



Invited talks of the CEDYA/CMA 2022, Zaragoza, Spain

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Abstract

The biennial congress CEDYA/CMA 2022 of the Spanish Society of Applied Mathematics, SEMA, was held in Zaragoza in July 2022 in a hybrid format. In this Special Issue of the SeMA Journal, we gather the papers of five of the invited plenary speakers of the conference.

Keyword Preface

This Special Issue of the SeMA Journal is closely linked to the CEDYA/CMA Congress held in Zaragoza (Spain) in July 2022. The inaugural Congress of Differential Equation and Applications, known by its Spanish initials as CEDYA, was initially organized by members of the Universidad Complutense de Madrid in 1978. The success of its debut led to an annual meeting of the emerging Spanish community of applied mathematicians. In 1987, the congress additionally adopted the acronym CMA, standing for Congress of Applied Mathematics in Spanish. Since then, the joint CEDYA/CMA congress has been held biennially.

This congress also marked the birth of the Spanish Society of Applied Mathematics, SEMA, which was officially established during CEDYA/CMA 1991 in Oviedo.

In 2021, SeMA's executive committee opted to shift the CEDYA/CMA celebration from odd to even years. So, in 2022 was held in Zaragoza. This meeting was celebrated in special circumstances due to the COVID pandemic, and the Organizing Committee decided that the best option was an hybrid format. Nearly 300 national and international researchers attended CEDYA/CMA 2022, while only 50 were online.

Under the leadership of Juan Ignacio Montijano from the Universidad de Zaragoza, the Scientific Committee selected eight keynote speakers, approved eighteen minisymposia, organized contributed talks in seven special sessions, and a poster session. In total, nearly 300 presentations were delivered throughout the conference week.

We wish to express our gratitude to the Organizing Committee, Scientific Committee, and SeMa for helping us in the successful development of this meeting. We are also indebted

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to all the others who helped in the organization of the Conference, in particular, Facultad de Ciencias, Facultad de Medicina and the Vicerrectorado de Educación Digital y Formación Permanente.

In this volume, we gather the following papers submitted by five plenary speakers:

1. The first article is “Asymptotic preserving methods for quasilinear hyperbolic systems with stiff relaxation: a review” by Giovanni Russo and Sebastiano Boscarino.
2. The second paper is “Parameter-robust preconditioners for Biot’s model” by Carmen Rodrigo, Francisco J. Gaspar, James Adler, Xiaozhe Hu, Peter Ohm and Ludmil Zikatanov.
3. Professor Volker Mehrmann presented his conference on-line from Germany and he co-authors the article “Adaptive Nonlinear Optimization of District Heating Networks Based on Model and Discretization Catalogs” join with Hannes Dänschel, Marius Roland and Martin Schmidt.
4. The four paper is “Dynamics of excitable cells: spike-adding phenomena in action” by Roberto Barrio, Santiago Ibañez, Jorge A. Jover-Galtier, Alvaro Lozano, M. Angeles Martínez, Ana Mayora-Cebollero, Carmen Mayora-Cebollero, Lucía Pérez, Sergio Serrano and Rubén Vígara.
5. Finally, the last paper is “Mathematical Modeling, Analysis and Control in Soft Robotics: a Survey” by Francisco Periago, Rogelio Ortigosa-Martínez, Jesús Martínez-Frutos, Carlos Mora-Corral and Pablo Pedregal.

We hope and wish that these very nice articles will be useful to the mathematical community

In Zaragoza February 22th, 2024

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on behalf of the Local Organizing Committee

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