

# Recent Trends in Differential Equations

## Aveiro June 27–29, 2016

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The conference *Recent trends in Differential Equations* held in Aveiro (Portugal) from 27 to 29 June, 2016, celebrated the 75th birthday of Professor Arrigo Cellina from the University Milano-Bicocca, Italy and the 60th birthday of Professor Alberto Bressan from Penn State University, USA.

Organized by the *Functional Analysis and Applications* group of the *Center for Research and Development in Mathematics and Applications* (CIDMA), and hosted by the *Department of Mathematics of the University of Aveiro*, the conference brought together mathematicians engaged in research on Differential Equations, Differential Inclusions and Set Valued Maps, Calculus of Variations, Control Theory and Applications. All these are areas where Professors Arrigo Cellina and Alberto Bressan have both made major contributions.

Several participants presented their most recent results and illustrated recent trends in these areas. The conference was particularly addressed to young researchers and Portuguese and foreign PhD students, who had the opportunity to meet with world-renown mathematicians and start collaborations in these research areas. There were 5 Keynote talks of 50 minutes each, 15 Invited talks (of 30 minutes long) and 15 Contributed talks (of 20 minutes long), all of them of high scientific level.

The opening session was held in the auditorium of the Rectorate of the University of Aveiro, in the presence of Professor Manuel Antonio Assunção, Rector of the University of Aveiro; Professor José Francisco Rodrigues, President of the CIM (International Center for Mathematics), Professor Luís Filipe Pinheiro de Castro, Scientific Coordinator of CIDMA, and Prof. João Manuel da Silva Santos, Director of the Department of Mathematics. Afterwards, the conference was hosted in the Department of Mathematics and held in plenary session (the Keynote and the Invited talks) and parallel sessions (the Contributed talks).

The Keynote talks were given by Zvi Artstein from Weizmann Institute of Science in Rehovot (Israel), Alberto Bressan from Penn State University (USA), Gianni Dal Maso from the International School for Advanced studies (SISSA) in Trieste (Italy), Héctor J. Sussmann from Rutgers University (USA), and Richard Vinter from Imperial College in London (UK).

The Invited talks were given by professors Andrea Bac-

ciotti (Polytechnic of Turin, Italy), Ugo Boscain (Ecole Polytechnique, Palaiseau Cedex France), Fabian Flores-Bazan (University of Concepcion, Chile), Rinaldo M. Colombo (University of Brescia, Italy), Graziano Crasta (Sapienza Università di Roma, Italy), Elsa Maria Marchini (Politecnico di Milano, Italy), Carlo Mariconda (Università degli Studi di Padova, Italy), Manuel Monteiro Marques (University of Lisbon), Marco Mazzola (University Pierre et Marie Curie, Paris VI, France), Antonio Ornelas (University of Evora, Portugal), Michele Palladino (Penn State University, USA), Franco Rampazzo (University of Padova, Italy), Wen Shen (Penn State University, USA), Susana Terracini (University of Torino, Italy), and Giulia Treu (University of Padova, Italy).

The high scientific level of the conference has been ensured by the prestige of the two celebrated mathematicians, by the prestige of the Keynote and Invited speakers, as well as, by the high level of all contributions of the participants. In this occasion, the organizers took advantage of the best facilities offered by the university campus in Aveiro, providing a pleasant and fruitful environment. This was possible also thanks to the partial support from the *Portuguese Foundation for Science and Technology* (FCT) and the support received from CIM, here gratefully acknowledged.

### ARRIGO CELLINA

Born in Varese (Italy) at 3 August 1941, graduated in Physics at the University of Milan in 1965. In 1968 he obtained the title of Doctor of Philosophy (Ph.D.) in Mathematics at the University of Maryland. In 1969 he obtained the *Libera Docenza* in Mathematical Analysis. He taught as a Lecturer and Assistant Professor at the University of Perugia and then at the University of Florence.

After one year on leave at the University of Paris IX, in 1974 he took service as *Extraordinary Professor* at the University of Padua. In 1979 he moved to S.I.S.S.A. (Trieste), where he served as Coordinator of the Sector of Functional Analysis and Applications and as Deputy Director of S.I.S.S.A.

In the Fall of 1997 he took service at the University of Milan, and the following year, at the University of Milano-Bicocca, where he was coordinator of the Doctoral program in Mathematics.

