

Trends in Partial Differential Equations and Related fields

Sidi Bel-Abbès, Algeria, 8-10 April 2019

Program

Monday, April 8, 2019

9h-9h30: Welcoming participants

9h30-10h20: C. Amrouche (Pau)

Sur la Régularité des Solutions d'Equations et de Systèmes Elliptiques: Espaces de Sobolev

10h20-11h10: A. Sili (Marseille/Toulon)

Analyse asymptotique de problèmes de structures minces et homogénéisation I

11h10-11h30: Coffee Break

11h30-12h20: T. Hmidi (Rennes)

Aggregation equation and collapse to singular measure

12h20-14h30: Lunch

14h30-15h05: B. Chentouf (Kuwait)

On the stabilization of a rotating disk-beam system with a finite memory term

15h05-15h40: F. Shel (Monastir)

Stability of the wave equations on a tree with local Kelvin-Voigt damping

15h40-16h: Coffee Break

16h-17h: 4 parallel sessions

Tuesday, April 9, 2019

9h-9h50: A. Sili (Marseille/Toulon)

Analyse asymptotique de problèmes de structures minces et homogénéisation II

9h50-10h40: C. Amrouche (Pau)

Sur la Régularité des Solutions d'Equations et de Systèmes Elliptiques: Equations Elliptiques

10h40-11h10: Coffee Break

11h10-12h: L. Robbiano (Versailles)

Propagation du support de mesures semi-classiques et stabilisation du problème de Zaremba

12h-14h30: Lunch

14h30-15h05: F. Macià (Madrid)

Quasimodes and Control of a Quantum Particle

15h05-15h40: A. Bchatnia (Tunis)

Décroissance de l'énergie locale de l'équation de Klein Gordon critique

15h40-16h: Coffee Break

16h-17h: 4 parallel sessions

Wednesday, April 10, 2019

9h-9h50: C. Amrouche (Pau)

Sur la Régularité des Solutions d'Equations et de Systèmes Elliptiques: Systèmes Elliptiques

9h50-10h40: A. Sili (Marseille/Toulon)

Analyse asymptotique de problèmes de structures minces et homogénéisation III

10h40-11h10: Coffee Break

11h10-12h: C. Castro (Madrid)

Numerical approximation of the control for the wave equation

12h: Closing and lunch

Courses

Chérif Amrouche (Pau)

Titre du cours : Sur la Régularité des Solutions d'Equations et de Systèmes Elliptiques

Cours 1 : Espaces de Sobolev

Dans ce premier cours, on donnera les propriétés essentielles concernant les espaces de Sobolev parmi lesquelles : Traces, injections de Sobolev, interpolation, inégalités de Poincaré, de Hardy, de Poincaré Wirtinger, de Calderon-Zygmund.

Cours 2 : Equations Elliptiques

Le second cours sera consacré à la résolution de quelques équations elliptiques faisant intervenir l'opérateur de Laplace, avec divers types de conditions aux limites : Dirichlet, Neumann, Fourier-Robin. On s'intéressera ici aux questions de régularité des solutions dans un cadre hilbertien ou non hilbertien : solutions faibles, solutions fortes et solutions très faibles.

Cours 3 : Systèmes Elliptiques

On terminera par l'étude de systèmes elliptiques, et particulièrement le système de Stokes et le système d'élasticité linéaire, en considérant différentes conditions aux limites physiques.

Ali Sili (Marseille/Toulon)

Titre: Analyse asymptotique de problèmes de structures minces et homogénéisation

Résumé. Le but de ce cours est une introduction à l'analyse asymptotique de solutions d'edp posées dans des domaines minces. En général, les solutions u^ϵ de telles équations dépendent d'un petit paramètre ϵ qui caractérise le domaine et qui est destiné à tendre vers zéro. Il s'agira alors de trouver " la limite " de u^ϵ et donner l'équation dont cette limite est solution. Dans ce cadre, nous considérerons quelques équations relatives à des problèmes de réduction de dimension $3d - 1d$ ou $3d - 2d$ et mettrons en évidence l'effet de l'anisotropie du milieu sur le modèle limite. Nous montrerons également l'analogie de ces problèmes avec l'homogénéisation de milieux fibrés.

Talks

Ahmed Bchatnia (Tunis)

Title: Décroissance de l'énergie locale de l'équation de Klein Gordon critique

Résumé: Dans ce travail, on démontre la décroissance exponentielle de l'énergie locale des solutions de l'équation de Klein-Gordon, avec une nonlinéarité critique localisée. La preuve est basée sur les inégalités de Strichartz généralisées, et le semi-groupe de Lax-Phillips.

Carlos Castro (Madrid)

Title: Numerical approximation of the control for the wave equation.

Abstract. In this talk we focus on the numerical approximation for the boundary controls of the wave equation. We show the main difficulties associated to the classical approaches based on solving discrete approximations obtained by finite differences or finite elements discretization for the wave equation. Finally we analyze a new numerical method based on a projection for the wave equation on a suitable finite dimensional space.

Boumediène Chentouf (Kuwait)

Title: On the stabilization of a rotating disk-beam system with a finite memory term

Abstract: In this paper, we consider a rotating disk-beam system. The beam is supposed to have variable parameters and clamped at its left-end to the center of the disk. The proposed feedback control consists of a torque control that acts on the disk, while a dynamic memory boundary control is exerted at the right-end of the beam. First, we discuss the existence and uniqueness of solutions to the closed-loop system under specific conditions on the angular velocity of the disk and the memory term. Next, the resolvent method is invoked in order to establish the exponential stability of the closed-loop system. Finally, several numerical simulations are provided to show the relevance of the theoretical outcomes.

