penalized dual reformulation for solving mixed-Integer bilevel quadratic programs



## Numerical Methods, Ai: Ordinary session (Morning 8h45-12h15)

Chairwoman: Dr. Kaidouchi Wahida

Google meeting link: <https://meet.google.com/vod-wiss-dov>

<b>09h00-09h15</b>	<b>Fatima OUAAR:</b> Effectiveness Fitting Of Linear Regression In Deep-Learning Approach
<b>09h15-09h30</b>	<b>Mohammed ELAROUSSI:</b> Redundancy in Abstract Argumentation: Towards Minimal Frameworks and Efficient Dynamics
<b>09h30-09h45</b>	<b>Nassima ANANE:</b> A Two-Step Iterative Fixed-Point Method for New General Absolute Value Equations
<b>09h45-10h00</b>	<b>Abdelouahab MANI:</b> Efficient Numerical Schemes for Nonlinear Quadratic Integral Equations
<b>10h00-10h15</b>	<b>Nesserine BENELMIR:</b> Stability and Bifurcation Analysis of a 4d Nonlinear Dynamical System
<b>10h15-10h30</b>	<b>Hadjer ZEROUALI:</b> Solving Pseudo-Hyperbolic Equation with Non Local Conditions Using Numerical Technique
<b>10h30-10h45</b>	<b>Fouzia BIREM:</b> A Numerical Method for Solving Systems of Volterra Delay Integro-Differential Equations
<b>10h45-11h00</b>	<b>Ouidad BOULAKOUR:</b> Solving Nonlinear Time-Fractional Evolution Problems Using the Laplace-Residual Power Series Method
<b>11h00-11h15</b>	<b>Break</b>
<b>11h15-11h30</b>	<b>Chahinaz HENNOUS:</b> Numerical Solution of Pantograph-Type Integral Equations via Taylor Collocation
<b>11h30-11h45</b>	<b>Roumaissa BENSEGHIR:</b> Reproducing Kernel Method For Solving Delay Integro-Differential Equations
<b>11h45-12h00</b>	<b>Chafika SAKHANE:</b> Taylor Collocation Method for Solving Two Dimensional Double Delay Differential Equations
<b>12h00-12h15</b>	<b>Safia MEKHALFA:</b> On the Orthogonality of a New Combination of Two Sequences of Classical Orthogonal Polynomials



## Numerical Methods, Ai: Ordinary session (Afternoon 13h30-16h30)

Chairwoman: Dr. HIMRI Safia

Google meeting link: <https://meet.google.com/vod-wiss-dov>

<b>13h30–13h45</b>	<b>Khaoula Imane SAFFIDINE:</b> Periodic Pattern Reaction-Diffusion System
<b>13h45–14h00</b>	<b>Salah Eddine BENCHELLALI:</b> Mathematical Analysis and Numerical Simulation to Investigate the Propagation Properties of Kink Soliton in the Higher Order Nonlinear Schrödinger Equation in the Presence of Quintic Term
<b>14h00–14h15</b>	<b>Abdenmour KROUCHI:</b> Local Discontinuous Galerkin Method for \Vspace Second Order Partial Differential Equation
<b>14h15–14h30</b>	<b>Abdelhakim DEHAMNIA:</b> Homogenization and Uniform Stabilization for a Nonlinear Second Order Equation with Multiple Spatial Scales
<b>14h30–14h45</b>	<b>Seddik MERDACI:</b> Homogénéisation a symptotique des Plaques Hétérogènes Visco-Elastique Affaiblies Par des Micro-Fissures
<b>14h45–15h00</b>	<b>Najia HAOUARI:</b> A Python-Based Neural Network Method for Linear Programming
<b>15h00–15h15</b>	<b>Sara LABIDI:</b> From Physical Models to Mathematical Analysis





