Curriculum Vitae of Martino BARDI

I was born in 1956 in Trieste, got married in 1995, and adopted a son and a daughter in Brazil in 2007.

Web page: http://www.math.unipd.it/~bardi/

Current positions:
- Full professor of Mathematical Analysis at the Department of Mathematics of the University of Padova, 2012 - now;
- Chairman of the Ph.D. Program in Mathematical Sciences of the University of Padova, May 2017 - now.

Honors.
- Isaacs Award of the International Society for Dynamic Games, 2016
(h t t p : / / w w w . i s d g - s i t e . o r g / A w a r d   ,   h t t p s : / / e n . w i k i p e d i a . o r g / w i k i / International_Society_of_Dynamic_Games);
- plenary speaker at the 59th Meeting of the Australian Mathematical Society, Adelaide 2015.

Education.
- "Laurea" in Mathematics cum laude at the University of Padova in 1979, thesis on "Predator-prey models in periodically fluctuating environments" published on J. Math. Biol.
- C.N.R. scholarship at the University of Padova 1981-82.
- Visiting research assistant at the University of Maryland 1983-4, supervisor L.C. Evans.

Earlier positions.
- Researcher at the Faculty of Sciences of the University of Padova, 1984 - 87.
- Associate professor at the Faculty of Engineering in Padova, 1988 - 90.
- Full professor of Mathematical Analysis at the Faculty of Engineering in Padova, 1990 - 2011.

Visiting positions.
- Centre de Recherche en Mathèmatiques de la Decision, Universitè Paris-Dauphine (France), 1987;
- Institute for Mathematics and Applications - Minneapolis (USA), 1993;
- Ècole Normale Supèrieure - Paris (France), 2001;
- Institut Mittag-Leffler - Stockholm (Sweden), 2003;
- Universitè de Rouen (France), 2003.

Scientific interests.
Nonlinear differential equations and applications. In particular: viscosity solutions of Hamilton-Jacobi equations; optimal control and differential games (deterministic and stochastic), dynamic programming and approximation methods; fully nonlinear elliptic and parabolic partial differential equations (subelliptic problems, singular perturbations, homogenization), applications to financial models with stochastic volatility; Mean-Field Games.

Publications.
I am author or co-author of about 50 papers on international journals and 20 on refereed volumes with several collaborators such as L.C. Evans, B. Perthame, S. Osher, H. Ishii, R. Jensen, Y. Giga, Y. Achdou; I am also co-author of two monographs and editor of a volume of the Annals of the International Society of Dynamic Games.
The complete list is at   http://www.math.unipd.it/~bardi/cv_and_publications/pubBardi_eng.pdf
MathSciNet counts 1915 citations of my papers by 1151 authors (updated May 10, 1919); according to Google Scholar my book with Capuzzo-Dolcetta has more than 1500 citations.

Books:
- Bardi, M.; Crandall, M.G.; Evans, L.C.; Soner, H.M.; Souganidis, P.E.: Viscosity solutions and applications. Lecture Notes in Mathematics, 1660. Springer-Verlag, Berlin, 1997.
- Bardi, M.; Capuzzo-Dolcetta, I.: Optimal control and viscosity solutions of Hamilton-Jacobi-Bellman equations. Systems & Control: Foundations & Applications. Birkhauser, Boston, 1997.
2nd printing: Modern Birkhauser Classics, 2008.
- Bardi, M.; Parthasarathy, T.; Raghavan, T.E.S. editors: Stochastic and differential games: theory and numerical methods, Ann. Internat. Soc. Dynam. Games vol. 4, Birkhauser, Boston, 1999.

Selected journal publications of the last 5 years (preprints available at http://cvgmt.sns.it/people/

