

CONTROL AND ANALYSIS OF PARTIAL DIFFERENTIAL EQUATIONS

*Preface to a Special Issue dedicated to Marius Tucsnak
on the occasion of his 60th birthday*

NICOLAE CÎNDEA, GÜNTER LEUGERING, JÉRÔME LOHÉAC, SORIN MICU,
KIRSTEN MORRIS, TAKÉO TAKAHASHI, and ENRIQUE ZUAZUA

This special issue is dedicated to Prof. Marius Tucsnak for his 60th birthday. Fifteen original papers are presented, covering many topics to which Marius has made major contributions going from theoretical issues to numerical simulations and to real life applications. We are grateful to all authors and referees of this volume for their enthusiastic participation in this adventure.

After having obtained the master in mathematics-mechanics of the University of Bucharest in 1985, Marius Tucsnak worked for two years in the Research Institute for Textile Industry, in Bucharest. Between 1987 and 1990 he had an appointment as junior research scientist of the *Institute of Mathematics of the Romanian Academy* (IMAR). From 1990 to 1992 Marius Tucsnak followed a Ph.D. program under the supervision of Jean-Pierre Puel and he defended his Ph.D. in 1992 at the University of Orléans. In 1992 he was appointed as assistant professor at the University of Versailles and he defended his “habilitation” (HDR) in 1995 at the Université Pierre et Marie Curie (Paris 6). Marius Tucsnak has been hired as full professor at the University Henri Poincaré Nancy 1 in 1997. From 2009 to 2015 he was the head of the Elie Cartan Institute, which is the mathematics research department in Nancy. Since 2016 he is professor and holder of an excellency chair at the University of Bordeaux. He is a member of *Institut Universitaire de France* (IUF) and he has received the Spiru Haret prize of the Romanian Academy.

Marius Tucsnak scientific publishing activity is impressive. An inspection in MathSciNet shows more than 90 articles and almost 2000 citations. The domains of expertise of Marius includes control theory for infinite dimensional systems and the analysis of nonlinear partial differential equations describing fluid-structure interactions. In particular, he is known for his contributions to the development of new functional, complex and harmonic analysis methods in obtaining controllability results for systems described by linear partial differential equations. A constant and major feature of his scientific achievements in control theory is the belief that an efficient and successful approach to the

subject consists in combining the ideas of abstract functional analysis with techniques typical of partial differential equations. Concerning the analysis of systems describing fluid-structure interactions, his most well-known contribution is the global in time existence theorem for the equations describing the motion of a solid in a viscous incompressible fluid, which he obtained (in collaboration with Victor Starovoitov and Jorge San Martín) in 2002. His book *Observation and control for operator semigroups*, which is a joint work with George Weiss from 2009, is a major reference text.

A short description like this cannot do justice to Marius's activity with students. Suffice to say that he attracted many young people, from all over the world, to work with him; he has supervised at least fourteen Ph.D. theses and he has conducted numerous Postdoctoral Fellowships. Many of his students themselves have become well-established mathematicians. All who knew Marius Tucsnak have been captivated by his enthusiasm for mathematics, the depth of his arguments, the ease and clarity with which he can convey the most complicated ideas, the energy and joy of living every moment.

We cannot conclude without mentioning the remarkable human qualities of Marius. His kindness, generosity, honesty and loyalty have made him one of the most pleasant and appreciated people in our research community.

On the occasion of his 60th birthday, we wish Professor Marius Tucsnak a long, happy, healthy, and prosperous life, with continuing success in all his endeavors.

Nicolae Cîndea: Laboratoire de Mathématiques *Blaise Pascal*, Campus Universitaire des Cézeaux, 63178 Aubière cedex, France. Email: nicolae.cindea@uca.fr

Günter Leugering: Department of Mathematics, Friedrich-Alexander-Universität Erlangen-Nürnberg 91058 Erlangen, Germany. Email: guenter.leugering@fau.de.

Jérôme Lohéac: CRAN-CID, Université de Lorraine, CNRS, F-54518 Vandœuvre-lès-Nancy, France. Email: jerome.loheac@univ-lorraine.fr

Sorin Micu: Department of Mathematics, University of Craiova, and *Gheorghe Mihoc-Caius Iacob* Institute of Mathematical Statistics and Applied Mathematics of the Romanian Academy, Bucharest, Romania. Email: sd_micu@yahoo.com.

Kirsten Morris: Department of Applied Mathematics, University of Waterloo, Canada. Email: kmorris@uwaterloo.ca.

Takéo Takahashi: CNRS, Inria, IECL, Université de Lorraine, Nancy, France. Email: takeo.takahashi@inria.fr

Enrique Zuazua: Chair in Dynamics, Control, and Numerics Alexander von Humboldt-Professorship Friedrich-Alexander-Universität Erlangen-Nürnberg 91058 Erlangen, Germany and Chair of Computational Mathematics Fundación Deusto Av. de las Universidades, 24 48007 Bilbao, Basque Country, Spain and Departamento de Matemáticas, Universidad Autónoma de Madrid 28049 Madrid, Spain. Email: enrique.zuazua@fau.de.