Taoufik Hmidi (Rennes)

Title: Aggregation equation and collapse to singular measure

Abstract. We shall discuss the patch dynamics for the two-dimensional aggregation equation associated to the Newtonian potential. We reformulate a suitable graph model and prove a local well-posedness result in sub-critical and critical spaces. The global existence issue is solved for small initial data using a special weak damping behavior. This allows to analyze the concentration phenomenon of the aggregation patches near the blow up time. In particular, we prove that the patch collapses to a collection of disjoint segments and we provide a description of the singular measure through a careful study of the asymptotic behavior of the graph. This a joint work with Dong Li

Fabricio Maciá (Madrid)

Title: Quasimodes and Control of a Quantum Particle

Abstract. In this talk I will survey recent results on concentration and non-concentration type phenomena for solutions to Schrödinger equations and show how they are related to exact controllability properties for those equations.

Luc Robbiano (Versailles)

Titre: Propagation du support de mesures semi-classiques et stabilisation du problème de Zaremba

Résumé. Le problème de Zaremba consiste à étudier un problème elliptique d'ordre 2 avec comme condition au bord une condition de Dirichlet sur une partie du bord et une condition de Neumann sur une autre partie, ces deux parties étant séparées par une hyper surface régulière du bord. On étudie la stabilisation par un amortissement interne du problème d'évolution associé au problème elliptique de Zaremba. On cherche une stabilisation exponentielle pour cela on estime la résolvante. On introduit des mesures de défaut semi-classique et on prouve, par un raisonnement par l'absurde, que sous certaines conditions géométriques la résolvante est bornée sur l'axe imaginaire, ce qui implique la décroissance exponentielle.

Farhat Shel (Monastir)

Title: Stability of the wave equations on a tree with local Kelvin-Voigt damping

Abstract. We study the stability problem of a tree of elastic strings with local Kelvin-Voigt damping on some of the edges. Under the compatibility condition of displacement and strain and continuity condition of damping coefficients at the vertices of the tree, exponential/polynomial stability is proved.

Parallel sessions

Monday, April 8, 2019

Salle 1

16h00: Djelloul Ziane

Title: Exact Solutions for Coupled Nonlinear System of Local Fractional Burger Equations

Abstract: The basic motivation of the present study is to extend the application of the local fractional Sumudu decomposition method to solve coupled nonlinear system of Local fractional Burger equations. The derivatives operators are taken in the local fractional sense. The local fractional Sumudu decomposition method (LFSDM) can easily be applied to many problems and is capable of reducing the size of computational work to find non-differentiable solutions for similar problems

16h15: Djouamai Leila

Title: A new stability number of the Bresse–Cattaneo system

Abstract: In this paper, we consider the bresse–cattaneo system with a frictional damping term and prove some optimal decay results for the L^2 -norm of the solution and its higher order derivatives. In fact, we show that there is a completely new stability number δ that controls the decay rate of the solution. To prove our results, we use the energy method in the fourier space to build some very delicate Lyapunov functionals that give the desired results. We also prove the optimality of the results by using the eigenvalues expansion method. In addition, we show that for the absence of the frictional damping term, the solution of our problem does not decay at all.

16h30: Djellali Fayssal

Title: Stabilité des plaques de reissner-mindlin-timoshenko avec dissipation faible

Abstract : Dans ce travail, on montre qu'il existe un nombre critique qui stabilise le système reissner-mindlin-timoshenko avec dissipation de frottement qui agit sur les angles de rotation, on identifie deux caractéristiques de vitesse v_1 et v_2 et on montre que le système est exponentiellement stable si et seulement si v_1 et v_2 sont égaux. Si v_1 et v_2 sont différents on prouve que le système est polynomialement stable.

16h45: Ghegal Samah

Title: Global existence of a nonlinear wave equation with variable-exponent nonlinearities

Abstract: In this work, we consider a nonlinear wave equation with damping and source terms of variable-exponent types, to prove the global result, we have used the stable-set method.

17h00: Labidi Soaya

Title: Decay of solutions of a viscoelastic beam with memory term

Abstract: We are interested to have an exponential decay of solutions for a viscoelastic beam. More precisely, the decay is obtained for a convex kernel which the earlier results are improved.

17h15: Sengouga Abdelmouhcene

Title: Observability of the wave equation with mixed boundary conditions in time-varying intervals

Abstract: We consider the wave equation with mixed boundary conditions in the time-varying interval $(0, \ell(t))$ where $t > t_0 > 0$ and $0 < \ell < 1$. By means of generalized Fourier series in weighted L^2 -spaces, we derive a sharp energy estimate for the

solution of the wave equation. Then, we show the boundary observability, in a sharp time, at each of the endpoints of the interval. The observability constants are explicitly given.

Keywords: Wave equation, time-varying domains, generalised Fourier series, boundary observability.

17h30: Sabbagh Zineb

Title: Global existence and energy decay for viscoelastic plate with distributed delay

Abstract: We consider a nonlinear viscoelastic plate in a bounded domain with distributed delay and prove a global solution existence result using the energy method combined with the Faedo–Galerkin approximation, under condition on the weight of the damping and the weight of distributed delay. Also we establish the exponential stability of the solution by introducing a suitable Lyapunov functional.

Keywords : Global solution • Distributed delay • Multiplier method • Weak frictional damping • Viscoelastic Petrovsky equation • Exponential decay.

17h45: Yazid Fares

Title: Exponential decay of thermo-elastic Bresse system with distributed delay term

Abstract: The paper considered here is one-dimensional linear thermo-elastic bresse system with a distributed delay term in the first equation. We prove the well-posedness and exponential stability result, this later will be shown without the usual assumption on the wave speeds. To achieve our goals, we make use of the semi-group method.

Salle 2

16h00: Boussaid Omar

Title: Characterizations of symmetric polyconvexity

Abstract: Symmetric quasiconvexity plays a key role for energy minimization in geometrically linear elasticity theory. Due to the complexity of this notion, a common approach is to retreat to necessary and sufficient conditions that are easier to handle. This article focuses on symmetric polyconvexity, which is a sufficient condition. We prove a new characterization of symmetric polyconvex functions in the two- and three-dimensional setting, and use it to investigate relevant subclasses like symmetric polyane functions and symmetric polyconvex quadratic forms. In particular, we provide an example of a symmetric rank-one convex quadratic form in 3d that is not symmetric polyconvex.

