CV - Alberto Abbondandolo

Born in Viareggio, Italy, on October 28, 1970.

Business address. Ruhr Universität Bochum, Fakultät für Mathematik, Gebäude NA 4/33, D-44801 Bochum, Germany.
Tel. +49 (0)234 32 23345, e-mail: Alberto.Abbondandolo@ruhr-uni-bochum.de.

Private address. Markgrafenstr. 4, D-44791 Bochum, Germany. Tel. +49 (0)234 62349120.

EDUCATION

1984-1989 Liceo Scientifico (scientific oriented High School) Martin Luther King, Genoa.

1989-1993 Student in Mathematics at the Scuola Normale Superiore of Pisa and University of Pisa. *Laurea in Matematica* (the equivalent of the German Diploma) on November 25, 1993, supervisor Vieri Benci.

1994-1999 Ph.D. student in Mathematics at the Scuola Normale Superiore of Pisa. *Diploma di Perfezionamento* (Ph.D. degree) on September 16, 1999. Supervisor Vieri Benci. Title of the Thesis: "Morse theory for strongly indefinite functionals and Hamiltonian systems".

WORK EXPERIENCE

1995-2004 Ricercatore in Analisi Matematica (Research assistant in Mathematical Analysis, a first level permanent position) at the Scuola Normale Superiore of Pisa. On leave from 1999 to 2001.

1999-2000 Visiting Scholar, Courant Institute for Mathematical Sciences, New York University.

2000-2001 Postdoctoral Associate (Courant Instructor) at the Courant Institute for Mathematical Sciences, New York University.

2005- Associate Professor in Mathematical Analysis at the University of Pisa.

AWARDS AND OTHER ACHIEVEMENTS

2008 *Humboldt Research Fellowship for Experienced Researchers* for spending a research year in Leipzig.

2005 International Award "Vincenzo Caglioti" for Mathematics (*Accademia dei Lincei* and *Accademia delle Scienze, detta dei XL*). A prize for young researchers below 35, awarded to mathematicians every 5 years.

2001 The paper "Morse homology on Hilbert spaces", *CPAM* 54 (2001), 689-760, has been selected for a Featured Review by the American Mathematical Society.

1999 CNR Fellowship for spending a research year at the Courant Institute for Mathematical Sciences.

ORGANIZATION OF SCIENTIFIC ACTIVITIES

2011-12 Liason Officer for an exchange program between the Mathematics Department of the University of Pisa and the Chern Institute of Mathematics, Tianjin, China.

2010-12 Member of the "Giunta di Dipartimento" and of the "Comitato di Presidenza", two advisory boards which assist the director of the Mathematics Department and the Dean of the Science Faculty.

2009 Co-organizer of the Workshop *Variational methods in Hamiltonian systems*, Max Planck Institut für Mathematik in den Naturwissenschaften, Leipzig, January 16-17.

2007-09 Member of the Rating Committee of the University of Pisa.

2006-present Section editor of the *Journal of Fixed Point Theory and Applications*, Springer.

2006-12 Member of the Ph.D. Committe for Mathematics, University of Pisa.

2005-07 Organizer of the *Analysis Seminar* of the Mathematics Department, University of Pisa.

2005 Organizer of the session "Topics related to the variational methods" in a conference in honor of J. Dugundji "Fixed point theorems and its applications", Bedlewo, Poland, August 1-5, 2005.

2004 Co-organizer of the Winter School *Two weeks in Global Analysis*, held at the Center for Mathematical Research Ennio De Giorgi, Pisa, February 14-26, 2004.

2003-04 Editor of the web-site "Miscellanea Conti", an on-line collection of expository papers in mathematics, Center for Mathematical Research Ennio De Giorgi, Pisa.

SCIENTIFIC VISITS

2012 Institute for Advanced Study, Princeton. One month visit in January-February, invited by Prof. Helmut Hofer.

Università di Modena, invited by Prof. Massimo Villarini in the framework of the *Intensive two-month period on boundary value problems for differential equations: models for the applied sciences and theoretical aspects*. Colloquium and Research Seminar.

2011 Università di Padova, invited by Prof. Franco Cardin.

Université de Neuchâtel, invited by Prof. Felix Schlenck.

2010 One month visit at the Max Planck Institut für Mathematik in den Naturwissenschaften of Leipzig, invited by Prof. Matthias Schwarz.

Università di Padova, invited by Prof. Franco Cardin.

2009 Cambridge University, UK, invited by Prof. Gabriel Paternain.

Rutgers University, USA, invited by Prof. Abbas Bahri.

Universität Magdeburg, invited by Prof. Guofang Wang.

2008-2009 One year Sabbatical at the University of Leipzig and at the Max Planck Institut für Mathematik in den Naturwissenschaften, Germany, with a Humboldt Fellowship for Experienced Researchers (September 2008 - August 2009).

