



WELCOME MESSAGE

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On behalf of the Organizing Committee, we would like to extend a warm welcome to all the participants of the International Conference on Recent Advances in Partial Differential Equations and Applications (ICRAPDEA'23) held on 27-28, 2023 in Casablanca, Morocco.

This scientific event organized by Hassan II University and Faculty of Sciences Ain Chock, Casablanca will provide a remarkable opportunity for national and international academic communities to address new challenges, share their experiences and discuss future research directions in the field of partial differential equations. The technical program will include plenary and regular technical sessions face to face mode and exceptionally in hybrid mode for some participants.

All accepted papers after the peer-review process, will be published as chapters in the journal of Mathematical Modeling and Computing (DOI: 10.23939/mmc, Indexed by Scopus (ISSN: 2312-9794) and Moroccan Journal of Pure and Applied Analysis.

We would like to thank all members of different committees for their efforts before and during the conference and all members of the Technical Program Committee for their hard work in providing reviews in a timely manner. Special thanks also go to all authors for their valuable contributions since ICRAPDEA'23 would not be possible without their contributions.

We are also grateful to all our partners and sponsors, especially Hassan II University and the Faculty of Sciences Ain-Chock, the CNRST, Lorraine university, Institut Elie Cartan etc

We hope you enjoy your time with us and we look forward to meeting you all in the next edition of the ICRAPDEA conference.

ICRAPDEA'23 Organizing Committee



SCIENTIFIC COMMITTEE

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Rajae Aboulaïch (Université Mohammed V de Rabat, Morocco)

My Larbi Afifi (Université Hassan II de Casablanca, Morocco)

El Housseine Azroul (Université Sidi Mohamed Ben Abdellah de Fès, Morocco)

Omar El-Fallah (Université Mohammed V & Académie Hassan II des Sciences et Techniques, Rabat, Morocco)

Abdelhaq El Jai (Université de Perpignan, France & Académie Hassan II des Sciences et Techniques, Rabat, Morocco)

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Fahd Karami (Université Cadi Ayyad de Marrakech, Morocco)

Simon Labrunie (Université de Lorraine, France)

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Michel Pierre (Ecole Normale Supérieure de Rennes & IRMAR, France)

Sylvia Serfaty (Courant Institute of Mathematical Sciences & American Academy of Art and Sciences, USA)

Juan Luis Vazquez (Universidad Autonoma de Madrid & Real Academia Española, Spain)

CONFERENCE KEYNOTES



NONLOCAL REGULARITY FOR THE HEAT FRACTIONAL PROBLEM: APPLICATION TO NONLOCAL PROBLEM WITH NONLOCAL GRADIENT TERM

Boumediene ABDELLAOUI

Laboratoire d'Analyse Non linéaire et Mathématiques Appliquées
Département de Mathématiques, Université Abou Bakr Belkaïd, Tlemcen
Tlemcen 13000, Algérie

Abstract: In this talk we give new regularity results for the heat fractional problem in a natural fractional Sobolev spaces.

More precisely, we consider the following problem

$$\begin{cases} u_t + (-\Delta)^s u = f & \text{in } \Omega_T = \Omega \times (0, T), \\ u(x, t) = 0 & \text{in } (\mathbb{R}^N \setminus \Omega) \times (0, T), \\ u(x, 0) = u_0(x) & \text{in } \Omega, \end{cases}$$

where Ω is a bounded regular domain, $f \in L^m(\Omega_T)$ and $u_0 \in L^\sigma(\Omega)$ where $m, \sigma \geq 1$.

According to the value of m , we get the regularity of the “fractional gradient” of the solution u .

As a direct application, we will prove an existence result for a fractional Kardar-Parisi-Zhang problem with variant form of the fractional gradient.

A simple one will be the following

$$\begin{cases} u_t + (-\Delta)^s u = \mathbb{D}_s^2(u) + f(x, t) & \text{in } \Omega_T, \\ u(x, t) = 0 & \text{in } (\mathbb{R}^N \setminus \Omega) \times (0, T), \\ u(x, 0) = 0 & \text{in } \Omega, \end{cases}$$

where f belongs to a suitable Lebesgue space, \mathbb{D}_s^2 is a nonlocal “gradient square” term given by

$$\mathbb{D}_s^2(u)(x, t) = \frac{a_{N,s}}{2} \int_{\mathbb{R}^N} \frac{|u(x, t) - u(y, t)|^2}{|x - y|^{N+2s}} dy.$$

According to the value of m , we show existence and non-existence results.

