








Preface

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We are honored to present this special issue in *Matemática Contemporânea*, as collects papers that were presented at the XV ENAMA (Encontro Nacional de Análise Matemática e Aplicações), held from November 09 to 11, 2023, and organized by Universidade Federal de Alagoas (UFAL), Maceió-AL. ENAMA is an annual scientific meeting with the purpose of creating a forum for debates among students, professors and researchers, having as areas of interest: Functional Analysis, Numerical Analysis, Partial, Ordinary and Functional Differential Equations.

The XV ENAMA scientific committee, at the invitation of Professor Jaqueline Mesquita, editor-in-chief of *Matemática Contemporânea* and a member of the committee made the call for papers. This special issue, contain 07 research papers with relevant results in the areas of functional analysis, elliptic and evolution PDEs, as we describe below.

There is one paper accepted for publication in Analysis, more precisely in the theory of generalized geometry. The paper by Juriaans and Oliveira prove a fixed point theorem for hypersequences in this generalized context. Given a classical Riemannian manifold M the authors prove that it can be discretely embedded in a generalized manifold M^* in such a way that the differential structure of the latter is a natural extension of the differential structure of the former.

As far as Elliptic PDEs are concerned, there are two papers accepted for publication. The first one deals with extremal functions to sharp Sobolev inequalities involving Sobolev spaces in manifolds. In the second paper, the authors provide an existence result to radial solutions of Schrödinger-Bopp-Podolsky equations in the whole space.

There are four papers accepted for publication in Evolution PDEs. The first one, by P.L. Guidolin et al., establishes some properties of solutions of advection-diffusion equations posed on the real line. The initial data is assumed to be integrable and bounded, whereas the advective speed term depends on space and time and is assumed to be bounded. The main goal is to prove that bounded solutions are indeed continuous solutions. In the second paper, J. de Andrade and J. A. Soriano deals with the problem of internal exact-approximate controllability for the thermoelastic Bresse system posed on a bounded interval. the authors use the observability inequality, through Carleman estimates, and the HUM (Hilbert Uniqueness Method) proposed by J. L. Lions. Next, G. M. de Araújo and M. A. F. de Araújo prove an existence result for a problem concerning a coupled system for a model of micropolar fluid. The authors obtain a variational inequality for the system coupled to the micropolar fluid. Finally, the regularity and uniqueness of the solutions for the bi-dimensional case are also analyzed. Finally, in the fourth paper P. Krause studies the Dyson's split action formula for transport operators with fields defined on a bounded open set in \mathbb{R}^n with volume employing Lax's Equivalence theorem for lin-

ear systems. Consequently, it is showed that the global attractor has finite fractal dimension.