16h15: Bouzit Hamid

Title: On the two and three dimensional oseen potentials

Abstract: We prove continuity properties for the oseen potential. As a consequence, we show some new properties on solutions of the oseen equations. The study relies on weighted sobolev spaces in order to control the behavior of functions at infinity.

16h30: Ait Yahia Mohamed

Title: Iterated homogenization of an eigenvalue problem in perforated domains

Abstract: In this work we show a homogenization result of an eigenvalue problem defined on a perforated domains with finitely many periodic scales.

16h45: Abdelli Mouna

Title: Regional Gradient Controllability of Hyperbolic Systems

Abstract: In this paper we have discussed the characterisation of the control achieving a regional gradient controllability with minimum energy of systems described by hyperbolic equation and reach a desired state given only on a part of the system domain. The approach is based on an extension of the Hilbert Uniqueness Method.

17h00: Salima Azouz

Title: Anisotropic singular perturbation problems

Abstract: In the present work we focus on the analysis of the asymptotic behaviour of the solutions to anisotropic singular perturbation boundary value problems. A complete description of the asymptotic behaviour on the whole domain of definition is established. Two types of functions are constructed. The first type acts far away from the boundary layers to give the best possible approximation. The second one deals with the behaviour near the boundary layers to recover the complete approximation with a sharper rate of convergence. In fact, we go beyond the limit behaviour by considering the regular and the composite asymptotic expansions of arbitrary order. This allows to get an asymptotic approximation of a polynomial rate of convergence in arbitrary order or even an exponential one.

17h15: Boudjeriou Tahir

Title: Strong solutions of parabolic equations in non-cylindrical domains

Abstract: Here we will consider some parabolic problems in a singular non-cylindrical domain, our approach will be based on the technique of changing variable into a smooth cylindrical domain by a diffeomorphism.

17h30: Echarroudi Younes

Title: Null controllability of a cascade model in population dynamics

Abstract: In this work, we are concerned with the null controllability of a linear population dynamics cascade system (or the so-called prey-predator models) with two different dispersion coefficients which degenerate in the boundary and with one control force. We develop first a Carleman type inequality for its adjoint system, and then an observability inequality which allows us to deduce the existence of a control acting on a subset of the space domain which steers both populations of a certain age to extinction in a finite time.

17h45: El Hadfi Youssef

Title: Some degenerate parabolic problems: existence and regularity

Abstract: In this paper, we give some regularity results of solutions for some nonlinear parabolic equations with degenerate coercivity. We will show that the presence of some lower order terms has a regularizing effect on the solutions. We also give summability results for data in divergence form.

Salle 3**16h00: Benaissa Cherif**

Title: Density problems in Sobolev's spaces on time scales

Abstract: We present a generalization of the density of some of the functional spaces on the time scale, for example, spaces of rd-continuous function, spaces of Lebesgue Δ -integral and first-order Sobolev's spaces.

16h15: Cheheb Farida

Title: General decay result of a wave equation with a dynamic boundary control of diffusive type
Abstract: We study a wave equation with a dynamic boundary control of diffusive type. We establish optimal and explicit energy decay formula by using resolvent estimates. Our new result generalizes and improves the earlier related results in the literature.

16h30: Hakem Ali

Title: Decay properties of solutions for the initial boundary value problem of the degenerate quasilinear wave equation of Kirchhoff type with singular nonlinearities
Abstract: We study the decay properties of solutions for the initial boundary value problem of the degenerate quasilinear wave equation of Kirchhoff type with singular nonlinearities we illustrate our result by many significant examples which permit us to derive from our general estimates the polynomial, the exponential or the logarithmic decay.

16h45: Mahdi Fatima Zohra

Title: Existence of global attractor for a model of suspension bridge
Abstract: The goal of this work is to establish a well-posedness result and the existence of a finite-dimensional global attractor for the following model of suspension bridge equations.

17h00: Bensid Sabri

Title: On the exact number of monotone solutions of a simplified Budyko climate model and their different stability
Abstract: We consider a simplified version of the Budyko diffusive energy balance climate model. We obtain the exact number of monotone stationary solutions of the associated discontinuous nonlinear elliptic with absorption. We show that the bifurcation curve, in terms of the solar constant parameter, is S-shaped. We prove the instability of the decreasing part and the stability of the increasing part of the bifurcation curve. In terms of the Budyko climate problem the above results lead to an important qualitative information which is far to be evident and which seems to be new in the mathematical literature on climate models. We prove that if the solar constant is represented by $\lambda \in (\lambda_{1}, \lambda_{2})$, for suitable $\lambda_{1} < \lambda_{2}$, then there are exactly two stationary solutions giving rise to a free boundary (i.e. generating two symmetric polar ice caps: North and South ones) and a third solution corresponding to a totally ice covered Earth. Moreover, we prove that the solution with smaller polar ice caps is stable and the one with bigger ice caps is unstable.

17h15: Laouar Abdelhamid

Title: A mixed formulation in conjunction with the penalization method for solving the bilaplacian problem with obstacle type constraints
Abstract: In this paper we consider a mixed formulation for study of the bilaplacian problem with obstacle constraints in conjunction with the penalization method. The idea is based on the decomposition of the bilaplacian operator into two coupled laplacians and of course by choosing suitable spaces. The numerical advantage is to allow the solution of coupled systems with nice matrices having the M-matrix property. Moreover, the computed solution of the problem requires less execution time with respect to the discrete system of the bilaplacian problem. For simulation, we test the efficiency of a variety of iterative relaxation methods and discuss their numerical performances.

17h30: Younes Anis

Title: Mathematical model of the dynamics of blood cell production with mobilisation dependent apoptosis and proliferation regulations

Abstract: In this paper, a mathematical and numerical analysis of a nonlinear system of two differential equations with delay, describing the dynamics of blood cell production, is investigated. Existence and uniqueness of solutions is proved and first order necessary conditions are derived. We propose a mathematical model describing the dynamics of a hematopoietic stem cell population with growth factors and mobilisation dependent apoptosis and pro-liferation regulations. The method of characteristics reduces the age and space-structured model to a system of differential equations with a state-dependent delay.

