

Manuscript submitted to
AIMS' Journals
Volume **X**, Number **0X**, XX **200X**

doi:10.3934/xx.xx.xx.xx

pp. **X–XX**

NEW TRENDS ON NONLINEAR DYNAMICS AND ITS APPLICATIONS

TOMÁS CARABALLO

Departamento de Ecuaciones Diferenciales y Análisis Numérico, Universidad de Sevilla,
Apdo. de Correos 1160, 41080-Sevilla Spain

JUAN L.G. GUIRAO

Departamento de Matemática Aplicada y Estadística, Universidad Politécnica de Cartagena
Hospital de Marina s/n, 30203-Cartagena, Spain

(Communicated by the associate editor name)

ABSTRACT. This paper is the Preface of a special issue devoted to Nonlinear Dynamics and Complexity generated by the contributions of participants at the conference NDC 2015, La Manga, Spain (<http://ndc.lhscientificpublishing.com>) organized by the Dynamical System Research Group of Región of Murcia (<http://www.um.es/sistdinamicos/>).

Preface. From May 11th to 15th, 2015 the international conference “Nonlinear Dynamics and Complexity” was successfully held in La Manga (Spain). This Conference provided a place to exchange recent developments, discoveries and progresses on Nonlinear Dynamics and Complexity. The main aims of the conference were to present the fundamental and frontier theories and techniques for modern science and technology, to stimulate more research interest for exploration of nonlinear science and complexity and, to directly pass the new knowledge to the young generation, engineers and technologists in the corresponding fields. The presentations at the conference focused on recent developments, findings and progresses on fundamental theories and principles, analytical and symbolic approaches, computational techniques in nonlinear physical science and nonlinear mathematics. Amongst others, the main topics of interest in Nonlinear Dynamics and Complexity treated at the meeting were:

- Nonlinear differential equations and applications
- Nonlinear dynamics and engineering nonlinearity
- Discontinuous dynamical systems and control
- Synchronization and chaos control
- Neurodynamics and brain dynamics
- Social dynamics and complexity
- Switching systems with impulses
- Discrete and Continuous Dynamical Systems
- Neuronal signal analysis (EEG, BCI)

Organized by the research group working on the theory of dynamical systems of Región of Murcia (see <http://www.um.es/sistdynamics/>), the conference was aimed at Nonlinear Dynamics and Complexity in all branches of the dynamical systems: topological dynamics, low dimensional dynamics, differential equations, partial differential equations, Hamiltonian systems, difference equations, ergodic theory, ..., etc.

With the objective of giving the maximum diffusion to the results stated at the conference, we edit the present special issue with the additional intention of presenting a clear photograph of the state of the art in this active branch of modern research.

We are grateful to all the authors for their excellent contributions. We hope that the papers in this Special Issue will draw the readers' attention to the exciting theory and applications of nonlinear dynamics and complexity and will particularly inspire junior researchers to contribute their new findings and developments to this highly interdisciplinary field.

Finally, we would like to thank the big number of anonymous referees who have also contributed with their excellent work to improve the accepted papers content and presentation.

Tomás Caraballo and Juan L.G. Guirao
Guest Associate Editors

Received xxxx 20xx; revised xxxx 20xx.

E-mail address: caraball@us.es

E-mail address: juan.garcia@upct.es