We also obtain existence results for related problems involving different nonlocal gradient terms.

The talk is a part of the following paper:

B. Abdellaoui, S. Atmani, K. Biroud, E.-H. Laamri: *Global fractional regularity for the fractional heat problem, application to existence result for nonlocal KPZ equation.*



Title: Quasilinear elliptic equations on Finsler manifolds

Giovanni Molica Bisci (Università di Urbino Carlo Bo, Pesaro e Urbino, Italy)

Abstract: The theory of Sobolev spaces on complete Riemannian manifolds is well understood and widely applied into the study of various elliptic problems. Although Finsler geometry is a natural extension of Riemannian geometry, very little is known about Sobolev spaces on non-compact Finsler manifolds. Motivated by this wide interest in the literature, the leading purpose of this talk is to present some recent results on non-compact Randers spaces and their applications to quasilinear elliptic equations. The main approach is based on novel abstract Sobolev embedding results as well as on some variational and topological methods developed in the recent book *Nonlinear Problems with Lack of Compactness*, De Gruyter Series in Nonlinear Analysis and Applications 36 (2021), co-authored with P. Pucci.



Title: Le Smart Power Mathématique dans la gestion des grandes épidémies de l'histoire

Khadija Niri (Faculté des Sciences Ain Chock, Université Hassan II de Casablanca)

Abstract: Les épidémies ont toujours été une menace pour la santé publique et ont souvent eu un impact considérable sur la société et l'histoire de l'humanité. Au fil des siècles, les mathématiciens ont cherché à comprendre les mécanismes de la propagation des maladies infectieuses et ont développé des modèles mathématiques pour décrire et prévoir les épidémies. Dans cet exposé, on essaiera de présenter l'évolution de ces modèles et le développement de certains concepts associés comme le R_0 la taille finale et l'équilibre endémique. On illustrera par des exemples comment la compréhension, l'analyse mathématique et l'étude numérique de ces derniers sont devenus essentiels pour prédire la propagation des maladies et pour concevoir des stratégies efficaces de la santé publique.



Title: A domain decomposition method for the numerical approximation of the non-negative solution of non-linear parabolic equations.

Jean Rodolphe Roche (Université de Lorraine)

Abstract:

The aim of this talk is to present a numerical method to compute a numerical approximation of a non-negative solution of semi-linear parabolic equations. It concerns the case of solutions with or without blow-ups. For this purpose, we developpe two different algorithms combining Crank-Nicholson time discretization schema, finite elements approximation, Newton method, and domain decomposition technics.

In the case of the blow-up, we will give an estimation of the maximal time existence of the numerical solution. That estimation is a precise approximation of the maximal time existence of the analytical solution. We will also adapt the para-real algorithm to the non-linear problem. In all cases, the simulations converge and illustrate the performance of the algorithms studied and the coherence of the results with the theory.

This is joint work with: **Nahed Naceur, Nour Eddine Alaa and Moez Khenissi.**



Title: On fractional equations with critical growth

Raffaella Servadei (Università degli Studi di Urbino Carlo Bo, Italy)

Abstract:

Fractional and nonlocal operators appear in concrete applications in many different fields. This is one of the reason why, recently, nonlocal fractional problems are widely studied in the literature. Critical problems are particularly relevant for their relations with many applications where a lack of compactness occurs. Aim of this talk is to discuss some recent results about existence and multiplicity of solutions for fractional nonlocal equations with critical growth assumptions on the nonlinear term.



Enrique ZUAZUA

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[1] FriedrichAlexanderUniversität ErlangenNürnberg - Alexander von Humboldt Professorship, Germany

[2] Fundación Deusto, Bilbao

[3] Universidad Autónoma de Madrid

Title : **Control and Machine Learning**

Abstract: Control, or Cybernetics, according to the term coined first by Ampère and then popularized through the works of Wiener, is the science of control and communication in animals and the machines. The motivation goes back to ancient times: machines that automatically carry out man's work so that he can be freer and more efficient. The goals of Control are therefore, to a large extent, those of the modern discipline of Machine Learning.

In this talk we shall present some fundamental mathematical notions and techniques in Control that have strongly influenced the emergence and development of the field of Machine Learning. We will do it analyzing Neural Ordinary Differential Equations (NODEs) from a control theoretical perspective to address some of the main challenges in Machine Learning: Supervised Learning and Universal Approximation.