2008 Vrije Universiteit Amsterdam, The Netherlands, invited by Prof. Robert Vandervorst.

2007 Cologne University, Germany, invited by Prof. Hansjörg Geiges.

2006 Lehigh University, US, invited by Prof. Huai-Dong Cao.

2005 Leipzig University, Germany, invited by Prof. Matthias Schwarz.

2004 Courant Institute of New York, US, invited by Prof. Helmut Hofer and Prof. Tobias Colding.

2002 Leipzig University, Germany, invited by Prof. Matthias Schwarz.

Waseda University of Tokyo, invited by Prof. Kazunaga Tanaka.

2001 Michigan State University, US, invited by Prof. Casim Abbas.

Université Paris Dauphine, France, invited by Prof. Eric Seré.

2000 Max Planck Institute of Leipzig, Germany, invited by Prof. Matthias Schwarz.

1999-2000 Courant Institute of New York, US, invited by Prof. Louis Nirenberg. Visiting scholar for one year on an Italian grant by CNR.

Université de Montreal, Canada, invited by Prof. Andrzej Granas.

1998 Universitad de Sao Paolo, Brasil, invited by Prof. Paolo Piccione.

Universitad de Campinas, Brasil, invited by Prof. Francesco Mercuri.

Universitad de Concepcion, Chile, invited by Prof. Juan Molina.

1996 E.T.H. in Zurich, Switzerland, invited by Prof. Helmut Hofer.

Tel-Aviv University, Israel, invited by Prof. Joseph Bernstein.

INVITED LECTURES AT CONFERENCES AND SCHOOLS

1. Rio de Janeiro, Brasil, July 23-25, 2012, "The role of the Legendre duality in symplectic homology", series of three lectures at the school *Symplectic Topology and Applications*, IMPA.

2. Oberwolfach, Germany, July 15-21, 2012, "How large is the shadow of a symplectic ball?", Workshop *Geometric Group Theory, Hyperbolic Dynamics and Symplectic Geometry*, MFO.

3. Lecce, Italy, June 1-8, 2012, "How large is the shadow of a symplectic ball?", *Workshop on variational methods in N-body and vortex dynamics*, Università di Lecce.

4. Torino, Italy, April 16-17, 2012, "An introduction to symplectic homology", two lectures at the Workshop *Topological and variational methods in differential equations*, Politecnico di Torino.

5. Hamburg, Germany, August 20-26, 2011 "Basic Lagrangian Floer homology", two introductory lectures at the *Symplectic Field Theory V* conference, Universität Hamburg.

6. Kinshasa, Democratic Republic of Congo, July 18-31, 2011, "An introduction to hyperbolic dynamics", series of several lectures at the C.I.M.P.A. Research School *Systèmes dynamiques dans les variétés et applications*.

7. Neuchâtel, Switzerland, June 19-23, 2011 "Periodic Hamiltonian orbits by variational methods", series of 6 lectures at the *Summer school on closed orbits and variational methods at Neuchâtel*.

8. Kyoto, Japan, February 14-18, 2011, "Middle-dimensional squeezing and nonsqueezing behavior of symplectomorphisms", *Workshop on Symplectic Geometry and Topology*, Kyoto University.

9. Zurich, Switzerland, November 8-12, 2010, "Stable manifolds in holomorphic dynamics", *Edi-Fest: From Dynamical Systems to Symplectic Topology*, Conference in honor of Edi Zehnder on the occasion of his 70th birthday, ETH.

10. Leiden, Holland, August 2-6, 2010, "How far can one go without Floer homology?", *Symplectic techniques in conservative dynamics*, Lorentz Center.

11. Seul, Korea Institute for Advanced Study, July 12-16, 2010, *Summer school on Hamiltonian dynamics and sympletic geometry*. Four lectures "Periodic Hamiltonian orbits by variational methods".

12. San Antonio, TX, USA, September 23-27, 2009, "On Rabinowitz-Floer homology", *Variational and topological methods in nonlinear analysis*, Conference in honor of the 60th birthday of Vieri Benci.

13. Rio de Janeiro, Brasil, August 3-7, 2009, "Estimates and computations in Rabinowitz-Floer homology", *Workshop on conservative dynamics and symplectic geometry*, IMPA.

14. Oberwolfach, Germany, July 6-10, 2009, "Estimates and computations in Rabinowitz-Floer homology", *Workshop Dynamische Systeme*, MFO.

15. Montreal, Canada, May 19-24, 2008, "A cobordism argument in Floer homology", *Workshop on Floer theory and symplectic dynamics.*

16. Otranto, Italy, May 1-5, 2008, "String topology and Floer homology", Convegno del PRIN: *Metodi Variazionali e Topologici nello Studio dei Problemi Nonlineari.*

17. Paris, France, December 11-20, 2007, "High action orbits of Hamiltonian systems and their asymptotic Maslov index", *Atelier sur les aspects mathmatiques de la mcanique cleste*, Institut Henri Poincaré.