## Room2: Operator Theory, Probability and Statistics

### Operator Theory: Ordinary session (Morning 8h45-12h15)

Chairwoman: Dr. Bazine Imane

Google meeting link: <https://meet.google.com/pbw-cxrp-cyz>

<b>09h00–09h15</b>	<b>Nadjet MERDJ:</b> On The Operator Equation $XD X + Y EX + AX - BX = C$
<b>09h15–09h30</b>	<b>Hicham KASRI:</b> Theoretical Analysis and Uniform Stability for a Hyperbolic Equation with Dirichlet and Wentzell Boundary Conditions
<b>09h30–09h45</b>	<b>Farida MEKKAOU:</b> A Note on $(F,G)$ -Aluthge Transforms of Operators
<b>09h45–10h00</b>	<b>Belaala MAATOUGUI :</b> An Over View on Lipschitz Ph-Summing Operators
<b>10h00–10h15</b>	<b>Nesrine HAMIDI:</b> Estimation of the Relative Error Under Functional Censored Data
<b>10h15–10h30</b>	<b>Aissa BOUHALI:</b> Commutants of the Sums of Two Toeplitz Operators on the Bergman Sapce with General Symbols
<b>10h30–10h45</b>	<b>Raoudha LAFFI:</b> Boundedness and Reproducing Kernels of Multiplier Operators in the Fourier-Laguerre Setting
<b>10h45–11h00</b>	<b>Antar BOUYELLI:</b> On the Extended Spectrum of Certain Operators
<b>11h00–11h15</b>	<b>Break</b>
<b>11h15–11h30</b>	<b>Abdelaziz GHERDAOUI:</b> Some Estimates for Hardy-Steklov-Type Operators Acting on Monotone Functions in $L_p$ Spaces With $0 < p < 1$ .
<b>11h30–11h45</b>	<b>Mohammed Aiman: DOUCHE</b> A Review on the Applications of the Drazin Inverse in Solving Differential Equations
<b>11h45–12h00</b>	<b>Tayeb MAHROUZ:</b> Regularity of Differential Operators of Constant Strength in Roumieu Spaces
<b>12h00–12h15</b>	<b>Ayyoub FELLAG ARIOUAT:</b> Example of Non Normal Operator on Hilbert Spaces



## Operator Theory: Ordinary session (Afternoon 13h30-16h30)

Chairman : Pr. Guebbai Hamza

Google meeting link: <https://meet.google.com/pbw-cxrp-cyz>

<b>13h30–13h45</b>	<b>Brahim ABDELMALEK:</b> Existence and Multiplicity of Solutions for Nonlinear Elliptic Systems
<b>13h45–14h00</b>	<b>Mourad RAGHDI:</b> Dense Range of Nonlinear Operators and Approximate Controllability of Semilinear Heat Equations
<b>14h00–14h15</b>	<b>Mustapha MAADANI:</b> A-Isometry Operators in Semi-Hilbertian Spaces
<b>14h15–14h30</b>	<b>Abdelkader BOUREBAI:</b> Normal Forms and Semiclassical Spectra of Schrödinger Operators Near Resonance
<b>14h30–14h45</b>	<b>Rachid YAHY:</b> Lipschitz Factorable $\mathcal{SP}_\infty$ -Summing Operators
<b>14h45–15h00</b>	<b>Wisssem CHOUGAR:</b> The Controllability Of A Parabolic System Using Carleman's Estimates.
<b>15h00-15h15</b>	<b>KAIDOUCHI Wahida:</b> Study Of A Nonlinear Infinite-Dimensional Equation



## Probability and Statistics: Ordinary session (Morning 8h45-12h15)

Chairwoman: Dr. Kamouche Somia

Google meeting link : <https://meet.google.com/nsw-xohg-vri>

<b>09h00–09h15</b>	<b>Oum Kelthoum BELLAOUI:</b> Existence and Uniqueness of Riemann-Liouville Fractional Integro-Differential Equations with Random Coefficient
<b>09h15–09h30</b>	<b>Atika AOURI:</b> Estimation of Spatiotemporal Garch Model
<b>09h30–09h45</b>	<b>Kheira SENOUCI:</b> On the Local Linear Estimation of the Conditional Cumulative Distribution for Functionally Dependent and Censored Data
<b>09h45–10h00</b>	<b>Faiza LIMAM-BELARBI:</b> Robust Estimation for Censored Functional Time Series: Strong Consistency Results of a Trimmed Regression Approach
<b>10h00–10h15</b>	<b>Ahmed LAKEHAL:</b> The Application of Brass' Relational Models for Estimating Experience Mortality
<b>10h15–10h30</b>	<b>Ahmed AKRIMI:</b> Local Linear Estimation of Spectral Density Function with Missing Data
<b>10h30–10h45</b>	<b>Ikram HAMED:</b> Risk Sensitive for Fractional Brownian Motion
<b>10h45–11h00</b>	<b>Oum Elkheir BENAOUA :</b> A Note on the Conditional Distribution Estimate in Single Functional Index Model
<b>11h00–11h15</b>	<b>Break</b>
<b>11h15–11h30</b>	<b>Abdellatif GUENAIZI:</b> Détection Offline Des Ruptures Dans Les Modèles De Durées
<b>11h30–11h45</b>	<b>Billel ALIAT:</b> On Markov Regime Switching Periodic Linear State Space Models: Filtering, Estimation and Applications
<b>11h45–12h00</b>	<b>Samia MAZOUZ:</b> Partial Functional Mean Characterization Based Tests for the Bivariate Skew-Normal Distribution
<b>12h00–12h15</b>	<b>Farida SLIMI :</b> Algebraic Method for Computing Weibull Moments