We adopt the perspective of the simultaneous or ensemble control, according to which, each item to be classified or learned corresponds to a different initial datum for the Cauchy problem of a NODE. The challenge is then to control the ensemble of solutions to the corresponding targets by means of one sole control. We present a genuinely nonlinear and constructive method, allowing to show that such an ambitious goal can be achieved, estimating the complexity of the control.

This property is rarely fulfilled by the classical dynamical systems in Mechanics and, as we shall see, it is intimately related to the very nonlinear nature of the activation functions governing the NODEs under consideration. It allows deforming half of the phase space while the other half remains invariant, a property that classical models in mechanics do not fulfill. Analyzing the natural consequence of Universal Approximation, we shall also establish the link with optimal transport.

We shall also illustrate how, classical concepts and tools of Control Theory, such as the “turnpike property” allow the training of Neural Networks in a more stable and robust manner.

Joint work with **Borjan Geshkovski**, **Carlos Esteve**, **Domènec Ruiz-Balet** and **Dario Pighin**.



CONFERENCE PROGRAM

KS: Keynote Speakers	MS: Mini-symposium	S: Session
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KS: Keynote Speakers	
KS1: Enrique Zuazua (Friedrich–Alexander-Universität Erlangen–Nürnberg, Germany)	Control and Machine Learning
KS2: Jean Rodolphe Roche (Université de Lorraine, France)	A domain decomposition method for the numerical approximation of the non-negative solution of non-linear parabolic equations.
KS3: Khadija Niri (Université Hassan II de Casablanca, Morocco)	The Mathematical Smart Power in the management of the great epidemics of history
KS4: Giovanni Molica Bisci (Università di Urbino Carlo Bo, Pesaro e Urbino, Italy)	Quasilinear elliptic equations on Finsler manifolds
KS5: Raffaella Servadei (Università degli Studi di Urbino Carlo Bo, Italy)	On fractional equations with critical growth
KS6: Boumediene Abdellaoui (Université de Tlemcen, Algeria)	Nonlocal regularity for the heat fractional problem: application to nonlocal problem with nonlocal gradient term

MS: Mini-symposium	
MS1: Control theory & Inverse problem	<u>Lahcen MANIAR</u>, FSSM, Université Cadi Ayyad, Marrakech, Morocco
MS2: Nonlocal PDEs and its applications	<u>Elhoussine AZROUL</u>, FSDM, Université Sidi Mohamed Ben Abdallah, Fès, Morocco
MS3: PDEs in Biological and Complex Systems	<p>Title 1: <i>Partial differential equations applied to infectious diseases and economics.</i> <u>Khalid HATTAF</u>, CRMEF of Casablanca, Morocco</p> <p>Title 2: <i>Global proprieties of a spatial heterogeneous delayed epidemic model with partial susceptible protection and nonlocal disperse,</i> <u>Abdessamad TRIDANE</u>, Mathematical sciences-(COS), Al Ain, UAE</p>
MS4: Integral transforms of Fourier type	Title 1: <i>Equivalence of K-Functionals and Modulus of Smoothness Constructed by Generalized Jacobi Transforms</i> <u>Mohamed EL HAMMA</u>, FSAC, Université Hassan II de Casablanca, Morocco



	<p>Title 2: Generalized Abilov's Theorem for The Multidimensional Fourier-Bessel Transform <u>Abdellatif AKHLIDJ</u>, FSAC, Université Hassan II de Casablanca, Morocco</p>	
MS5: Elliptic and Parabolic Equations and systems	<p><u>Azeddine BAALAL</u>, FSAC, Université Hassan II de Casablanca, Morocco</p> <p><u>El Haj LAAMRI</u>, Institut Élie Cartan, Université de Lorraine, France</p>	
MS6: PDEs in Image processing	<p><u>Driss MESKINE</u>, EST Essaouira, Université Cadi Ayyad, Morocco</p> <p>Title : <i>Sur quelques équations et systèmes de réaction-diffusion et application en imagerie</i> Presented by <u>Fahd KARAMI</u>, EST Essaouira, Université Cadi Ayyad, Morocco</p>	
MS7: Computational approaches to PDEs	<p><u>Mostafa OUARIT & Atika RADID</u>, FSAC, Université Hassan II de Casablanca, Morocco</p>	
Locations of KS, MS and Parallel sessions		
A : Amphi	SS : Salle Séminaire	SMI: Salle