17h45: Draifia Ala Eddine

Title: Blow up of solution a singular nonlocal viscoelastic system

Abstract: In this work we consider a nonlinear hyperbolic one-dimensional viscoelastic nonlocal system with a nonlocal boundary condition. We establish a blow up result for large initial data and a decay result for small enough initial data.

Salle 4

16h00: Matallah Atika

Title: On critical Kirchhoff type problems with singular Hardy potential

Abstract: In this work, we investigate the existence of solutions for elliptic Kirchhoff type problems with singular Hardy potential and critical Hardy-Sobolev exponent. We use variational methods to prove the main results.

16h15: Benmansour Safia

Title: Existence and multiplicity results for elliptic critical nonlocal kirchhoff type problem in a bounded domain

Abstract: In this work, we investigate the existence of at least two solutions for an elliptic nonlocal problem of kirchhoff type involving a critical Sobolev exponent in a bounded domain of \mathbb{R}^3 . The approach relies essentially on the Ekeland variational principle and the mountain-pass theorem.

16h30: Tahri Kamel

Title: Existence of solutions of polyharmonic elliptic operator of high order on Riemannian manifold

Abstract: Using variational methods and critical points theory, we show the existence and multiplicity of solutions for polyharmonic elliptic problem involving GJMS operator on Riemannian manifold.

16h45: Boukarabila Youssouf Oussama

Title: Existence and multiplicity for nonlocal critical problem involving hardy potential

Abstract: We study the existence/nonexistence and multiplicity of solutions of a perturbed doubly critical problem related to the fractional laplacean. The main difficulty of this problem is caused by the fractional laplacean operator and the presence of the hardy potential and Sobolev critical power. This equation is treated in the whole space which adds another major difficulty due to the loss of compactness and a nonlocal concentration compactness results were used. This work is a collaboration with A. Attar and E. H. Laamri.

17h00: Meghnafi Mustapha

Title: Logistic equation with p-laplacian and constant yield harvesting

Abstract: In this work, we are interested by the existence and uniqueness of positive solutions for a class of quasilinear boundary value problems.

17h15: Ayadi Hocine

Title: Entropy solutions for nonlinear anisotropic elliptic equations with variable exponents and degenerate coercivity

Abstract: Entropy solutions for nonlinear anisotropic elliptic equations with variable exponents and degenerate coercivity.

17h30: Lalili Hadjira

Title: Existence of weak solutions for nonlinear equation with $p(x)$ -Laplacian operator via topological method

Abstract: In this work, we are concerned with the existence of nontrivial weak solutions for nonlinear elliptic equation involving $p(x)$ -Laplacian operator via monotone operator's theory.

17h45: Messirdi Sofiane

Title: Sur les problèmes elliptiques avec deux exposants critiques de Hardy-Sobolev au même pôle

Abstract: Dans cet article, nous étudions un problème elliptique comportant deux exposants critiques différents de Hardy-Sobolev au même pôle. Par les méthodes variationnelles et le principe de compacité de concentration, nous obtenons l'existence d'une solution positive.

Tuesday, April 9, 2019

Salle 1

16h00: Abdelatif Kainane

Title: Global existence of small data solutions to semi-linear fractional σ -evolution equations

Abstract: We study the global (in time) existence of small data solutions to semi-linear fractional σ -evolution equations with mass or power non-linearity. Our main goal is to explain on the one hand the influence of the mass term and on the other hand the influence of higher regularity of the data on qualitative properties of solutions. From some polynomial decay in $l_p - l_q$ estimates for solutions to the corresponding linear fractional σ -evolution equations and by a fixed point argument the existence of small data solutions is proved for some admissible range of powers p .

16h15: Ataouat Mohamed

Title: On stability and decay rates of some viscoelastic fourth-order problems

Abstract: Our objective in this dissertation is investigate a viscoelastic plate equation and to find general and explicit decay rates of the energy.

16h30: Bahlil Mounir

Title: Global existence and energy decay of solutions to a viscoelastic Timoshenko beam system with a nonlinear time varying delay term in the weakly nonlinear internal feedbacks

ABSTRACT. In this paper, we consider the viscoelastic Timoshenko system with a delay term in the weakly nonlinear internal feedback in a bounded domain:

$$\begin{cases} \rho_1 \varphi_{tt}(x, t) - K(\varphi_x + \psi)_x(x, t) = 0, \\ \rho_2 \psi_{tt}(x, t) - b\psi_{xx}(x, t) + K(\varphi_x + \psi)(x, t) + \mu_1(t)g_1(\psi_t(x, t)) \\ \quad + \int_0^t h(t-s)\psi_{xx}(x, s) ds + \mu_2(t)g_2(\psi_t(x, t - \tau(t))) = 0, \end{cases}$$

We prove a global existence result using the energy method combined with the Faedo- Galerkin procedure under a condition between the weight of the delay term in the feedback and the weight of the term without delay. Furthermore, we establish a decay rate estimate for the energy by introducing suitable Lyapunov functionals.

16h45: Benaissa Abdelkader

Title: Existence globale et stabilisation de certaines équations et systèmes d'évolution de type hyperbolique

Abstract: In this talk, the main objective is to give a global existence and Stabilization results.

17h00: Beniani Abderrahmane

Title: Existence and stability for a lame system with time delay and infinite memory

Abstract: In this paper, we consider a coupled Lamé system with a viscoelastic term and a strong damping. We prove well-posedness by using Faedo-Galerkin method and establish an exponential decay result by introducing a suitable Lyapunov functional.

17h15: Benomar Khalida

Title: Optimal decay rates for the acoustic wave motions with boundary memory damping

Abstract: A linear wave equation with acoustic boundary conditions (ABC) on a portion of the boundary and Dirichlet conditions on the rest of the boundary is considered. The (ABC) contain a memory damping with respect to the normal displacement of the boundary point. In this paper, we establish polynomial energy decay rates for the wave equation by using resolvent estimates.

