

## FOREWORD

The study of elliptic and parabolic nonlinear partial differential equation has manifold aspects and can be seen from a number of different perspectives and points of view. The mathematical tools involved can, similarly, be quite different since they may include, for example, functional analysis, calculus of variations, topological techniques, geometric analysis, semigroup theory, numerical methods.

It would therefore be hopeless to give a complete picture of the research going on nowadays on these topics. Nevertheless, we tried to collect in the present volume several contributions of some leading scholars in these fields, hoping that they could give some hints of some of the main research lines in the field, identifying in particular some setting in which the elliptic theory is an important clue to analyze the parabolic situation, and viceversa.

In the papers collected here, all of which have been anonymously refereed as requested by the high standards of this Journal, several rapidly developing and important topics are discussed and developed.

Among them, we mention the following ones: two-phases free boundary problems; qualitative properties of solutions of Lane-Emden-Fowler equations; Hopf fibration and singularly perturbed elliptic equations; biharmonic elliptic boundary value problems; positivity preserving issues in models for clamped plates; Liouville theorems for Hardy-Littlewood-Sobolev systems; regularity of solutions of degenerate elliptic equations; decay properties for degenerate parabolic problems; porous media and fast diffusion equations driven by fractional Laplacians; fine asymptotics of solutions to the fast diffusion equation; well-posedness of nonlinear integral equations with general kernels and asymptotics of the corresponding solutions; local lower and upper bounds for solutions to doubly nonlinear singular parabolic equations; nonlinear initial value problems that model evolution and selection in living systems in connection with kinetic theory; relationships between optimal inequalities and nonlinear flows; generalized solutions, via non-archimedean fields, to equations which may not have solutions in distributional sense; models for oscillations in suspension bridges.

The success of this collection depends on the quality of the papers and of the high reputation of the Authors: we are grateful to all the contributors of the present volume.

Guest Editors:  
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