CONFERENCE PROGRAM

July 27, 2023

OPENING CEREMONY

- 08h30-09h00 (UTC+1)
09h00-09h30
- **AZEDDOUG Houssine**, President of Hassan II University
 - **SADDIQI Omar**, Dean of the Faculty of Sciences Ain Chock, Hassan II University
 - **BAALAL Azeddine**, Local General Chair of ICRAPDEA'23
 - **LAAMRI El Haj**, General Chair of ICRAPDEA'23

PLENARY SESSION

09h30-10h15 (UTC+1)

KS1: Control and Machine Learning
Enrique ZUAZUA (Germany)
Moderator : El Haj LAAMRI

Coffee Break

PLENARY SESSION

10h45-11h30 (UTC+1)

KS2: A domain decomposition method for the numerical approximation of the non-negative solution of non-linear parabolic equations.
Jean Rodolphe ROCHE (France)
Moderator : Omar EL FALLAH

11h30-12h15 (UTC+1)

KS3: The Mathematical Smart Power in the management of the great epidemics of history
Pr. Khadija NIRI (FSAC Hassan II University)
Moderator : Larbi AFIFI

Lunch

PLENARY SESSION

Mini-symposium & Parallel Session

	MS1 L. MANIAR L. AFIFI	MS2 A. AZOUANI	MS3 K. HATTAF A. TRIDANE	MS4 M. EL HAMMA A. AKHLIDJ	MS5 A. BAALAL E. LAAMRI	MS6 M. OUARIT A. RADID
14h00-16h00 (UTC+1)	Oral Session SMI1	Oral Session SMI2	Oral Session SMI3	Oral Session 1.4 SMI4	Oral Session 1.5 SMI5	Oral Session SMI6

Coffee Break

Mini-symposium & Parallel Session

	MS1 L. MANIAR L. AFIFI	MS2 A. AZOUANI	MS3 K. HATTAF A. TRIDANE	MS4 M. EL HAMMA A. AKHLIDJ	MS6 A. BAALAL E. LAAMRI	MS5 M. OUARIT A. RADID
16h30-18h30 (UTC+1)	Oral Session SMI1	Oral Session SMI2	Oral Session SMI3	Oral Session 1.4 SMI4	Oral Session 1.5 SMI5	Oral Session SMI6
	Oral Session 1.1 SMI1		Oral Session 1.2 SMI2		Oral Session 1.3 SMI3	

July 28, 2023

PLENARY SESSION

09h00-
9h45
(UTC+1)

KS4: Quasilinear elliptic equations on Finsler manifolds
Giovanni MOLICA BISCI (Italy)
Moderator : Raffealla SERVADEI

09h45-
10h30
(UTC+1)

KS5: On fractional equations with critical growth
Raffaella SERVADEI (Italy)
Moderator : Jean Rodolphe ROCHE

Coffee Break

PLENARY SESSION

11h00-
11h45
(UTC+1)

KS6: Nonlocal regularity for the heat fractional problem: application to nonlocal problem with nonlocal gradient term
Boumediene ABDELLAOUI (Algeria)
Moderator : Ahmed YOUSSEFI

Lunch

PLENARY SESSION

15h00-
16h30
(UTC+1)

Mini-symposium & Parallel Session

MS1 M. LHOUS EI M. MAGRI	MS2 E. AZROUL	MS3 K. HATTAF A. TRIDANE	MS4 I. MARRHICH F. EL WASSOULI	MS5 F. KARAMI D. MESKINE	MS6 M. OUARIT K. RHOFIR
Oral Session SMI1	Oral Session SMI2	Oral Session SMI3	Oral Session SMI4	Oral Session SMI5	Oral Session SMI6

Coffee Break

17h00-
18h30
(UTC+1)

Mini-symposium & Parallel Session

MS1 M. LHOUS EI M. MAGRI	MS2 E. AZROUL	MS3 K. HATTAF A. TRIDANE	MS4 I. MARRHICH F. EL WASSOULI	MS6 F. KARAMI D. MESKINE	MS5 M. OUARIT K. RHOFIR
Oral Session SMI1	Oral Session SMI2	Oral Session SMI3	Oral Session SMI4	Oral Session SMI5	Oral Session SMI6