17h30: Boumaza Nouri

Title: Decay of solution for the thermo-visco-elastic systems in \mathbb{R}^n

Abstract: In this paper, we consider the petrowsky-petrowsky system, the aim of this work is to extend the decay results for a viscoelastic system to those for the thermoviscoelastic system.

17h45: Braiki Hocine

Title: On global existence of solutions for an integro-differential equation with strong damping

Abstract: In this paper we consider the initial boundary value problem for an integro-differential equation $u'' + \Delta^2 u + \int_0^t h(t-s)\Delta^2 u \, dx - g(\Delta u) = 0$ with strong damping in a bounded domain is considered. The existence and asymptotic behavior of solutions are discussed under some conditions.

Salle 2

16h00: Mahoui Sihem

Title: Virtual control to parabolic problems with pointwise source and incomplete data

Abstract: We study the virtual control of parabolic problems with pointwise source and incomplete data. The virtual control was introduced by J-L. Lions for distributed control functions, and is based on decomposition domain methods. Due to the incomplete data we use the low-regret control approach to our problem. The virtual pointwise control is characterized by a singular optimality system.

16h15: Harkat Soumia

Title: Asymptotic behaviour of evolution problems in time-dependent growing domains

Abstract: The talk is devoted to study the asymptotic behaviour of the solution to some evolution problems defined on noncylindrical domains becoming unbounded in many directions when the time t tends to infinity. The geometry of the noncylindrical domain can be single out to analyze the rate of convergence far away from the moving boundary of the domain. Since the steady state problem is elliptic, a new definition of the solution of a linear elliptic problem in unbounded domains is introduced to deal with its existence. This is, of course, according to the data of the main parabolic problems. So, otherwise as the solution of the considered evolution problems and its limit do not belong necessarily to the same space, the convergence cannot be expected on the whole domain. In order to recover it, correctors are built to describe the behaviour of the solution in the distant regions.

16h30: Laib Teldja

Title: New modification Sentinel for Linear Parabolic Equation

Abstract: The purpose of this article is, firstly, to modify the old definition of the sentinel, introduced by J.L. Lions, so that we can separate the control support to the observation support and, secondly, to identify the pollution terms which arise in regular problems which are modeled by a linear parabolic equation. A new modification of the sentinel is used to identify pollution terms in the general case where the observation and the control supports are disjoint. The problem of finding a new modification sentinel is equivalent to finding the unique control of regular adjoint system of the parabolic equation that we solve.

16h45: Louafi Meriem

Title: On average control of systems depending on an unknown parameter

Abstract: In this communication we discuss some notion of average control of system depending on an unknown parameter in finite dimensional linear systems (ODEs) and in infinite dimensional linear systems (PDEs) also we discuss the average optimal control.

17h00: Mahjoub Moncef

Title: Conditional stability and uniqueness for determining coefficient in some multidimensional consolidation models using optimal control

Abstract: In this paper, we study an inverse problem of reconstructing spatially varying coefficient in a nonlinear Biot's consolidation model with the following observation data: both displacement and pressure in a subdomain ω satisfying $\omega \subset \Omega$. First the given problem is transformed into an optimization problem by using optimal control framework and we establish the existence of minimizer for the control functional. The solution of the optimization problem is based on a non-linear conjugate gradient method. Moreover, the well-posedness of the adjoint problem and the first order necessary optimality conditions are shown. The convergence proof of the adjoint problem is based on using a general compactness criterion. Based on the necessary optimality condition, we prove the Lipschitz stability and the uniqueness for the inverse problem under some a priori information.

17h15: Mokhtari Hanifa

Title: Conditions aux limites approchées et renforcement d'une plaque de Kirchhoff-Love avec une couche mince d'épaisseur variable

Abstract: Dans notre travail, nous nous intéressons à la modélisation asymptotique du comportement d'une plaque élastique renforcée par une couche mince d'épaisseur variable $\delta(t) = \delta f(t)$, (δ étant un petit paramètre positif) et de rigidité variant en δ^{-a} , $a \in \mathbb{R}^+$. Par différentes méthodes asymptotiques, nous modélisons l'effet de cette couche mince sur le déplacement de la plaque.

17h30: Terchi Messaouda

Title: The life span for a solution of wave equation with mixed damping Term

Abstract: We consider the nonlinear wave equation involving the nonlinear damping term $|u|^{m-1}u_t$ and a source term of type $\int_0^t (t-s)^{-\gamma} |u(s, \cdot)|^p ds$. We show the blow-up result assuming some conditions on the parameters of the equation, and using some analysis tools.

17h45: Said Olfa

Title: Sur un problème inverse de source pour des équations d'évolution fractionnaires

Abstract: Dans ce travail, on donne une étude théorique pour un modèle décrivant le transfert thermique en présence d'une dérivée fractionnaire en temps. Pour l'étude théorique de ce problème on a distingué les deux cas $\alpha \in]0,1[$ et $\alpha \in]1,2[$ et on a donné un résultat d'existence et d'unicité pour chaque cas. La deuxième partie est consacré à une étude bibliographique sur des problèmes inverses de source pour l'équation de la chaleur classique. Puis on a essayé d'appliquer quelques techniques appris dans cette étude sur l'équation de la chaleur fractionnaire.

Salle 3

16h00: Oudjedi Damerdji Linda Fatima

Title: Stability of third order neutral differential equation with delay

Abstract: This paper establishes sufficient conditions to ensure the stability of zero solution to neutral type nonlinear differential equation of third order by constructing Lyapunov functionals.

16h15: Bitat Dalila

Title: Some generalized nonlinear retarded inequalities with integration over infinite intervals

Abstract: In this talk, we present some nonlinear retarded inequalities for functions of two independent variables with integration over infinite intervals that can be used as tools to study the qualitative properties of solutions of some nonlinear partial differential and integral equations. Some applications are given as illustration.

