Preface

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Biographical notes: Marco Ceccarelli is a Professor at the University of Cassino and South Latium, Italy, where he chairs LARM: Laboratory of Robotics and Mechatronics. His research interests cover subjects of robot design, mechanisms, experimental mechanics with special attention to parallel kinematic machines, service devices, and history of mechanical engineering. He is an ASME Fellow and Editor of Springer book series on *Mechanism and Machine Science* (*MMS*) and *History of MMS*. He is the President of IFToMM, the International Federation for the Promotion of MMS. He started several IFToMM sponsored conferences including MEDER (Mechanism Design for Robotics) and MUSME (Multibody Systems and Mechatronics).

Roberto Simoni received his Bachelor's in Mathematics in 2006, and Master's and Doctorate in Mechanical Engineering in 2008 and 2010, respectively, from the Federal University of Santa Catarina. He is a Professor at the Federal University of Santa Catarina, Campus Joinville since 2012. His research interests include kinematic analysis, synthesis and analysis of parallel mechanisms and manipulators with applications of group theory, graph theory and screw theory. In recent years, he has expanded the scope of his research to include underwater robotics. He is currently a Postdoctoral at the Centre d'Investigació en Robòtica Submarina from the University of Girona, Girona, Spain, working with obstacle avoidance strategies for intervention autonomous underwater vehicles.

The International Symposium on Multibody Systems and Mechatronics (MuSMe 2017) is the sixth event of a series that has started in 2002 as joint activity of the Commission for Mechatronics of Iberoamerican Federation of Mechanical Engineering (FeIbIM) and Technical Committees for Multibody Dynamics, and Robotics and Mechatronics of the International Federation for the Promotion of Mechanism and Machine Science (IFToMM). The MuSMe International Symposium is a conference initiative to bring together researchers from the broad ranges of disciplines referring to multibody systems and mechatronics.

Modern systems can be considered as integrated systems that can be properly studied, designed, and operated by using mechatronics viewpoints, but even considering the multibody architecture. In particular, the aim of the MuSMe Symposium is to be a forum to exchange views, opinions, experiences, and stimulating integration between mechatronics and multibody systems disciplines, a forum for facilitating contacts among research people and students, mainly but not only from Ibero-American areas.

The first event was held at Universidad Panamericana de la Ciudad de México, Mexico in May 2002, the second was held at Federal University of Uberlandia, Brazil in March 2005, the third was hosted at Universidad Nacional de San Juan, Argentina, in April 2008, the fourth was celebrated at Universidad Politecnica de Valencia, Spain, in October 2011, the fifth was held on June 2014 at SUNEO (Sistema de Universidades Estatales de Oaxaca) at UMAR Campus Huatulco, Oaxaca, Mexico, and the last one has been organised at the Federal University of Santa Catarina (UFSC), Brazil, in October 2017.

The proceedings volume of the MuSMe Symposium is published within the Springer series on *Mechanism and Machine Science* (*MMS*) and the 2017 edition contains 52 papers by authors from all around the world after peer review.

We would like to express grateful thanks to the members of the International Scientific Committee for MuSMe Symposium for cooperating enthusiastically for the success of the MuSMe 2017 event and this journal special issue:

- Prof. Marco Ceccarelli (Chair), Italy
- Prof. Mario Acevedo, Mexico
- Prof. Jorge A.C. Ambrósio, Portugal
- Prof. Alberto Cardona, Argentina
- Prof. Osvaldo H. Penisi, Argentina
- Prof. João Carlos M. Carvalho, Brazil
- Prof. Javier Cuadrado, Spain
- Prof. Pietro Fanghella, Italy
- Prof. Mario Fernandez Fernandez, Chile
- Prof. Paulo Flores, Portugal
- Prof. Manfred Husty, Austria
- Prof. Vicente Mata, Spain
- Prof. Carlos Munares, Perù.

This journal special issues contain a selection of the best presented papers with extended revised versions addressing several aspects of the wide field of mechatronics, such as kinematics, static and dynamic analysis, control of mechatronic systems, mechatronic systems for assistive technology, modelling and simulation, prototypes and experimental validations, synthesis of mechanisms and robots, and vehicle dynamics.

This special issue like the proceedings can be considered to be of interest to researchers, graduate students and engineers specialising or addressing attention to

mechatronics. We believe that a reader will take advantage of the papers in this special issue with further satisfaction and motivation for her or his work, both in teaching and researching on mechatronic systems.

We thank the authors, who have contributed with interesting papers in several subjects, covering many fields of multibody systems and mechatronics and, additionally, for their cooperation in revising their papers in agreement with the reviewers' comments within a second peer review process. We are grateful to the reviewers for the time and effort they spent in evaluating the papers.

We thank the publisher and editorial staff of the journal for accepting and helping the publication of this special issue, since the early step in 2015.

We are grateful to our families since without their patience and comprehension it would not have been possible for us to organise MuSMe 2017, its proceedings and this journal special issue.