CLOSING CEREMONY



MS1: Control theory & Inverse problem

PARALLEL SESSION 1.1

Session 1.1		Chairman: L. MANIAR and L. AFIFI
Room SMI1		Date: 27 July 2023 14h00-18h30
484285	Hizazi Hiba	On LMI Conditions To Design observer-based control for linear systems with uncertain parameters
473645	Khaloufi Issam	A mathematical model describing the correlation between smokers and tuberculosis patients
481056	Allal Brahim	Boundary controllability for a degenerate and singular wave equation
482528	Ouhafsa Mohamed	Boundary optimal control problem of semi-linear systems
482345	Akoubi Abdelkarim	Boundary stabilization of bilinear systems
481899	Salhi Jawad	Controllability and stabilization of coupled hyperbolic systems
485794	Rzik Sara	Exact Controllability of the 1-D Beam Equation with Piezoelectric Actuator
482408	Amaliki Younes	Finite-time stabilisation of a class of linear and bilinear control systems
482024	Oukdach Omar	Hirarchical control problem for the heat equation with dynamic boundary conditions
488754	Baali Ouejdane	Necas identity for the biharmonic operator in lipschitz domain
482725	Azdine Ilhame	Numerical modelling of the steel-concrete interface: Application to linear connection by ribbed steel plate
482742	Zenfari Saida	Observer Design For A Class Of Discrete Port Hamiltonian Systems
482613	Delbouh Ahmed	On the exponential stabilization for a class of the second order semilinear distributed systems with time delay
482617	Ben Brahim Hamza	On the Observability for A Class of Linear Time-Fractional Systems.



MS1: Control theory & Inverse problem

PARALLEL SESSION 1.2

Session 1.2		Chairman: M. LHOUS and El M. MAGRI
Room SMI1		Date: 28 July 2023 15h00-18h30
484286	Hizazi Hiba	Domination In Linear Fractional Order Disturbed System
482723	Lamrani Ilyasse	On the Stabilization of Prey-Predator Model with Diffusion
482306	Ait Aadi Abderrahman	On the weak and strong stabilization of infinite dimensional bilinear systems with bounded control in Hilbert space
482363	Askouraye Najib	On two point boundary-value problems for second order nonlinear differential inclusions with phi-Laplacian
486010	Yahyaoui Soufiane	Optimal control for Dirac bilinear systems
482110	Hamza Toufga	Optimal Control of a Spatiotemporal Discrete Tuberculosis Model
482178	Bouhyaoui Imane	Parasite transmission dynamics: The case of anisakiasis
480907	Ouyadri Mourad	Positive controllability of fractional discrete lineare time invariant systems
482486	Ghandor Wadii	Regional controllability of fractional-order dynamical system with time-varying delays in the state
482350	Amissi Chadi	Remediability problem in finite dimension linear fractional dynamical systems
480816	Hilal Soukaina	Sensitivity analysis of social media addition
489152	Chorfi Salah-Eddine	Stability estimates for initial data in general Ornstein-Uhlenbeck equations
486178	El Kazoui Khalil	stabilization of a class of second order semilinear systems
482214	Raghib Taha	The Problem Of Second-Order Functional Evolution With Time And State-Dependent Maximal Monotone Operators And Nonconvex perturbation
485016	Mehdaoui Mohamed	Well-Posedness and Optimal Control of a Parabolic System with Nonlinear Diffusion Terms Modeling the Fast Spread of an Epidemic

MS 2.1: Stochastic PDEs and multi-physics

PARALLEL SESSION 2.1

Session 2.1		Chairman: A. AZOUANI
Room SM12		Date: 27 July 2023 14h00-18h30
486181	Semmouri Abdellatif	A numerical scheme for solving boundary value problem of multi-order fractional differential equations
482278	Charradi Nabil	A viability result for non-convex differential inclusion in Banach spaces
489107	Talbi Hajar	Analysis and Numerical Approximation to a Strongly Nonlinear Elliptic System With Degeneracy
482789	El Karma Asmae	Comparative Analysis Of Previous Works On Landslides Analysis
482706	Amina Allali	HIV infection model involving AIDS-related cancer with cell-to-cell transmission and stochastic perturbation
482169	Jaouhari Mounir	Interface Homogenization of a Periodic Array of Linear Viscoelastic Inclusions A Matched Asymptotic Expansion Approach for Helmholtz problem
482770	Kissi Benaissa	Modeling of internal erosion : application to hydraulic structures
482783	Jourhmane Hamza	Non-negative periodic solutions for a degenerate double phase Laplacian parabolic equation
482768	Ait Bakrim Aicha	Projection methods in turbulence
486184	Samir Zahra	Simulation numérique des écoulements de fluides viscoélastiques par la méthode des éléments finis
486549	Malghi Hayat	Stability analysis and existence of integral solutions for a hybrid differential problem involving psi-Caputo derivative.
482101	Mohammed Bouasabah	Stochastic Modelling and Linear Regression as Technical Indicator for a Trading Decision
482750	El Mezriahi Youssef	The Influence Of The Height On The Resistance To Base Shear Of RC Buildings Using A Non-Linear Static Analysis