Probability and Statistics: Ordinary session  
(Afternoon 13h30-16h30)

Chairman : Dr.Segni Sami

Google meeting link: <https://meet.google.com/nsw-xohg-vri>

<b>13h30–13h45</b>	<b>Hafida BEN BRAHIM:</b> Martingale Problem and Weak Solution for General Sdes
<b>13h45–14h00</b>	<b>NOUR El-Hayet Ladaouri:</b> Impact of Choosing the Kernel, Smoothing Parameter and Norm on the Estimation of the Conditional Density with Functional Data
<b>14h00–14h15</b>	<b>Aida ZITOUNI:</b> A Chaos–Sobol Framework for Global Sensitivity Analysis of GI/M/1/N Queuing Systems
<b>14h15–14h30</b>	<b>Asma HADJOU BELAID:</b> Stochastic Stability Analyses of a Diffusion Drift System with the Lyapunov Function
<b>14h30–14h45</b>	<b>Dihia BELAIZA:</b> Reliability Analysis of an M/M/1 Retrial Queue with Negative Arrivals and Breakdowns
<b>14h45–15h00</b>	<b>Dahbia HAFAYED :</b> Sufficient Conditions for Optimal Control of Forward-Backward Doubly Stochastic Volterra Systems with Random Jumps
<b>15h00–15h15</b>	<b>Oussama BAH:</b> Bayesian inference for Twice-Censored Data



## Room3A: Fixed Point and Fractional Theory

Ordinary session (Morning 8h45-12h15)

Chairwoman: Dr. Bazine Safia

Google meeting link: <https://meet.google.com/mnz-cdkm-xse>

09h00–09h15	<b>Fatma BERRIGHI:</b> Study of Mild Solutions to Conformable Fractional-Order Evolution Equations
09h15–09h30	<b>Aboubaker El-Saddik BOUZIANE:</b> Investigating a Class of Caputo-Type Fractional Integro-Differential Equations
09h30–09h45	<b>Rachid CHERIEF:</b> Novel Doubly Periodic and Other Solutions of the Conformable Time-Fractional (2+1)-Dimensional Modified Kdv-CBS Equation
09h45–10h00	<b>Amar BENKERROUCHE:</b> Initial Value Problem With Ordinary And Fractional Derivatives for Non-Autonomous Variable Order Differential Equations
10h00–10h15	<b>Nassima MELOUANE:</b> Fixed Point Index for Positive Meir-Keeler Condensing Operator and Application
10h15–10h30	<b>Naima BOUSSEKKINE:</b> Weak Solutions for a Fractional Boundary Value Problem (Bvp) Involving $\Psi$ Caputo Impulsive Fractional Differential Equations
10h30–10h45	<b>Souhila SABIT:</b> Existence, Uniqueness, And Stability of Fractional Operator Approach to Cauchy-Type Problems
10h45–11h00	<b>Hammou BENMEHIDI:</b> Coupled Fractional Differential Systems with the Caputo-Fabrizio Operator
11h00–11h15	<b>Break</b>
11h15–11h30	<b>Belqassim AZZOUZ:</b> On a Nonlinear Fractional Differential Equation Under Certain Condition
11h30–11h45	<b>Yacine ELHADJ MOUSSA:</b> Smoking As An Epidemic: Relapse Dynamics With Caputo Derivatives
11h45–12h00	<b>Radhowane CHAIB:</b> Contraction Sequences and Fixed Points in B-Metric Spaces
12h00–12h15	<b>Azeddine NOUIKAS :</b> Variational Approach to Hadamard Fractional Boundary Value Problems with Infinitely Many Solutions



