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Preface

Dear Reader,

in this book you will find the Proceedings of the Summer School – Conference "Advanced Problems in Mechanics (APM) 2016". The conference had been started in 1971. The first Summer School was organized by Prof. Ya.G. Panovko and his colleagues. In the early years the main focus of the School was on nonlinear oscillations of mechanical systems with a finite number of degrees of freedom. Since 1994 the Institute for Problems in Mechanical Engineering of the Russian Academy of Sciences organizes the Summer School. The traditional name of "Summer School" has been kept, but the topics covered by the School have been much widened, and the School has been transformed into an international conference. Now it is held under the patronage of the Russian Academy of Sciences. The topics of the conference cover now almost all fields of mechanics, being concentrated around the following main scientific directions:

- aerospace mechanics;
- computational mechanics;
- dynamics of rigid bodies and multibody dynamics;
- fluid and gas;
- mechanical and civil engineering applications;
- mechanics of media with microstructure;
- mechanics of granular media;
- nanomechanics;
- nonlinear dynamics, chaos and vibration;
- molecular and particle dynamics;
- phase transitions;
- solids and structures;
- wave motion.

The Summer School – Conference has two main purposes: to gather specialists from different branches of mechanics to provide a platform for cross-fertilization of ideas, and to give the young scientists a possibility to learn from their colleagues and to present their work. Thus the Scientific Committee encouraged the participation of young researchers, and did its best to gather at the conference leading scientists belonging to various scientific schools of the world.

We believe that the significance of Mechanics as of fundamental and applied science should much increase in the eyes of the world scientific community, and we hope that APM conference makes its contribution into this process.

We are happy to express our sincere gratitude for a partial financial support to Russian Foundation for Basic Research, Russian Academy of Sciences, and St. Petersburg Scientific Center. This support has helped substantially to organize the conference and to increase the participation of young researchers.

We hope that you will find the materials of the conference interesting, and we cordially invite you to participate in the coming APM conferences. You may find the information on the future "Advanced Problems in Mechanics" Schools – Conferences at our website:

`http://apm-conf.spb.ru`

With kind regards,

Co-Chairmen of APM 2016

Dmitri A. Indeitsev, Anton M. Krivtsov

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