16h30: Benkhattou Nadia

Title: Fractional Riemann–Liouville initial value problem on time scales

Abstract: We introduce the concept of fractional derivative of Riemann–Liouville on time scales. Fundamental properties of the new operator are proved, as well as an existence and uniqueness result for a fractional initial value problem on an arbitrary time scale.

16h45: Beldjerd Djamilia

Title: New results on the asymptotic behavior of a neutral third–order differential equation

Abstract: In this talk, we are concerned with stability, boundedness and square integrability of solutions for some nonlinear neutral delay differential equations of third order. We employ Lyapunov's direct method to obtain the results.

17h: Chahtou Ahmed

Title: Existence and asymptotic behavior of global solutions for a nonlinear higher-order wave equation with a nonlinear source term and a delay term

Abstract: We consider the initial-boundary value problem for some nonlinear higher-order wave equation in a bounded domain. The existence of global weak solutions for this problem is established by using the potential well theory combined with faedo-galarkin method. We also established the asymptotic behavior of global solutions as $t \rightarrow +\infty$ by applying the Lyapunov method.

17h15: Dib Fatima

Title: Periodic solutions for delay differential equation via variational approach

Abstract: In this work we discuss the existence of periodic solutions for an impulsive nonautonomous second order delay differential equation. We obtain multiple periodic solutions by a variational approach.

17h30: Irzi Nawal

Title: On a fractional problem with variable exponent

Abstract: In this paper, we study the fractional $p(x)$ -laplacian problem with variable exponents.

17h45: Hammi Amel

Title: Dunkl-Schrödinger operators

Abstract: Dunkl's theory generalizes the usual Fourier analysis and has a rich structure, which allows us to extend many classical results, in this presentation, we consider the Schrödinger

operators $L_k = -\delta_k + v$, where δ_k is the Dunkl-Laplace operator and v is a non-negative potential on \mathbb{R}^d . We establish that L_k is essentially self-adjoint on C_0^∞ . In particular, we develop a bounded h^∞ -calculus on L^p spaces for the Dunkl harmonic oscillator operator.

Salle 4

16h00: Kerfaf Khawla

Title: On the translation invariant operators in $L^p(\mathbb{Z}^d)$

Abstract: We study boundedness of translation invariant operators in the discrete space $L^p(\mathbb{Z}^d)$. In this context a Mihlin type multiplier theorem is given, yielding boundedness for certain known operators. We also give L^p - L^q boundedness of a discrete wave equation.

16h15: Miraoui Mohsen

Title: Existence, Uniqueness and Stability of Measure Pseudo Almost Periodic Solutions of some Nonlinear Models

Abstract: In nature there is no phenomenon that is purely periodic, and this gives the idea to consider the measure pseudo almost periodic oscillation. By employing a suitable fixed point theorem, the properties of the measure pseudo almost periodic functions and differential inequality, we investigate the existence and uniqueness of the measure pseudo almost periodic solutions for some models of Lasota–Ważewska equation with measure pseudo almost periodic coefficients and mixed delays. We suppose that the linear part has almost periodic and the nonlinear part is assumed to be measure pseudo almost periodic. Moreover, the global attractivity and the exponential stability of the measure pseudo almost periodic solutions are also considered for the system. As application, an illustrative numerical example is given to demonstrate the effectiveness of the obtained results.

16h30: Ould-Hammouda Amar

Title: Krasnoselskii Iteration Process for Monotone Generalized-Nonexpansive Mappings

Abstract: we introduce a new class of generalized non expansive mapping and establish some weak and strong convergence theorems for Krasnoselskii-Ishikawa iteration in Banach spaces.

16h45: Oussaeif Taki Eddine

Title: Study of solution for a parabolic integrodifferential equation with the Second kind integral condition

Abstract: In this paper, we establish sufficient conditions for the existence, uniqueness and numerical solution for a parabolic integrodifferential equation with the second kind integral condition. The existence, uniqueness of a strong solution for the linear problem based on a priori estimate "energy inequality" and transformation of the linear problem to linear first-order ordinary differential equation with second member. Then by using a priori estimate and applying an iterative process based on results obtained for the linear problem, we prove the existence, uniqueness of the weak generalized solution of the integrodifferential problem.

17h00: Rouibah Khaoula

Title: High-order methods for the numerical solution of Volterra integro-differential equations

Abstract: In this paper, an iterative continuous collocation method based on the use of Lagrange polynomials is developed for the numerical solution of nonlinear Volterra integral equation. The error analysis of the proposed numerical method is studied theoretically. The results are

compared with the results obtained by other well-known numerical methods to prove the effectiveness of the presented algorithm.

17h15: Tassadit AKEB

Title: Stochastic differential equation driven by a fractional Brownian motion

Abstract: In our work, we discuss the problem of the existence of almost periodic solutions to the stochastic affine fractional equation (the stochastic integral is understood in the Skorohod sense). Under sufficient conditions we affirm the almost periodicity in distribution of the solution.

17h30: Nasri Nassima

Title: Formulations duales pour le problème de l'obstacle pour une plaque encastrée

Abstract: Nous considérons dans le cadre de ce travail le problème de l'obstacle pour une plaque fine encastrée. Des formulations variationnelles duales ont été construites. Des résultats numériques ont été obtenus en utilisant la méthode des éléments finis ainsi qu'une borne de l'erreur.

17h45: Ourahmoun Abbes

Title: Analysis of viscoelastic antiplane contact problems with long memory and regularization friction law

Abstract: This paper deals with the study of a mathematical model which describes a mathematical problem modelling the antiplane shear deformation of a viscoelastic body in frictional contact with a rigid foundation. The contact is bilateral and is modelled with a Tresca friction law. We propose regularization of the non-differentiable functional j , non differentiability due to the friction term appearing in the variational formulation of this mechanical problem. This regularization is obtained by replacing the function $|\cdot|$ by the function $\sqrt{(|\cdot|^2 + \rho^2)}$ where ρ is a strictly positive parameter. We present the classical formulation for the antiplane problem and write the corresponding variational formulation. Then we establish the existence of a unique weak solution to the model, by using the Banach fixed point theorem and classical results for elliptic variational inequalities.