MS 2.2: Nonlocal PDEs and its applications

PARALLEL SESSION 2.2

Session 2.2		Chairman: E. AZROUL
Room SMI2		Date: 28 July 2023 15h00-18h30
482744	Melouani Yassine	Analysis of a mathematical nonlocal model for tumor therapy
482162	Sabiry Abdelaziz	Existence of renormalized solutions to nonlinear $p(\cdot)$ -parabolic problems of generalized porous medium with general measure data
485573	Boumazourh Athmane	Existence of Solutions for a Class of Fractional Kirchhoff-type Systems in \mathbb{R}^N with Non-standard Growth
485574	El-Yahyaoui Houria	Existence Results For A Fractional $(p(x; \cdot); q(x; \cdot))$ -Kirchhoff Type Elliptic System
482112	Benhadda Walid	Existence results for ϕ -Caputo fractional differential equations with p -Laplacian operator via topological degree methods
482527	Zineddaine Ghizlane	Existence results in weighted Sobolev space for quasilinear degenerate $p(x)$ -elliptic problems with a Hardy potential
482103	Baroudi Sami	Leray-Schauder degree theory for anti-periodic ψ -Caputo-type fractional p -Laplacian problems
482682	El Alami Omar	Multiple solutions for a Kirchhoff-type problem involving the fractional $p(x)$ -Laplacian operator
482107	Massar Mohammed	On a nonlocal anisotropic equation with singular term
476189	Sabri Abdelali	Weak Solution for Nonlinear Fractional $p(\cdot)$ -Laplacian Problem with Variable Order via Rothe's Time-Discretization Method
485825	Farjil Hind	Unilateral elliptic problems with strongly non linear including two lower order terms in Orlicz spaces
489998	Eddaoudi Hicham	Local integrability of $G(\cdot)$ -superharmonic functions in Lebesgue and Musielak –Orlicz spaces

MS 3: PDEs in biological and complex systems

PARALLEL SESSION 3.1

Session 3.1		Chairman: K. HATTAF and A. TRIDANE
Room SM13		Date: 27 July 2023
484047	Madani Nassira	A fractional epidemiological model of measles transmission.
479476	Hajhouji Zakaria	A fractional model of partial differential equations for HIV-1 infection with highly active antiretroviral therapy
480006	Elkarmouchi Maha	A generalized diffusive IS-LM business cycle model with delays in gross product and capital stock
482784	Chini Hassan	A multi-scale model to assess the effect of temperature and radiation on lettuce growth
481385	Tahiri Mostafa	Dynamical Behavior of a Reaction-Diffusion SIR Model with Memory Effects
485038	Bouziane Soukaina	Dynamics of a delayed reaction-diffusion prey-predator model with Hattaf-Yousfi functional response
480004	Lasfar Sara	Dynamics of a diffusive business cycle model with two delays and variable depreciation rate
482035	Elmamouni Hamza	Dynamics of two-steps reversible enzymatic reaction under the new generalized Hattaf fractional derivative
483488	Diki Ghizlane	Exact solutions to a fractional differential system describing vesicle dynamics under a linear shear flow
482741	Lamghari Abdelkarim	Forecasting infectious disease transmission with an SEIR model and social contact matrices
480087	El Hassani Abdelaziz	Global stability of a generalized HBV model with anomalous diffusion and two delays
482220	Benfatah Youssef	On the maximal output admissible set for a class of bilinear discrete-time systems

