

## CURRICULUM VITAE, GIOVANNI COLOMBO

### *Personal and academic*

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Full professor, Mathematical Analysis, Engineering School, University of Padua

Born in Padova, April 28th, 1958; married with five children

1977, degree in flute, Padova Conservatory of music; concert activity until 1981

1983, degree in Mathematics, University of Padua, 110/110 *cum laude*

1984, military service (mandatory)

fall 1985, enrolled at SISSA (International School of Advanced Studies), Trieste, as graduate student in functional analysis

March 1988: “Doctor Philosophiae”, (SISSA); advisor: prof. A.Cellina

March 1988 - March 1990: post doctoral position, SISSA, Trieste

April 1990 - October 1992: researcher position, mathematical analysis, SISSA, Trieste

November 1992 - October 1994: associate professor, mathematical analysis, Engineering School, University of L’Aquila (Italy)

November 1994 - 2004: associate professor, mathematical analysis, Engineering School, University of Padova

January 2005 - present time: full professor, mathematical analysis, Engineering School, University of Padova

### *Research projects and visits*

- 1993: collaboration with V. Křivan (Czech Academy of Sciences): funded with 8,000 ECU from EU (ERB-CIPA-CT-93-1554); research program: analysis of uncertain systems.

- 2000: collaboration with P. Wolenski (LSU, Baton Rouge, USA), funded by Istituto Nazionale di Alta Matematica; research program: regularity of the minimum time function;

- 2001: collaboration with M. Monteiro Marques (CMAF, Lisbon); funded by Istituto Nazionale di Alta Matematica; research program: analysis of the Moreau process.

- 2002-2003: sabbatical year. Invited visits to Baton Rouge (LSU), Schauder Center for Nonlinear Analysis (Toruń, Polonia), Technical University of Budapest.

- 2004: invited visit to CMAF, Lisbon.

- 2010-2014: member of EU Marie Curie Project “SADCO”

- 2010-2013: member of the project “Nonlinear Partial Differential Equations: models, analysis, and control-theoretic problems”, funded by CARIPARO

- 2010-2013: member of the project VARIANT, funded by the Portugal Ministry of Education

- 2011-2013: member of the project “Some analytic and differential geometric aspects in Nonlinear Control Theory, with applications to Mechanics”, funded by Padova University.

### *Others*

- Referee for several international journals, including *Proc. Amer. Math. Soc.*, *SIAM J. Contr. Opt.*, *Set-Val. Var. Anal.*, *Nonlin. Anal.*, *J. Convex Anal.*, *J. Diff. Equat.*, *J. Math. Anal. Appl.*, *J. London Math. Soc.*, *Zeitschr. Anal. Anwend.*, *Topol. Meth. Nonlin. Anal.*); reviewer for *Mathematical Reviews*.

### *Teaching activities.*

1990, 1991, 2001: graduate courses (introduction to differential inclusions; set-valued and nonsmooth analysis).

1996, 1997, 2000: advanced undergraduate courses (introduction to Calculus of Variations and to Optimal Control)

1996, 1997: master course (introduction to partial differential equations)

1992 - present: courses on Mathematical Analysis for the Engineering School (various levels)

1999 - present time: member of various Faculty boards for teaching supervision.

Supervisor of two research degree thesis (1989, 1994). Supervisor of three graduate student (2002 - 2006, 2008 - 2010, 2011 -)

### *Selected invited talks*

- Krasieczyn (Poland), 1988 (international conference)

- Warsaw, 1989, "Mini-Semester on Differential Inclusions"

- Pamporovo (Bulgaria), 1990 (international conference)

- Warsaw, 1993, "Mini-Semester on Differential Inclusions",

- Fontevraud (France), 1994, "Viability and Control" (international conference)

- World Congress of Nonlinear Analysts, Athens, 1996, (in a session)

- Viability and Control II, 1997, Levico.

- Second Symposium on Nonlinear Analysis, Toruń, 1999.

- CDC, Las Vegas, 2002 (in a session).

- Nonsmooth analysis and Mathematical control Theory, Baton Rouge, 2003 (international conference).

- SISSA, 1993 (invited seminar);

- Firenze, 1996 (invited seminar);

- SISSA, 1997 (invited seminar);

- Roma II, 1997 (invited seminar);

- Politecnico di Torino, 1998 (invited seminar);

- *Schauder lecture*, Toruń (Poland), 2003;

- Technical University, Budapest, 2003 (invited seminar);

- World Congress of Nonlinear Analysts, Orlando, 2004 (contributed talk);

- Geometric Control Theory and Nonsmooth Analysis, Rome, 2006;

- Differential equations and topology (Pontryagin's centennial conference), Moscow, 2008 (contributed talk);

- Control Theory and nonsmooth analysis, Rome, June 2009: invited talk.

- ICIAM, Dresden, May 2010: invited talk.

- IFIP, Berlin, September 201: invited talk.
- Oberwolfach, Variational Methods for Evolution, December 2011: invited talk.
- Brescia University, March 2012: invited talk.

*Research topics.*

- Set-valued analysis (continuous selections, papers # 1, 2, 4, 14, 29)
- Differential inclusions (existence of solutions, papers # 3, 5, 6, 7, 8, 10, 11, 12, 16, 18, 23)
- Optimal control (existence of minimizers, papers # 9, 21, 22)
- Nonsmooth analysis (regularity properties of some value functions of optimal control problems, and of some non-Lipschitz functions, papers # 27, 30, 32, 33, 34, 36, 37, 39)
- Viability theory and Moreau process (existence of solutions of differential inclusions with state constraints, papers # 13, 26, 31)
- Analysis of uncertain systems (deterministic perturbation: papers # 15, 19, 24; probabilistic approach for deterministic perturbations: papers # 25, 28)
- The regularity of the minimum time functions (most recent papers).