bardi/):
- M. Bardi, A. Cesaroni, E. Topp: Cauchy problem and periodic homogenization for nonlocal Hamilton-Jacobi equations with coercive gradient terms, to appear in Proc. Roy. Soc. Edinburgh Sect. A.
- M. Bardi, M. Fischer: On non-uniqueness and uniqueness of solutions in some finite-horizon Mean Field Games, ESAIM Control Optim. Calc. Var. to appear
- Y. Achdou, M. Bardi, M. Cirant: Mean Field Games models of segregation, Math. Models Methods Appl. Sci. 27 (2017), 75--113
- M. Bardi, E. Feleqi: Nonlinear elliptic systems and mean field games, NoDEA Nonlinear Differential Equations Appl. 23 (2016), 23--44
- M. Bardi, A. Cesaroni: Liouville properties and critical value of fully nonlinear elliptic operators, J. Differential Equations (2016), 3775--3799
- M. Bardi, A. Cesaroni, L. Rossi: Nonexistence of nonconstant solutions of some degenerate Bellman equations and applications to stochastic control, ESAIM Control Optim. Calc. Var. 22 (2016), 842--861
- M. Bardi, A. Cesaroni, A. Scotti: Convergence in Multiscale Financial Models with Non-Gaussian Stochastic Volatility, ESAIM Control Optim. Calc. Var. 22 (2016), 500--518
- M. Bardi, J.P. Maldonado Lopez: A Dijkstra-type algorithm for dynamic games, Dyn. Games Appl. (2015), 263--276
- M. Bardi, A. Cesaroni, D. Ghilli: Large deviations for some fast stochastic volatility models by viscosity methods, Discrete Contin. Dyn. Syst. 35 (2015), 3965--3988.
- M. Bardi, F.S. Priuli: Linear-Quadratic N-person and Mean-Field Games with Ergodic Cost, SIAM J. Control Optim. 52 (2014), 3022–3052.
- M. Bardi, F. Dragoni: Subdifferential and Properties of Convex Functions with respect to Vector Fields, J. Convex Analysis 21 (2014), 785--810.

Teaching.
- At the Faculty of Engineering: Analysis 1 and 2, Calculus, Advanced calculus and introduction to probability, Stochastic processes.
- At the Faculty of Sciences: Introduction to optimal control, Differential equations 1 and 2.
- At the Doctoral School in Mathematics (a selection): Nonlinear first- and second-order partial differential equations: viscosity methods and homogenization theory (2011), Introduction to Nonlinear PDEs (2008), Viscosity methods for the homogenization on nonlinear PDEs (2003), Viscosity methods for 1st and 2nd order nonlinear PDEs (2000), Maximum principles and boundary value problems for nonlinear elliptic equations (1998).
- At other Doctoral schools: S.M.I. Summer course "Partial Differential Equations" (Cortona 2005), short courses in Pisa and Trento.
- At the Galilean School of Higher Education, Padova, "Equations of Mathematical Physics" (2010).

Training of young researchers.
I have been a Faculty Member of the Ph.D. Program in Mathematical Sciences of this University continuously since 1989 and I am currently the Chairman. I was the advisor of several young researchers:

- Ph. D. students:
— P. Soravia (1992), now full professor at the University of Padova,
— F. Da Lio (1998), now titular professor at ETH, Zurich (CH),
— S. Bottacin (1998),
— P. Bettiol (2002), now professor at the University of Brest (France),
— A. Cesaroni (2004), now researcher at the University of Padova,
— G. Terrone (2008), now Organist and Assistant Director of Music at the Cathedral of the Madeleine in Salt Lake City (USA),
— M. Cirant (2014), now researcher at the University of Parma,
— J. Meireles (2015), currently consultant at Closer Consultant, Lisbon,
— D. Ghilli (2016), now post-doc at the University of Graz (Austria),
— A. Goffi (current)
— H. Kouhkouh (current)

- "Laurea" students (a selection of those with published research thesis):
— F. Bagagiolo (1994), now researcher at the University of Trento,
— S. Faggian (1995), now associate professor at the University of Venice,
— P. Goatin (1996), now Chargée de Recherche 1ère classe (Experienced Research Scientist) at INRIA (France).

- Former Post-docs (a selection):
— O. Ley (2000), now Professor at the University of Rennes (France);
— L. Rifford (2000), now Professor at the University of Nice (France),
— C. Marchi (2003-4), now researcher at the University of Padova,
— A. Davini (2006), now associate professor at the University of Roma 1.
— L. Manca (2007-8), now Maitre de Conference at the University of Marne La Vallee (France),
— F. Dragoni (2008), now senior lecturer at the University of Cardiff (UK),
— E. Feleqi (2012-15), now associate professor at the University of Vlore (Albania).

Scientific Committees:
- International Society of Dynamic Games: Vice president 2006-08, member of the Executive Board 2004-08;
- Italian Mathematical Union, U.M.I.: member of the Scientific Committee 2006-12;
- Department of Pure and Applied Mathematics of the University of Padua: vice-chairman 2002-2005.
- Evaluation Committee of CEREMADE - Universitè Paris Dauphine by the French national agency HCERES, 2017.

Editorial Committee of NoDEA - Nonlinear Differential Equations and Applications, since 2019.