## Room3A: Ordinary session (Afternoon13h30-16h30)

Chairwoman: Dr. Djennaoui Saliha

Google meeting link: <https://meet.google.com/mnz-cdkm-xse>

<b>13h30–13h45</b>	<b>Mohammed Elamine BEROUDJ:</b> Solving An Inverse Problem Of A Fractional Partial Differential Equation Using Orthonormal Legendre Polynomials
<b>13h45–14h00</b>	<b>Rachid BELKFIF:</b> Existence , Uniqueness And Ulam--Hyers Stability For Two--Point Fractional Boundary Value Problems
<b>14h00–14h15</b>	<b>KAMACHE Fares:</b> Positive Solution For Singular Double Phase Nonhomogeneous Quasilinear Problems Involving The $\Psi$ -Hilfer Fractional Operator
<b>14h15–14h30</b>	<b>Abdelhak ABDALLAH:</b> Study Of A Three Sequential Abstract Fractional Differential Equations
<b>14h30–14h45</b>	<b>Said MEKHDOUA:</b> On the Existence and Uniqueness of Solutions for a Coupled System of Nonlinear Langevin Equations
<b>14h45–15h00</b>	<b>Amouria HAMMOU:</b> Impulsive Fractional Differential Equations Involving The Caputo-Hadamard Fractional Derivative In A Banach Space
<b>15h00–15h15</b>	<b>Randa HADJADJ:</b> A Common Fixed Point Approach to Equilibrium in Abstract Economies
<b>15h15-15h30</b>	<b>Bourega Abdeldjabar:</b> Coupled Riemann–Liouville Fractional Systems Via Fixed Point Theorems In Generalized Banach Spaces.
<b>15h30-15h45</b>	<b>Zineb KORICHI:</b> Mathematical Solution Of The Fractional Liouville Equation
<b>15h45-16h00</b>	<b>Maroua NOUAR:</b> INITIAL Data Reconstruction in Time-Fractional Allen-Cahn Equations
<b>16h00-16h15</b>	<b>Oussama BOUANANE :</b> analytical and numerical study of the time-fractional caputo-burger equation



## Room3B: Fixed Point and Fractional Theory

Ordinary session (Morning 8h45-12h15)

Chairman: Dr. Dida Rida

Google meeting link: <https://meet.google.com/foy-dxxt-adf>

09h00–09h15	<b>Souheyla DEBBOUCHE</b> : Quelques Définition De La Dérivée Fractionnaire Avec Une Application Aux Equations Logistiques
09h15–09h30	<b>Aymen LAKEHAL</b> : MATHEMATICAL Analysis of Spatial SEIAR Models with Componentwise Caputo Derivatives and Non Linear Diffusion
09h30–09h45	<b>Hamdi Cherif MOUNTASSIR</b> : Analytical Solutions Of Fractal Partial Differential Equations Via A Unified Local Fractional Transform Approach
09h45–10h00	<b>Mohammed KOUIDRI</b> : Analytical Foundations And Applications Of Fractional Resonant Boundary Value Problems
10h00–10h15	<b>Soumia BENSIMESSAOUD</b> : Realization Of Compound Combination Synchronization Between Three Identical Integer-Order Chaotic Systems And A Fractional-Order Chaotic System
10h15–10h30	<b>ABDELAZIZ Belaada</b> : Existence Of Weak Solution For A Fractional $\mathcal{P}\mathcal{S}$ -Laplacian Problem
10h30–10h45	<b>Bochra AZZAOU</b> : Integral Equation Of Nonlinear Boundary Value Problem In Fractional Sobolev Spaces
10h45–11h00	<b>Aida BELLOUT</b> : A Study of Chaotic Dynamics in a Fixed-Memory Fractional Cardiac Action Potential Duration Model
11h00–11h15	<b>Break</b>
11h15–11h30	<b>Samia YUCEFI</b> : Existence and Ulam-Hyers Stability of Boundary Value Problems for Nonlinear Variable-Order Caputo Fractional Differential Equations
11h30–11h45	<b>Naceur CHEGLOUFA</b> : Neutral $\Psi$ -Hilfer Fractional Delay Equations: Existence of S-Asymptotically Bloch Type Periodic Solutions
11h45–12h00	<b>Nora BENMIR</b> : Euler-Bernoulli Beam Model For Lateral Dynamics Of Drill Strings: Analysing Resonance And Stability Under Axial Tension And Compression
11h45-12h00	<b>Lilia ZENKOUFI</b> : Positive Solution of a Three-Point Boundary Value Problem for a Fifth-order Differential Equation