Posters

Abdelmalek Mohammed

University of Tlemcen, Algeria

Some properties of generalized newton transformations

Adjimi Naas

University of Ghardaia, Algeria

Pde fractional

Aid Omar Farouk

University of Oran 1, Algeria

Fourier integral operators

Aissani Khalida

University of Tahri Mohamed Bechar, Algeria

Controllability for impulsive fractional evolution equations With state-dependent delay

Aliane Mohamed

University of Laghouat, Algeria

Nonlinear optimal control of Goddard problem

Amrani Majda

University of Annaba, Algeria

Serie chronologique

Amroune Nouredine

University of Sidi Bel abbès, Algeria

Well-posedness and asymptotic stability for the lame system with internal distributed delay

Aounallah Radhouane

University of Sidi Bel Abbès, Algeria

Blow-up for a nonlinear viscoelastic hyperbolic equation with a fractional boundary dissipation

Banouh Hicham

University of USTHB, Algeria

Phd student

We attempt to generalize the heisenberg's uncertainty principle to the case of continuous wavelet transform on real clifford algebras.

Bayour Benaoumeur

University of Mascara, Algeria

Structural derivatives on time scales

Beddani Abdallah

University of Relizane, Algeria

Bolza type problems with euler-lagrange equation

Bekkouche Noria
University of Saida, Algeria
Existence of many nonradial solutions for a perurbed Dirichlet problem

Belattar Zokha
University of Ain Temouchent, Algeria
Existence result for an elliptic nonlocal problem

Belkhir Naouel
University of Tlemcen, Algeria
Risk function estimators under random censoring with varying kernels and bandwidths. Simulation and example.

Bellal Nabila
University of Annaba, Algeria
Existence of solutions to nonlinear parabolic unilateral problems with an obstacle depending on time

Belloufi Mohammed
University of Mohamed Cherif, Algeria
Behavior of new models of hybrid conjugate gradient algorithm

Belouerghi Malika
University of Biskra, Algeria
A Consistent Approach to Generating Multiscroll Chaotic Chen Attractors

Benali Abdelkader
University of Chlef, Algeria
Generalization of kaplansky theorem for hyponormal operators

Benamira Sihem
University of Oum El Bouaghi, Algeria
Finite element method for a nonlinear hyperbolic problem with nonlinlocal bouandary conditions

Benchira Hayet
University of Tlemcen, Algeria
Solutions for singular kirchhoff problem involving critical nonlinearity

Benhanna Abdelkader Hakim
University of Kouba, Algeria

Beniani Abderrahmane
University of Ain Temouchent, Algeria
Existence and stability for a lame system with time delay and infinite memory

Benniche Omar
University of Khmis Miliana, Algeria
Near viability for nonlinear systems in arbitrary banach spaces

Bensikaddour Djemaia
University of Mostaganem, Algeria

Some types of minimal translation surfaces in lorentz heisenberg 3-space with flat metric.

Bensikaddour Djemaia
University of Mostaganem, Algeria

Minimal surfaces in lorentz heisenberg 3-space

Classification of some types of minimal translation surfaces in lorentz heisenberg 3 – space.

Benyou Fatima Zohra
University of Sidi Bel Abbès, Algeria

Decay property for solutions in elastic solids without mechan-Ical damping

Benyou Fatima Zohra
University of Sidi Bel Abbès, Algeria

Global existence and asymptotic stability for a coupled Viscoelastic wave equation with a time-varying delay term

Berhail Amel
University of Guelma, Algeria

Study of solution for hadamard fractional differential equations on an infinite interval with integral boundary value

Bokhari Ahmed
University of Chlef, Algeria

A new bernoulli operational matrix for solving variable order fractional differential-integral equations

Bouabsa Wahiba
University of Sidi Bel Abbès, Algeria

Local linear estimation for functional data

Bouafia Dahmane
University of M'sila, Algeria

Existence of solutions for a perturbed second order problem on the half-line via ekeland variational principle

Boudjerida Assia
University of Boumerdes, Algeria

Controllability results of some classes of fractional order differential inclusions

Bouizem Nacera
University of Tlemcen, Algeria

Modèle mathématique de la leucemie avec traitement par l'imatinib

Bouizem Mohammed
University of Tlemcen, Algeria

Analyse mathématique d'un modèle structure en age sur la leucémie

Boulares Boulares
University of Guelma, Algeria
On existence of positive solution for initial value problem

Bouremani Touffik
University of Setif 1, Algeria
Construction a parametrized maximal flow via dynamic programming approach in renewable resources optimal control problem

Bourrada Amel
University of Mascara, Algeria
Averaging For Fuzzy Differential Euations

Bouteffal Zohra
University of Mascara, Algeria
Measure of noncompactness in the study of solutions for fractional partial differential equations with delay

Bouzir Habib
University of Mascara, Algeria
Deformation of some generalized structures

Britel El Hassen
University of Laghouat, Algeria
Etude numerique d'un systeme d'edp non lineaireavec singularites en 3d "Application du logiciel cosmosworks 2018"

Chaouchi Belkacem
University of Khemis Miliana, Algeria
Hypercylic properties of abstract higher-order differential equations

Dalah Mohamed
University of Constantine, Algeria
A mixed formulation for the finite element solution of antiplane contact problem with friction: codes in matlab

Daoudi Khelifa
University of Sidi Bel Abbès, Algeria
Existence and uniqueness of solutions for some neutral differential equations with state-dependent delays

Della Abdelkader
University of Kouba, Algeria
P(x)-solitons in several space dimensions with variable exponent and infinitely many solutions

Derbazi Choukri
University of Ghardaia, Algeria

Existence and uniqueness results for some nonlinear fractional differential equations with riemann-liouville fractional integrals and caputo fractional derivatives in boundary conditions