MS 3: PDEs in biological and complex systems

PARALLEL SESSION 3.2

Session 3.2		Chairman: K. HATTAF and A. TRIDANE
Room SMI3		Date: 28 July 2023
479260	Warrak El Mehdi	Global Stability of an age-structured HIV infection model with latency and cell-to-cell transmission
480005	Assadiki Fatima	Global stability of fractional partial differential equations applied to a biological system modeling viral infection
477984	Karama Mohammed	Karama-Hamdi Method (KHM)
486147	Elkhettab Ahlam	Mathematical Model Of Tumor Growth
482071	El Hammani Mohammed	Mathematical Modeling and Optimal Control of Chemotherapy Resistance in Cancer Treatment
485797	Bouda Sara	Mathematical modeling of HIV transmission in a heterosexual population: incorporating memory conservation
485912	Kasmaouy Ilyass	Population Dynamics Under Climate Change: Influences of Allee Effect and Variable Speed
480080	El Younoussi Majda	Spatiotemporal dynamics of cancer with oncolytic virotherapy and inhibitors
482099	El Karimi Mly Ismail	Spatiotemporal Dynamics of RNA Viruses in Presence of Immunity and Treatment: A Case Study of SARS-CoV-2
486632	Boulouz Abed	Stability analysis of a spatially and size-structured population model with unbounded birth process
479449	Karama Mohammed	Using Karama-Hamdi Method to extract periodic and Quasi-periodic vibrations in a Modified van der-Pol with quintic force
482067	Aguedjig Hamza	Validation and Parameter Estimation of Tumour Growth Model
485684	Kamali Nezha	VARIATIONAL METHODS FOR A FRACTIONAL $p(x, \cdot)$ -BI-NONLOCAL PROBLEM OF ELLIPTIC TYPE

MS 4.1: Integral transforms of Fourier type

PARALLEL SESSION 3.1

Session 4.1		Chairman: A. AKHLIDJ and M. EL HAMMA
Room SMI4		Date: 27 July 2023 14h00-18h30
486112	Faouaz Saadi	Absolutely convergent Fourier-Bessel series and generalized Lipschitz classes
486611	Mahfoud Ayoub	Dini Clifford Lipschitz functions for the first Hankel-Clifford transform
485936	Belkhadir Abdelhak	Generalization of Titchmarsh's Theorem for the Jacobi-Dunkl Transform
476816	Tyr Othman	Generalized Lipschitz conditions and weighted Jacobi-Dunkl series
482664	Dahani Afaf	Generalized Translation and Convolution associated to the Linear Canonical Fourier-Jacobi Transform
486020	Khadari Abdelmajid	K-functional related to the Deformed Hankel Transform
485740	Laamimi Afaf	Lipschitz functions class for the generalized Dunkl transform
485832	Sadik Zakaria	Localization Operators associated with the canonical Fourier Bessel transform.
486634	El Gargati Abdelghani	Miyachi's UP for Offset Linear Canonical Transform
486032	Djellab Nisrine	New estimates for the fourier Transform in the Space $L_2(\mathbb{R}_n)$
485812	Khalil Chaimaa	On the equivalence of K-functionals and modulus of smoothness constructed by the generalized Fourier Bessel transform
482686	Elgadiri Fatima	Qualitative uncertainty principles for Linear Canonical Fourier-Bessel transform



MS 4.2: Function spaces and differential operators

Session 4.2		Chairman: F. EL WASSOULI and I. MARRHICH
Room SMI4		Date: 28 July 2023 15h00-18h30
477771	Chana Ahmed	Tikhonov regularization problem and Toeplitz operators for the Laguerre-Bessel wavelet transform
487450	Fantasse Yassine	Wavelet packet analysis in the framework of heckmanopdam theory on
485110	El Fahri Kamal	Some new results on L-weakly compact sets and applications
481993	Abakrim El Mahjoub	On The improvement Of Shepard Operator and its applications
485768	Ousbika Mohamed	On a Partial Difference Equations with p-Laplacian operator
481990	Oukacha Daoud	Generalized Poisson transform of an L^p -function over the Shilov boundary of the symmetric domains of non-tube type



