

## 6º Congreso Mexicano de Punto Fijo y sus Aplicaciones (modo virtual)

Del 1 al 4 de junio de 2021, Centro de Investigación en Matemáticas, A.C., Unidad Mérida

<https://puntofijo2021.eventos.cimat.mx/>

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### Programa

Hora\Día	Martes 1	Miércoles 2	Jueves 3	Viernes 4
09:00-10:00	Inauguración	Curso 1	Curso 2	Curso 3
10:00-11:00	Conferencia 1	Conferencia 4	Conferencia 7	Conferencia 9
11:00-11:30	Receso	Receso	Receso	Receso
11:30-12:30	Conferencia 2	Conferencia 5	Conferencia 8	Conferencia 10
12:30-13:30	Conferencia 3	Conferencia 6		Clausura

	Ponente	Título
Conferencia 1	Łukasz Piasecki	Weak* fixed point property and the space of affine functions
Conferencia 2	Jeimer Alveiro Villada Bedoya	Separable Lindenstrauss spaces whose duals do not contain weak star closed convex unbounded sets having the AFPP
Conferencia 3	Cleon Barroso	On the fixed point property in Banach spaces with unconditional Schauder basis
Curso 1	Víctor Pérez García	Técnicas recurrentes en la Teoría de Punto Fijo - Técnica 1
Conferencia 4	Enrique Llorens Fuster	Some remarks about generalized nonexpansive mappings
Conferencia 5	Jesús Garcia Falset	Soluciones periódicas de ecuaciones diferenciales de segundo orden en espacios de Banach
Conferencia 6	Omar Muñoz Pérez	Characterizations of the existence of solutions for variational inequality problems in Hilbert spaces
Curso 2	Víctor Pérez García	Técnicas recurrentes en la Teoría de Punto Fijo – Técnica 2
Conferencia 7	David Ariza Ruiz	Abstract measures of noncompactness and fixed points for nonlinear mappings
Conferencia 8	Chayan Adelki De la Cruz Reyes	An overview on multi-valued contraction or contraction type mappings
Curso 3	Carlos Alberto Hernández Linares	Técnicas recurrentes en la Teoría de Punto Fijo – Técnica 3
Conferencia 9	Roque Vidal Luciano Gerardo	Una introducción a la teoría del punto fijo en espacios normados ordenados
Conferencia 10	Agnieszka Gergont	On isomorphic embeddings of $c$ into $L_1$ -preduals and some applications

## Resúmenes

### I. Conferencias

Łukasz Piasecki (Maria Curie-Skłodowska University)

*Weak\* fixed point property and the space of affine functions*

Jeimer Alveiro Villada Bedoya (Maria Curie-Skłodowska University)

*Separable Lindenstrauss spaces whose duals do not contain weak star closed convex unbounded sets having the AFPP*

Cleon Barroso (Universidade Federal do Ceará)

*On the fixed point property in Banach spaces with unconditional Schauder basis*

Resumen: In this talk, we revisit the FPP in spaces with unconditional basis. The talk will start with some reminders on Schauder bases and their impact on the theory. Next, in the second part of the talk, we will discuss both old and recent fixed point results. In particular, we will explain how a classical result of P.-K. Lin can be generalized in the class of separable dual spaces. Then, in the last part, if we have some time left, we will discuss some possibly new developments with respect to equivalent renormings in spaces with an unconditional basis for which the FPP for non-expansive mappings may or may not be valid.