## Room4: Other Topics

### Room4A: Ordinary session (Morning 8h45-12h15)

Chairman: Dr. SEDKA Ilyes

Google meeting link: <https://meet.google.com/rca-mcaa-xbo>

<b>09h00–09h15</b>	<b>Mohamed BEKIRI :</b> Nodal Solutions For A Yamabe Type Problem On Compact Manifold
<b>09h15–09h30</b>	<b>Nawel HAMBLI :</b> Numerical Analysis To Investigate The Impact Of Chirp On The Propagation Of Optical Pulses In Nonlinear Media
<b>09h30–09h45</b>	<b>Dounya HAMEK:</b> An Entirely New Family Of Generating Functions for Binary Products of Gaussian Pell Padovan Numbers With Bivariate Polynomials.
<b>09h45–10h00</b>	<b>Rayane BOUCHERMA:</b> Modeling the Dynamics of Tuberculosis Transmission in Algeria
<b>10h00–10h15</b>	<b>Sara DRIDI:</b> A Boolean Satisfiability Formulation of Regional Controllability in Cellular Automata
<b>10h15–10h30</b>	<b>Aicha BENGUETAIB :</b> Singular Elliptic Equations with Variable Exponents and $L^1$ -Data
<b>10h30–10h45</b>	<b>Khelifa BERKANE:</b> Modeling Infectious Disease Spread Using a Fractional Stochastic Sirds Framework
<b>10h45–11h00</b>	<b>Ayoub KEMARI:</b> Stabilité De La Méthode Linéaire Appliquée A Un Système Caténaire A Tricompartiments. Le Cas Du Système Polynomial D'ordre $(\alpha + \beta)$ .
<b>11h00–11h15</b>	<b>Break</b>
<b>11h15–11h30</b>	<b>Nadjet LAKEHAL:</b> On the Synchronization of a Novel Chaotic System with Two Method
<b>11h30–11h45</b>	<b>Nawel ABDESSELAM :</b> Blow-Up of Nonlinear Schrödinger Equations with Variable Coefficients and Memory
<b>11h45–12h00</b>	<b>Chahinez IMINE:</b> Measuring Symmetry Resistance in Graph Products
<b>12h00–12h15</b>	<b>Abdeldjalil KADRI:</b> Dynamics of a Time-Delayed Stochastic Sir Model With Nonlinear Incidence and Treatment Rate



## Room4A: Ordinary session Afternoon 13h30-16h00)

Chairwoman: Dr. Khalfallaoui Roumaissa

Google meeting link: <https://meet.google.com/rca-mcaa-xbo>

<b>13h30–13h45</b>	<b>Amina BELLIL :</b> Decomposition Of Quasi-Twisted Codes Over Non-Chain Ring
<b>13h45–14h00</b>	<b>FIDA BAHBA:</b> Advances In Harmonic Analysis Within The Opdam-Cherednik Framework
<b>14h00–14h15</b>	<b>Zaineb LOKSAIER:</b> A Rational-Closure of the Heisenberg Group : Application to Image Texture Analysis
<b>14h15–14h30</b>	<b>Djahida BOUCHEFRA:</b> Dirac Equation with Exactly Solvable Killingbeck with a Ring-Shaped Oscillatory Potential
<b>14h30–14h45</b>	<b>Yacine BRIEDJ:</b> Integer Points of a Family of Elliptic Curves Induced by a Diophantine Set
<b>14h45–15h00</b>	<b>Said AMROUCHE :</b> Un Triangle Arithmétique Liè A La Suite De Fibonacci
<b>15h00–15h15</b>	<b>Ibrahim DAAMECHE:</b> Exponential Stability of the Von Kármán System With Internal Damping
<b>15h15–15h30</b>	<b>Saad MOHAMED:</b> Fuzzy Subring
<b>15h30–15h45</b>	<b>Hamza LEKHCHINE:</b> Mohand Moussaoui: A Scientific Legacy and Historical Vision in the Development of Applied Mathematics
<b>15h45–16h00</b>	<b>Maroua Amel BOUBEKEUR:</b> Impact of Chronic Diseases on Epidemic Dynamics: A Mathematical Perspective
<b>16h00–16h15</b>	<b>Moustafa TADJ:</b> a Generalisation of Biharmonic Maps in Riemannian Manifolds