Editorial Boards:
- International Journal on Game Theory, 2001-08;
- Communications in Pure and Applied Analysis, since 2001;
- Numerical Functional Analysis and Optimization, since 2007;
- Bollettino of the Unione Matematica Italiana, 2007-12;
- Dynamic Games and Applications, since 2010;
- International Journal of Mathematics and Mathematical Sciences, 2011-13;
- International Scholarly Research Network Mathematical Analysis, 2012-14;
- Abstract and Applied Analysis, 2012-2017;
- Minimax Theory and its Applications, since 2015;
- Mathematical Problems in Engineering, 2015-16.

Principal Investigator of research projects:

- *Progetto di Eccellenza Fondazione Ca.Ri.Pa.Ro.* "Nonlinear Partial Differential Equations: model, analysis and control-theoretic problems" 2010-2014.

Principal Investigator of national research projects:
- I.N.D.A.M.-G.N.A.M.P.A. projects "Partial Differential Equations and Control Theory" 2001 and 2002;
- I.N.D.A.M.-G.N.A.M.P.A. project "Viscosity methods for asymptotic problems in nonlinear PDEs" 2006.
- I.N.D.A.M.-G.N.A.M.P.A. project "Curvature equations and differential forms in Carnot groups", 2010.

Principal Investigator of research projects of the University of Padova:
"Mean-Field Games and Nonlinear PDEs" 2016-2018.

Principal Investigator of local Research Unit in the International research project
"Mean-Field Games and Applications" 2018-2021.

Principal Investigator of local Research Units in European research projects:
- Training Mobility and Research Network "Viscosity solutions and applications" 1999-2003, Network Principal Investigator P.-L. Lions (Paris, France);
- European Science Foundation Programme "Optimization with PDE Constraints" 2008-2013, coordinated by R.W. Hoppe (Augsburg, Germany), K. Kunisch (Graz, Austria), and O. Pironneau (Paris, France).

Principal Investigator of local Research Units in national research projects:
- 1-year MURST projects (40%) continuously from 1989 to 1999;
- 2-year MIUR projects (PRIN, i.e., Research Projects of National Interest) "Analysis and control of deterministic and stochastic evolution equations" 1999-2000, and 2001-2;
- 2-year MIUR projects PRIN "Viscosity, metric, and control theoretic methods in nonlinear PDEs" 2003-4, 2006-7, 2008-10;

- 2-year MIUR project PRIN "Viscosity, geometric, and control methods for nonlinear diffusive models" 2011-13.

Organization of scientific meetings:
(with various colleagues) 13 international meetings (Bressanone 1990, Padova 1990, Trieste 1993, Levico Terme 1998, Bressanone 2000, Padova 2004, Gaeta 2004, Roma 2008, Padova 2011, Padova 2012, Padova 2013, Roma 2017, Levico Terme 2019) and the XV Conference of the Unione Matematica Italiana (Padova 1995); member of scientific committees of conferences in the USA, Canada, Russia, Australia, France, China, Poland, Italy.

Invited talks at international conferences:
more than 50 plenary and 15 mini-symposium talks, here is a short selection of *plenary lectures:*
- Newton Institute Euro Workshop "Geometric evolutions and nonlinear elliptic equations", Cambridge (UK) 2001;
- European Space Agency "Lectures on Trajectory Design and Optimization," Noordwijk 2002;
- GAMM - Gesellschaft fur Angewandte Mathematik und Mechanik, Abano Terme 2003;
- "New trends in viscosity solutions and applications," Lisbona 2006;
- 13th International Symposium on Differential Games and Applications," Wroclaw 2008;
- Pacific Institute for the Mathematical Sciences "Accelerate Canada Thematic Programme on Partial Differential Equations," Vancouver 2009;
- "Mean Field Games and Related Topics," Rome 2011;
- "Topics in Stochastic control" Milan 2011;
- ERC Workshop on "Geometric Analysis on sub-Riemannian and Metric Spaces," Pisa 2011;
- "Dynamical Optimization in PDE and Geometry," Bordeaux 2011;
- "Mostly Maximum Principle," Roma 2012;
- "NetCo 2014 - New trends in optimal control," Tours 2014;
- "Mean Field Games and Related Topics - 3," Paris 2015;
- 59th Meeting of the Australian Mathematical Society, Adelaide 2015;
- "HJ2016: Hamilton-Jacobi equations: new trends and applications", Rennes 2016;
- "New Trends in Nonlinear PDEs", Cardiff 2016;
- Isaacs Award presentation at the 17th International Symposium of the International Society of Dynamic Games, Urbino 2016;
- "New Trends in Control Theory and PDEs'', Rome 2017;
- "Mean-Field Games and applications", KAUST-Saudi Arabia 2018;
- "Crowds: models and control", CIRM Marseille 2019.

Padova, August 6th, 2019

                                                                Martino Bardi