Enrique Llorens Fuster (Universidad de Valencia)

*An overview on generalized nonexpansive mappings*

Jesús Garcia Falset (Universidad de Valencia)

*Soluciones periódicas de ecuaciones diferenciales de segundo orden en espacios de Banach*

Resumen:

In this talk we deal with the existence of solutions for the following second order differential equation:

$$\begin{cases} u''(t) = f(t, u(t)) + h(t) \\ u(a) - u(b) = u'(a) - u'(b) = 0, \end{cases}$$

where  $\mathbb{B}$  is a reflexive real Banach space,  $f : [a, b] \times \mathbb{B} \rightarrow \mathbb{B}$  is a sequentially weak-strong continuous mapping and  $h : [a, b] \rightarrow \mathbb{B}$  is a integrable function on  $\mathbb{B}$ . Finally, we present some examples of application of the general result. In particular, we study the existence of solution for the following partial differential equation:

Let  $\Omega$  be an open convex and bounded subset of  $\mathbb{R}^n$  and consider  $\rho : [a, b] \times \Omega \rightarrow \mathbb{R}$  a function.

$$\begin{cases} \sum_{i=1}^n \frac{\partial^2}{\partial x_i^2} \left( \frac{\partial^2 \phi}{\partial t^2}(t, x) - \rho(t, x) \right) = \phi(t, x) \text{ in } (a, b) \times \Omega, \\ \phi(a, x) - \phi(b, x) = \frac{\partial \phi}{\partial t}(a, x) - \frac{\partial \phi}{\partial t}(b, x) = 0 \text{ in } \Omega, \\ \frac{\partial^2 \phi}{\partial t^2}(t, x) - \rho(t, x) = 0 \text{ on } (a, b) \times \partial\Omega. \end{cases}$$

Omar Muñiz Pérez (CONACYT-CIMAT Mérida)

*Characterizations of the existence of solutions for variational inequality problems in Hilbert spaces*

Resumen:

In this talk we will show some necessary and sufficient conditions for the existence of solutions to the Variational Inequality Problem: Find  $x \in K$  such that

$$\langle F(x), y - x \rangle \geq 0, \quad \text{for every } y \in K,$$

where  $K$  is a nonempty closed convex subset of a real Hilbert space  $H$  and  $F : K \rightarrow H$  is a monotone and continuous operator. These characterizations will be given in terms of approximate fixed points sequences and by Leray-Schauder condition.

David Ariza Ruiz (Universidad de Valencia)

*Abstract measures of noncompactness and fixed points for nonlinear mappings*

Resumen: In this talk, we study the existence of fixed points for a mapping by using abstract measures of noncompactness. Thus, we can obtain some generalizations of Darbo and Sadovskii's theorems and we also give a characterization for the existence of fixed points of a mapping which is not necessarily continuous. Finally, we solve an open problem proposed by I.A. Rus in 2001.

Chayan Adelki De la Cruz Reyes (CIMAT-Mérida)

*An overview on multi-valued contraction or contraction type mappings*

Resumen: The Hausdorff metric is widely used in both abstract and applied areas of mathematics including nonsmooth analysis, optimization theory, calculus of variations and is closely connected with the metric fixed point theory. The Hausdorff metric has allowed us to obtain results that extend the Banach contraction principle, as the Nadler's fixed point theorem.

In this talk we study some results about the existence of fixed points for multi-valued nonself mappings which are contractions or type contractions.

Roque Vidal Luciano Gerardo (Benemérita Universidad Autónoma de Puebla)

*Una introducción a la Teoría del Punto Fijo en Espacios Normados Ordenados*

Resumen: En la época contemporánea, la Teoría del Punto Fijo ha avanzado mucho en los espacios normados ordenados, en gran parte debido a la fuerte relación entre su estructura topológica y de orden parcial. En esta charla comentaremos algunos de estos resultados de punto fijo que son aplicados a la Teoría de integración.

Agnieszka Gergont (Maria Curie-Skłodowska University)

*On isomorphic embeddings of  $c$  into  $L_1$ -preduals and some applications*

## II. Cursos Introductorios. *Técnicas recurrentes en la Teoría de Punto Fijo*

Víctor Pérez García (Universidad Veracruzana)

*Técnicas 1*

Víctor Pérez García (Universidad Veracruzana)

*Técnicas 2*

Carlos Alberto Hernández Linares (Universidad Veracruzana)

*Técnicas 3*