MS 5: Elliptic and Parabolic Equations and systems

PARALLEL SESSION 5.1

Session 5.1		Chairman: A. BAALAL and EL H. LAAMRI
Room SM15		Date: 27 July 2023 14h00-18h30
484086	Boukarabila Siham	On a singular elliptic problem_at the minisymposia MS6. Elliptic and Parabolic Equations and systems
482109	Ouali El-Houcine	On the Continuous embeddings between the fractional Hajlasz-Orlicz-Sobolev spaces
484127	Atmani Somia	On Some Nonlocal Parabolic Systems With Gradient Source Terms
485838	Daoud Maha	A class of fractional parabolic reaction-diffusion systems with control of total mass: theory and numerics
485079	Younes Abdelbadie	The influence of the Hardy-Leray potential on some fractional-order equations
485781	Bengrine Fatima Zohra	The cooperative Lane-Emden system with Hardy potential.
489999	Achraf El wazna	Nonhomogeneous Dirichlet Problems For Fractional Elliptic Equations With Variable Exponent
482713	Berghout Mohamed	Potential Theory for fractional Sobolev spaces with variable exponents
481996	Bouhal Abdellatif	On the existence of solution to nonlinear elliptic equation with variable exponent and singular lower order term
482349	Haddani Ismail	Entropy solution for nonlinear parabolic problems with growth condition and two lower order terms in Musielak spaces
486180	Elbostani Said	Solution of Generalized Two-Dimensional Nonlinear Benjamin-Bona-Mahony-Burgers Equation Using Moving Least Square Method



MS 5.2: PDEs in Image processing

PARALLEL SESSION 5.1

Session 5.2		Chairman: F. KARAMI and D. MESKINE
Room SM15		Date: 28 July 2023 15h00-18h30
482743	Ziraoui Adil	Seismic Behavior Study of a Structure using Nonlinear Static Analysis
482800	Ameur Meryem	Some stationaries and non-stationaries hidden Markov chain : application in imagery
481572	Attmani Jamal	Convergence of FV Scheme for a Parabolic System in Image Processing
489153	Y. Ouakrim	A nonlinear Regularization of the Total Variation Model for Identifying Discontinuous Diffusion Coefficients in Elliptic Equations
489154	Y. Ouzrour	Mathematical Analysis and Numerical Approximation of the Thermo-electric Flow System Modeling Radiofrequency Ablation Phenomena in Cardiac Tissue

MS6: Computational approaches to PDEs

PARALLEL SESSION 6.1

Session 6.1		Chairman: M. OUARIT and A. RADID
Room SMI6		Date: 27 July 2023 14h00-18h30
482748	Khadija Elhadi	An iterative scheme to solve a coupled magnetohydrodynamic flow
485926	Rhofir Karim	Accelerated Residual New Iterative Method for solving generalized Burgers-Huxley equation
482343	Bahadi Mohamed	Degenerate elliptic nonlinear problem with a singular source term
486186	Maarouf Nisrine	Conservation Laws of the Time-Fractional Regularized Long-Wave Equation
482560	Barkouki Hind	Discontinuous Galerkin approach method to solve the two-dimensional multilayer shallow water flows
482767	Makroum Abdelmoula	Étude du comportement mécanique et thermique en compression des matériaux de disques de frein
483146	El Ghazouani Aziz	Existence, uniqueness and stability results for fuzzy caputo fractional generalized hukuhara non linear volterra fredholm integrodifferential equations
482440	Abouddrar Yasmine	How SIEM Technology and Big Data are Revolutionizing Cybersecurity with the Aid of Artificial Intelligence
490531	Staili Yassin	Invariant sets for a class of semilinear delay differential equations with non-dense domain
490066	Smouk Ali	Numerical stability of the Timoshenko system with thermoelasticity second sound

MS6: Computational approaches to PDEs

PARALLEL SESSION 6.2

Session 6.2 Room SMI6		Chairman: K. RHO FIR and M. OUARIT Date: 28 July 2023
486188	Mohib Abdelali	Moving least squares method for the two-dimensional Burgers-type equation arising in fluid turbulent flows
482796	Smouk Ali	Numerical Analysis and Stability of the Moore-Gibson-Thompson-Fourier Model
482688	Lahrache Manar	Numerical analysis of DDFV scheme for the Thermistor problem
482763	Hariri Imane	Physics Informed Neural Networks For One And Two Dimensional Reaction-Diffusion Brusselator System
486153	Achak Azzedine	Quantitative uncertainty principles for Weinstein transform
482627	Sadik Fatima-Ezzahra	Simulating Bidimensional Water Infiltration With Radial Basis Functions Methods
486025	Moutaouakkil Jamal	Solving ODEs using machine learning
482681	Nassiri Fatima Ezzahra	Stabilization Approaches for Viscoelastic Fluid Flows
482793	Sakhi Hasnae	Top Machine Learning Approaches Recommended for Sentiment Analysis : Moroccan Use Case