## Room4B: Ordinary session (Morning 8h45-12h15)

Chairwoman: Dr. Djaghout Manal

Google meeting link: <https://meet.google.com/tue-aroo-xhe>

<b>09h00–09h15</b>	<b>Yassine OUAKEOUAK:</b> Exponential Stability of a Thermoelastic Shear Beam Model With Lord-Shulman Type
<b>09h15–09h30</b>	<b>NABIL Hamidi:</b> A Model of Plasmid-Bearing and Plasmid-Free Competition in a Chemostat with Distinct Removal Rates
<b>09h30–09h45</b>	<b>KOUAKOU Kouassi Vincent:</b> Congruent Numbers From The Unity Circle Via Elliptic Curves: Trigonometric And Galaxy Families
<b>09h45–10h00</b>	<b>Amel RAHMANI:</b> Multiplicity Results For Boundary Value Problems Of Kirchhoff Type On The Half-Line Via Genus Theory
<b>10h00–10h15</b>	<b>Hamid ACHAB:</b> On the Mathematical Modeling of Thermo-Viscoplastic Contact with Time-Fractional Derivatives
<b>10h15–10h30</b>	<b>Amina BECHEROUL:</b> Trend Function Estimation In Stochastic Differential Equations Driven By Generalized Mixed Bi-Fractional Brownian Motion
<b>10h30–10h45</b>	<b>Chahinaze DJADI:</b> On Extended Congruence Relations And Arithmetic Properties Of Generalized Binomial Coefficients
<b>10h45–11h00</b>	<b>Hossemddine ACHOUR:</b> Self-Similar Solution For The Inverse Problem That Occurs In Image Restoration
<b>11h00–11h15</b>	<b>Break</b>
<b>11h15–11h30</b>	<b>Rebiha SAFFIDINE :</b> The Regularization Method For Solving Bilinear Sub-Riemannian Geodesic Problem
<b>11h30–11h45</b>	<b>Oussama REZAIGUIA :</b> Optimal Control Strategies For A Cost-Effective Diphtheria Transmission Model
<b>11h45–12h00</b>	<b>Meriem El-Batoul KEDDAR :</b> Controlling Covid-19 Dynamics Using An Epidemic Model
<b>12h00–12h15</b>	<b>Souad AZRA :</b> Nilpotent-By-Polycyclic-By-Cernikov Groups Nilpotent-By-Polycyclic-By-Cernikov Groups



## Room4B: Ordinary session (Afternoon13h30-16h30)

Chairwoman: Dr. Hafaidia Imane

Google meeting link: <https://meet.google.com/tue-aroo-xhe>

<b>13h30–13h45</b>	<b>Yasmina GHETTOUT:</b> Synchronization Of Chaotic Systems Using Active Control And Backstepping Control Methods
<b>13h45–14h00</b>	<b>Samiha AGUEB:</b> L'effet De L'ajout D'une Chaîne Sur Le Nombre B-Chromatique
<b>14h00–14h15</b>	<b>Bochra GHERIBI:</b> Morrey Space And Besov Space
<b>14h15–14h30</b>	<b>Ghania GUETTAI:</b> Exploring A Novel Class Of Polynomials Derived From The Laguerre Transform
<b>14h30–14h45</b>	<b>MOUSSA FALL:</b> Classification Of Algebraic Points On The Hyperelliptic Curve Of Affine Equation $Y^2 = X^5 + 3x^3 + X$
<b>14h45–15h00</b>	<b>Abdelaziz BENNOUR:</b> Existence And Multiplicity Of Solutions To The Nonhomogeneous Biharmonic Problem Involving Critical Growth And Hardy Potentials
<b>15h00–15h15</b>	<b>Amina GUERROUMA :</b> A Comparative Study of Heuristic-Based Memetic Algorithms for Multi-Objective Stochastic Knapsack Problems





**2<sup>nd</sup> International Conference **Mohand Moussaoui** on Applied  
Mathematics and Modeling**

