

## Preface

This special volume of the Journal ESAIM : ProcS (European Series in Applied and Industrial Mathematics : Proceedings and Surveys) is dedicated to Professor Abdelhaq El Jai on the occasion of his retirement and 65th birthday. Abdelhaq El Jai is a truly applied mathematician who deeply influenced several researchers in France and Morocco in the areas of Modelling, Analysis and Control of Distributed/Lumped Parameters Systems. His goal was always focused on discussing and identifying new issues in order to enlarge the research field of systems theory. He played a primordial role in promoting research on distributed parameters systems especially among the Moroccan universities and has attracted an increasingly important community which contributes to raise the knowledge and interest in the area of systems theory. As a tribute to his legacy, many of his researchers and former students collaborated into the organization of an international symposium on Systems Modelling, Analysis and Control (Colloque de Modélisation, Analyse et Contrôle des Systèmes – CMACS 2014) which took place in Ifrane at Al-Akhawayn University, Morocco, May 29-30, 2014. The achievement of this project was made possible with the involvement of several Moroccan and French institutions : IMAGES-University of Perpignan, Academy Hassan II of Science and Technology, Systems Theory Network, INRIA Saclay, LCIS-Valence, SM2A and ABC-MathInfo. CMACS 2014 brought together over a hundred of distinguished applied mathematicians, computer scientists and other researchers working in the field of systems theory including fundamental aspects or practical applications arising from physics, engineering and life sciences. There were no regular contributions but essentially plenary lectures (invited talks) presented by researchers of high scientific reputation who spontaneously accepted to take part in this event. Their presentations covered various topics related to the main research field of A. El Jai.

All researchers associated to this international symposium were invited to contribute towards a special issue in honor of A. El Jai. First of all, we would like to thank all the authors who have shown their interest by submitting their papers for consideration. We are also extremely grateful to the international scientific committee members who have accepted the difficult task of selecting papers. The expertise they have done was very efficient so as to ensure a high quality of the issue and fit to the good reputation of the journal. Accordingly, a number of contributions had to be rejected. On the other hand, each accepted article received at least two detailed reports for the final recommendation.

The present volume contains 11 research papers as well as a short biography of A. El Jai which describes briefly, but thoroughly, his major scientific activities. Among the contributions, 6 articles were presented and co-authored by plenary speakers : Pierre Auger (IRD Bondy, France), Bastien Chopard (University of Geneva, Switzerland), Franco Bagnoli (University of Florence, Italy), Michel Fliess (Ecole polytechnique, France), Frederic Rotella (ENI de Tarbes, France) and El Hassan Zerrik (University Moulay Ismail de Meknès, Morocco).

The published papers address various aspect of academic and applied research in systems theory or automatic control covering lumped or distributed parameters systems and using continuous or discrete approaches. They are mostly related to the research interest of Professor El Jai who introduced with his colleagues, various new concepts and methodologies in theory of distributed parameters systems : sensors and actuators, regional stability analysis, concept of domination, controllability of bilinear systems. They also deal with practical applications on fishery or market modelling, risk perception or ocean acidification. They mostly used partial differential equations but also innovative approaches like cellular automata or complex networks. An original paper addresses a new setting for causality between time series and could be connected with concrete case-studies. Another contribution adopted a new approach for designing linear functional observers which could opened new and interesting prospects in automatic control.

This issue of ESAIM : Proceedings and Surveys was realized under the guidance of an international Scientific Committee chaired by Samira El Yacoubi and composed of : Larbi Achhab (Morocco), Larbi Afifi (Morocco), Pierre Auger (France), Franco Bagnoli (Italy), Abdelaaziz Belfekih (Morocco), Abdelhaq Benbrik (Morocco), Abdessamad Bernoussi (Morocco), Larbi Berahmoune (Morocco), Catherine Bonnet (France), Ali Boutoulout (Morocco), Bastien Chopard (Switzerland), Amina Eladdadi (USA), Hassan El Amri (Morocco), Marie-Claude El Jai-Simon (France), Michel Fliess (France), Malik Ghallab (France), Sébastien Gourbière (France), Hassan Hbid (Morocco), Khalid Kassara (Morocco), Hee-Dae Kwon (South Corea), Laurent Lefèvre (France), Suzanne Lenhart (USA), Abdelwahid Namir (Morocco), Rabah Rabah (France), Mostafa Rachik (Morocco), Frédéric Rotella (France), Youssoufi Touré (France), Abdessamad Tridane (UAE), Joseph Winkin (Belgium), Redouane Yafia (Morocco), Noura Yousfi, (Morocco), Irène Zambetakis (France), El Hassan Zerrik (Morocco), Karima Ztot (Morocco), Hans Zwart (The Netherland).

Finally, it is a big pleasure to express our sincere thanks to the Editors in Chief of the Journal ESAIM : ProcS, for their agreement and efforts to make possible the publication of this special volume.

The Guest Editors

Samira EL YACOUBI, Larbi AFIFI, El Hassan ZERRIK and Abdessamad TRIDANE

*I am very happy, indeed proud, to be associated with this project.*  
Samira El Yacoubi