Djelaili Amina
University of Sidi Bel Abbès, Algeria

La résolution d'équation d'opérateur non borné dans l'espace de Hilbert

Dob Sara
University of Skikda, Algeria

On existence of solutions for a coupled system of nonlinear equations with p-Laplacian operator at resonance

El Hendi Hichem
University of Bechar, Algeria

Multiplicity of solutions for quasilinear boundary value problems

Elbahi Hadidi
University of Annaba, Algeria

Solution périodique pour un système planaire perturbé

Ferhat Mohamed
University of Oran, Algeria

Asymptotic behavior for a wave equation with dynamic boundary condition and infinite memory

Fernane Khairreddine
University of 8 May, Algeria

Résolution numérique des équations non linéaires de Volterra – Fredholm

Gasri Ahlem
University of Tébessa, Algeria

Etude d'un problème inverse de la synchronisation des systèmes dynamiques

Gouasmia Abdelhamid
University of Oum El Bouaghi, Algeria

Méthode numérique en calculant des solutions exactes pour les équations de Stokes

Guelfen Hanene
University of Batna 2, Algeria

Numerical radius inequalities for the skew diagonal parts of 3×3 operator matrices

Hichar Saliha
University of Ouargla, Algeria

An elliptic equations and application

Kada Kloucha Meryem
University of Tlemcen, Algeria

Prevision d'un processus autoregressif fonctionnel

Kainane Mezadek Mohamed
University of Chlef, Algeria

Globel existence for coupled to the structurally damped σ -evolution model

Kassa Sara
University of Annaba, Algeria

Periodic solutions for periodic second-order differential equations with variable potential

Khellaf Ammar
University of Guelma, Algeria

The generalized spectrum approximation "application on the Schrödinger operator"

Ladrani Fatima Zohra
University of Oran, Algeria

Oscillation theorems for higher order neutral nonlinear dynamic equations on time scales

Laiadi Abdelkader
University of Biskra, Algeria

Free surface flows over a trapezoidal obstacles

Lakehal Rachid
University of Boumerdes, Algeria

Some properties of new star selection principles in topological

Lateli Ahcene
University of Constantine, Algeria

Spectral Method for Mixed Initial-Boundary Value Problem

Latreche Abdelkrim
University of Skikda, Algeria

The relations between fuzzy topological space definitions

Louhibi Naima
University of Sidi Bel Abbès, Algeria

Well-posedness and energy decay of solutions for a quasilinear Petrovskyequation with a nonlinear strong dissipation

Lounis Ferhat

University of Tizi-Ouzou, Algeria

Scaling limits for single server retrial queues with impatience and preventive maintenance

Meddahi Meryem

University of Chlef, Algeria

A hybrid method for variational inequalities over fixed point sets of multimaps

Meddour Halima

University of Batna 2, Algeria

Local persistence of geometric structures for Boussinesq system with zero viscosity

Medjadj Imene

University of Oran, Algeria

Measure of Noncompactness and Partial Functional Differential Equations with State-Dependent Delay

Melki Houdeifa

University of Annaba, Algeria

On the 3-dimensional Hopf bifurcation Via averaging theory of third order.

Melouka Remil

University of Relizane, Algeria

Cauchy problem with delay term

Menaceur Amor

University of Guelma, Algeria

Maximum number of limit cycles for generalized Kukles differential equations

Mesmouli Mouataz Billah

University of Souk Ahras, Algeria

Stability of solutions for a system of nonlinear functional differential equations with delay

Mezdoud Zaineb

University of Annaba, Algeria

G-framework

Mohamed Helal

University of Mascara, Algeria

Perturbed Partial Fractional Order Differential Equations with finite State-Dependent Delay on Fréchet Spaces

Mokhtari Sara

University of Sidi Bel Abbès, Algeria

General Decay Of Solution To Some Nonlinear Vector Equation In A Finite Dimensional Hilbert Space

Moulai Khatir Anes

University of Bella, Algeria

Stability and boundedness of solutions to certain third order neutral differential equations with delay.

Nabti Abderrazak

University of Tebessa, Algeria

A fractional order HIV infection model with Caputo–Fabrizio derivative

Ouedjedi Yamina

University of Mascara, Algeria

Fractional diffusion equation

Ourahmoun Abbas

University of Setif1, Algeria

Analysis Of A Dynamic Elasto-Viscoplastic Frictionless Antiplan Contact Problem With Normal Compliance

Reguig Yasmina

University of Saida, Algeria

Flot de la courbure de la courbure de Gauss et applications biharmoniques

Rezzag Bara Rayhana

University of Ouargla, Algeria

A posteriori analysis of prestressed shell model.

Rezzoug Imad

University of Oum El Bouaghi, Algeria

Weakly sentinels for distributed systems

Rimouche Ali

University of Temcen, Algeria

On nonhomogeneous elliptic equations involving critical Sobolev exponent and weight

Zaadi Achour

University of Laghouat, Algeria

A method for solving a limited problem by using variational

Sakrani Samia
University of Guelma, Algeria
Martingales under signed measures

Sandel Saida
University of Khenchela, Algeria
Punctual Sentinels for the identification of an unknown boundary

Stihi Nadjat
University of Annaba, Algeria
Approche géométrique dans les systèmes de files d'attente

Tabouche Nora
University of Guelma, Algeria
Study of Hadamard fractional differential equations with integral boundary conditions

Taouaf Nouredine
University of Sidi Bel Abbès, Algeria
Well-posedness and exponential stability for coupled Lamé system with viscoelastic term and strong damping

Touati Sami
University of Guelma, Algeria
Some result on hurricane mathematical model.

Zaouche Elmehdi
University of El Oued, Algeria
Uniqueness of solution in a rectangular domain of an evolution dam problem with heterogeneous coefficients

Zitouni Mohamed
University of Annaba, Algeria
Existence of radial positive solutions vanishing at infinity for asymptotically homogeneous systems