2020 chapter

ICMC SUMMER MEETING
ON DIFFERENTIAL EQUATIONS

3-5 FEBRUARY 2020 | **SÃO CARLOS, SP BRAZIL**
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SCIENTIFIC COMMITTEE

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Celebrating the **60th** birthday of
TOMÁS CARABALLO

LIST OF SESSIONS

Elliptic Equations
Fluid Equations
Linear Equations
Evolution Equations and Applications
Integral and Functional Differential Equations
Boundary Perturbations of Domains for PDEs and Applications
Nonlinear Dynamical Systems
Dispersive Equations
Conservation Laws and Transport Equations
Poster Session

USP   ICMC USP SÃO CARLOS   CAPES   CNPq   FAPESP

[3] J. Korvenpää, T. Kuusi and G. Palatucci - *The obstacle problem for nonlinear integro-differential operators*. Calc. Var. Partial Differential Equations 55 (2016), no. 3, Art. 63, 29 pp.

Non-local Degenerate Diffusion Coefficients Break Down the Components of Positive Solutions

João R. Santos Júnior, Manuel Delgado, Cristian Morales-Rodrigo, Antonio Suarez
UFPA

This work deals with nonlinear elliptic problems where the diffusion coefficient is a degenerate non-local term. We show that this degeneration implies the growth of the complexity of the structure of the set of positive solutions of the equation. Specifically, when the reaction term is of logistic type, the continuum of positive solutions breaks into two disjoint pieces. Our approach uses mainly fixed point arguments.

Improved regularity for the porous medium equation along zero level-sets

Makson S. Santos, Edgard Pimentel
PUC-Rio

In this presentation, we are going to talk about the regularity theory for an inhomogeneous porous medium equation of the form

$$u_t - \Delta(u^m) = f \quad \text{in} \quad Q_1,$$

and produce a new sharp regularity result for the solutions to such equation. We produce regularity estimates as the solutions approach their zero level-set. More precisely, we show that weak solutions to our equation are locally asymptotically Lipschitz along their zero level-set. Our techniques are based on geometric and approximation methods. This is joint work with Edgard Pimentel.

Remarks on the spectrum of a nonlocal Dirichlet problem

Marcone C. Pereira, Rafael D. Benguria
Universidade de São Paulo

In this talk we analyse the spectrum of nonlocal Dirichlet problems with non-singular kernels in bounded open sets. The novelty are two folds, the continuity of eigenvalues with respect to domain perturbation via Lebesgue measure and differentiability of simple eigenvalues for smooth kernel and open sets.

Sub-supersolution method for a quasilinear elliptic problem involving the $1-$laplacian operator and a gradient term

Marcos T. O. Pimenta, Giovany M. Figueiredo
FCT - UNESP - Universidade Estadual Paulista

In this work we study a quasilinear elliptic problem involving the $1-$laplacian operator and a gradient term. The problem requires the definition of a suitable sense of solution, which allows us to show the existence of a solution in $BV(\Omega)$, having no jump part. Despite the lack of regularity of the solutions, we develop a sub-supersolution approach, together with a thorough analysis of the distributional derivative of the functions in $BV(\Omega)$.