Mathematical and Numerical Aspects of Dynamical System Analysis

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PREFACE

This is the fourteenth time when the conference “Dynamical Systems: Theory and Applications” gathers a numerous group of outstanding scientists and engineers, who deal with widely understood problems of theoretical and applied dynamics.

Organization of the conference would not have been possible without a great effort of the staff of the Department of Automation, Biomechanics and Mechatronics. The patronage over the conference has been taken by the Committee of Mechanics of the Polish Academy of Sciences and Ministry of Science and Higher Education of Poland.

It is a great pleasure that our invitation has been accepted by recording in the history of our conference number of people, including good colleagues and friends as well as a large group of researchers and scientists, who decided to participate in the conference for the first time. With proud and satisfaction we welcomed over **180** persons from **31** countries all over the world. They decided to share the results of their research and many years experiences in a discipline of dynamical systems by submitting many very interesting papers.

This year, the DSTA Conference Proceedings were split into three volumes entitled “Dynamical Systems” with respective subtitles: *Vibration, Control and Stability of Dynamical Systems*; *Mathematical and Numerical Aspects of Dynamical System Analysis* and *Engineering Dynamics and Life Sciences*. Additionally, there will be also published two volumes of Springer Proceedings in Mathematics and Statistics entitled “*Dynamical Systems in Theoretical Perspective”* and *“Dynamical Systems in Applications”.*

These books include the invited and regular papers covering the following topics:

- asymptotic methods in nonlinear dynamics,
- bifurcation and chaos in dynamical systems,
- control in dynamical systems,
- dynamics in life sciences and bioengineering,
- engineering systems and differential equations,
- non-smooth systems
- mathematical approaches to dynamical systems
- original numerical methods of vibration analysis,
- stability of dynamical systems,
- vibrations of lumped and continuous systems,
- other problems.

Proceedings of the 14th Conference „Dynamical Systems - Theory and Applications" summarize **168** and the Springer Proceedings summarize **80** best papers of university teachers and students, researchers and engineers from all over the world. The papers were chosen by the International Scientific Committee from **370** papers submitted to the conference. The reader thus obtains an overview of the recent developments of dynamical systems and can study the most progressive tendencies in this field of science.

Our previous experience shows that an extensive thematic scope comprising dynamical systems stimulates a wide exchange of opinions among researchers dealing with different branches of dynamics. We think that vivid discussions will influence positively the creativity and will result in effective solutions of many problems of dynamical systems in mechanics and physics, both in terms of theory and applications.

We do hope that DSTA 2017 will contribute to the same extent as all the previous conferences to establishing a new and tightening the already existing relations and scientific and technological cooperation between both Polish and foreign institutions.

On behalf of both
Scientific and Organizing Committees

Chairman
Professor Jan Awrejcewicz

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