

## TOMÁŠ ROUBÍČEK CELEBRATES HIS SIXTIETH ANNIVERSARY

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(as guest editors)



Professor Tomáš Roubíček, a leading expert in applied mathematical analysis, turned sixty in 2016.

Actually, Tomáš' path towards mathematics was not straightforward. Despite of his success in high-school mathematical Olympiads on the national level, he followed the advice of his godfather<sup>1</sup> and he enrolled at the Faculty of Electrical Engineering of the Czech Technical University and decided to study mathematics in his spare time. In parallel, he started his career towards a self-made mathematician volunteering at the Department of Mathematics at the Faculty of Nuclear Sciences and Physical Engineering. Eventually, he graduated from the Czech Technical University in 1980 and later on he obtained his Ph.D. degree<sup>2</sup> in technical cybernetics in 1987 from the Czechoslovak Academy of Sciences. Already his first papers published during his Ph.D. studies dealt with topics that have become reoccurring in his scientific life. They include problems from optimal control theory, nonconvex minimization, and optimization in general, over numerical methods, to nonlinear partial differential equations. In 1985, he joined the Institute of Information Theory and Automation of the Czechoslovak (and now the Czech) Academy of Sciences.

The European collapse of communism in 1989 opened new opportunities also to Tomáš. He spent more than two years at universities in Augsburg and Munich in the groups of professor Karl-Heinz Hoffmann partly supported by the prestigious Alexander von Humboldt Foundation. These stays accelerated his scientific career

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<sup>1</sup>A mechanical engineer Ing. Miloš Poláček, CSc., a recipient of the State prize in 1954 and of the Gold Medal for life-time innovative work in 2013.

<sup>2</sup>Called that time a “candidate of science” degree.

and showed him new research challenges. His first book [9] summarizes this research period and provides a unified approach to relaxation of variational and optimal control problems by means of the theory of convex compactifications, his invention. This very abstract topic belonging to the area of pure mathematics earned him also the “Doctor of Science” accomplished in 1995 which was curiously his first mathematical degree at all. Moreover, in recognition of this book, Tomáš was also awarded the Prize of the Minister of Education of the Czech Republic for research in 1999. Nevertheless, not forgetting his technical background, Tomáš has always kept in mind applications of mathematics to physics and engineering. In particular, modeling of smart materials has become a standing topic in Tomáš’ scientific portfolio [2, 4].

In 1995, Tomáš accepted an offer by professor Jindřich Nečas with whom he previously collaborated on several industrial projects, and joined the Mathematical Institute of Charles University. This brought him new research and teaching opportunities. In particular, he taught a course on partial differential equations for many years. This effort got reflected in his second book on partial differential equations with applications [11] which has become a popular undergraduate and graduate textbook and enjoys already the second and extended edition. Tomáš has started his intensive collaboration with foreign researches mainly in Germany, Italy, and Spain. His long-term collaborative effort with professor Alexander Mielke first in Stuttgart and later in Berlin resulted, besides many journal articles (see e.g. [2, 3, 5]), in the recent joint monograph [4] on rate-independent processes.

Tomáš’ research interests are very broad. A common feature of his research is modeling and applications of mathematical methods in materials science. His technical education and excellent physical intuition has always allowed him to construct realistic mathematical models often combining many observed phenomena together. On the top of that, he studies these models not only from the view of mathematical analysis [10, 12] but also works on design of suitable numerical schemes [1].

Tomáš can easily overbridge scientific disciplines and can successfully work with physicists and engineers. This, on one hand, brings him inspiration for mathematical description of new features and, on the other hand, provides his collaborators with mathematically sound models. This creates fruitful working environment not only for his colleagues in Prague and abroad but also for his students. This symbiosis can be demonstrated on his joint work with researchers in Sevilla and Rome [6, 7, 13], for instance.

Over the years, Tomáš has become an internationally well-known mathematician. He currently serves as an associate editor of several international journals, namely, *Zeitschrift für Angewandte Mathematik und Mechanik*, *Mathematical Methods in the Applied Sciences*, and *Mathematical Models and Methods in the Applied Sciences*. Moreover, he acted as a member of the Executive Committee of the International Society for the Interaction of Mechanics and Mathematics (ISIMM).

Tomáš is fond of traveling and he usually spends a large part of every year abroad visiting various universities and research institution (University of Rome II, University of Sevilla, University of Vienna, Weierstrass Institute for Applied Analysis and Stochastics in Berlin, to name a few recent ones) and working with many colleagues and friends. Tomáš’ high research activity and diligence in science is reflected, besides the mentioned 3 books, in more than 130 journal articles, several book chapters and dozens of proceedings contributions written by him or together with about fifty coauthors spread over three continents.

Apart of his professional involvement, his prominent free-time activity lasting till nowadays is skiing. He spent altogether several years in Czech and Slovak mountains and in Alps. In fact, the snapshot above is from Italian Dolomites taken in January 2017.

This issue of Discrete and Continuous Dynamical Systems is composed of contributions (co)authored by his selected coauthors which represent most typical directions of Tomáš' research activities. We dare to say that the contributors are not only his colleagues but also good friends. We, his former Ph.D. students, are proud to belong among them.

Dear Tomáš, on behalf of all of them we are happy to celebrate your 60th birthday with this issue and we wish you many more successful years with and without mathematics to come.

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