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**Arrigo Cellina**

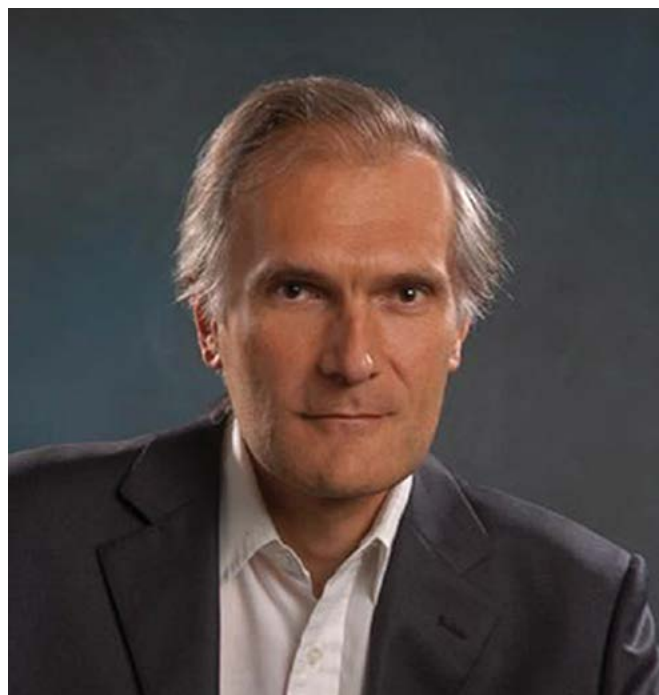
In the fall of 2011 he was placed on leave as tenured professor. He continues to teach as an unpaid professor from 2011 to date, teaching courses of Higher Analysis and Calculus of Variations.

He has taught at various times at the University of Southern California Los Angeles and in Santa Barbara; He has been visiting professor at several institutions, including the universities of Paris, Montpellier and Limoges, the Courant Institute of Mathematical Sciences (NYU) and M.S.R.I. Berkeley. He was President of the Scientific Foundation C.I.M.E. and member of the Scientific Committee of CIM (1996-2000).

He is the author of more than a hundred mathematical publications and of a classical monograph on differential inclusions (with J.P.Aubin), published in the prestigious Springer's series on Grundlehren der Mathematischen Wissenschaften. He also edited the books *Methods of Nonconvex Analysis and Optimal Shape Design* published within Springer's series *Lecture Notes in Mathematics / C.I.M.E. Foundation Subseries*.

#### **ALBERTO BRESSAN**

Born in Venice at 15 June 1956, graduated in Mathematics in Padova in 1978, with a thesis on linear control processes, supervised by Roberto Conti. From February 1979 to January 1980 he had a C.N.R. research fellowship at University of Florence. He obtained the Ph.D. in Mathematics at the University of Colorado, Boulder, in 1982. He worked as Researcher at the University of Padova (Italy) from 1982 to 1986, Associate Professor at University of Colorado, Boulder (USA) from 1986 to 1991, Professor at the International



**Alberto Bressan**

School for Advanced Studies (SISSA) in Trieste, Italy, from 1991 to 2003. In 2003, he moved to Penn State University to assume a full professorship there — a position he still holds. In 2002 he was a Plenary speaker at the International Congress of Mathematicians, Beijing, 2002. In 2006 he was awarded the *Antonio Feltrinelli* prize for Mathematics, Mechanics and Applications of the Accademia Nazionale dei Lincei, Rome; in 2007 he won the *Analysis of Partial Differential Equations* prize of the Society for Industrial and Applied Mathematics, Phoenix (with Stefano Bianchini); in 2008 he was awarded the *M. Bôcher Memorial Prize* of the American Mathematical Society, San Diego. He was appointed to the Eberly Family Chair in Mathematics at Penn State in August 2008. In 2010 he received the *Luigi and Wanda Amerio* prize of the Accademia di Scienze e Lettere, Istituto Lombardo, Milan. In 2011 he became Member of the Royal Norwegian Society of Sciences and Letters, Trondheim, and Member of the Accademia di Scienze e Lettere, Istituto Lombardo, Milan, and was awarded the *Gaetano Fichera* prize for mathematical analysis by the Unione Matematica Italiana.

The research of Alberto Bressan covers several areas, including: Hyperbolic conservation laws and nonlinear wave equations; Modeling and optimization of traffic flow on networks; Optimal control, non-cooperative games, and applications to economics and finance; PDE models of controlled biological growth; Differential inclusions, dynamic blocking problems; Impulsive control of Lagrangian systems by means of active constraints.

He is author of three books, 8 book chapters, various lecture notes, and more than 170 research papers in international journals.