2019 CHAPTER

ICMC SUMMER MEETING
ON DIFFERENTIAL EQUATIONS

4-6 FEBRUARY 2019 | **SÃO CARLOS-SP, BRAZIL**

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SESSIONS:

- ✓ Boundary Perturbations of Domains for PDEs and Applications
- ✓ Computational Dynamics in the Context of Data
- ✓ Dispersive Equations
- ✓ Elliptic Equations
- ✓ Evolution Equations and Applications
- ✓ Fluid Dynamics
- ✓ Linear Equations
- ✓ Nonlinear Dynamical Systems
- ✓ Ordinary/Functional Differential Equations
- ✓ Poster Session

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[1] TABOR, Jacek. Oscillation theory of linear systems. Journal of Differential Equations, v. 180, n. 1, 171-197, 2002.

Eigenvalue problems for Fredholm operators with set-valued perturbations

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By means of a suitable degree theory, we prove persistence of eigenvalues and eigenvectors for set-valued perturbations of a Fredholm linear operator. As a consequence, we prove existence of a bifurcation point for a non-linear inclusion problem in abstract Banach spaces. Finally, we provide applications to differential inclusions.

Integral equations in the sense of Kurzweil integral and applications

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The purpose of this work is to develop the theory of integral equations, when the integrals involved are in the sense of Kurzweil-Henstock or Kurzweil-Henstock-Stieltjes, through the correspondence between solutions of integral equations and solutions of generalized ordinary differential equations (we write generalized ODEs, for short).

In order to obtain results for integral equations, we propose extensions of both the Kurzweil integral and the generalized ODEs . We develop the fundamental properties of this new generalized ODE, such as existence and uniqueness of solutions results. We, then, apply these results to a class of nonlinear Volterra integral equations of the second kind.

Finally, we consider a model of population growth that can be expressed as an integral equation that belongs to this class of nonlinear Volterra integral equations.