18. Tianjin, China, May 20-26, 2007, "The classification of geodesics on globally hyperbolic Lorentzian manifolds", *International conference on variational methods.*

19. Bedlewo, Poland, June 26-30, 2006, "A Morse complex for geodesics on globally hyperbolic Lorentzian manifolds", *Jean Leray International mathematical conference.*

20. Guanajuato, Mexico, December 5-9, 2005, "A Morse complex for geodesics on Lorentzian manifolds, I", *Topological and variational methods in partial differential equations.*

21. Pisa, Italy, October 17-22, 2005, *School in Nonlinear Analysis and Calculus of Variations,* dedicated to Giovanni Prodi for his 80th birthday. Four lectures "On the Morse complex for infinite dimensional manifolds".

22. Bedlewo, Poland, August 1-5, 2005, "The Lagrangian versus the Hamiltonian action functional", *Fixed point theory and its applications,* International Conference in memory of Jim Dugundji.

23. Oberwolfach, Germany, July 10-16, 2005, "On the Floer homology of cotangent bundles", *Dynamical systems.*

24. Erice, Italy, April 14-22, 2005, "On the Floer homology of cotangent bundles", *International School of Mathematics "G. Stampacchia" - 42nd Workshop: Variational methods in nonlinear analysis.* Dedicated to Louis Nirenberg and Giovanni Prodi in occasion of their 80th birthday.

25. Montreal, Canada, June 21 - July 2, 2004, *Morse theoretic methods in nonlinear analysis and symplectic topology*, NATO Summer School (5 lectures "On the Morse complex for infinite dimensional manifolds").

26. Bedlewo, Poland, June 23-28, 2003, "A Morse complex for infinite dimensional manifolds, I", *Topological and Variational Methods in Nonlinear Analysis 2003.*

27. Torino, Italy, June 19-20, 2003, "Intersection of stable and unstable manifolds: dimension and orientation", Workshop *Elliptic and hypoelliptic equations* INDAM Conference *Microlocal analysis and related subjects.*

28. Leipzig, Germany, November 28-30, 2002, "A Morse complex for Lorentzian geodesics", *Prospects in geometry.*

29. Pisa, Italy, November 7-9, 2002, "'A Morse complex for Hilbert manifolds", *Recent advances in calculus of variations and PDE's - A young researchers meeting.*

30. Pisa, Italy, June 8-12, 2002, "A Morse complex for Hilbert manifolds", *First Joint Meeting UMI-AMS.*

31. Oberwolfach, Germany, October 8-12, 2001, "Floer homology for symplectic fixed points, II Moduli spaces and transversality", in Arbaitsgemeinshaft *Arnold conjecture and Floer homology.*

32. Oberwolfach, Germany, July 15-21, 2001, "A Morse complex for semi-Riemannian geodesics", *Dynamische Systeme.*

33. Bedlewo, Poland, June 2001, "Ordinary differential operators in Hilbert spaces", *Topological and Variational Methods in Nonlinear Analysis 2001.*

34. Warsaw, Poland, May 8-20, 2000, "Morse homology on Hilbert spaces", *Infinite-dimensional Conley index and Floer homology.*

35. Bedlewo, Poland, June 19-24, 2000, "Morse homology on Hilbert spaces, I", *Topological and Variational Methods in Nonlinear Analysis 2000.*

36. Oberwolfach, Germany, July 1999, "Infinite dimensional Morse homology and subharmonic solutions for Hamiltonian systems", *Dynamische Systeme.*

37. Oberwolfach, Germany, March 1999, "Subharmonic solutions of Hamiltonian systems", *Gewöhnlische Differentialgleichungen.*

38. Bedlewo, Poland, November 1998, "Morse theory for strongly indefinite functionals", *Lusternik Workshop.*

39. Torino, September 1998, "Soluzioni periodiche di sistemi Hamiltoniani bi-dimensionali", *Settimana Nonlineare*, Politecnico of Torino.

40. Campinas, Brasil, August 1998, "Morse theory for strongly indefinite functionals", *II International Workshop on Nonlinear PDEs.*

41. Cortona, Italy, 1996, "Morse theory for strongly indefinite functionals", *Convegno Scuola Normale di Pisa - Bar Ilam University of Tel Aviv.*

REFEREE ACTIVITY

Journals. Referee for many journals, among which: Advances in Mathematics, African Diaspora Journal of Mathematics, Annali della Scuola Normale Superiore, Calculus of Variations, Compositio Mathematica, Control Optimization and Calculus of Variations, Discrete and Continuous Dynamical Systems, Duke Journal of Mathematics, Journal de Mathématiques Pures et Appliquées, Journal of Differential Equations, Journal of Differential Geometry, Journal of Functional Analysis, Journal of Mathematical Physics, Journal of Modern Dynamics, Journal of Symplectic Geometry, Journal of Topology and Analysis, Mathematical Proceedings of the Cambridge Philosophical Society, Mathematische Zeitschrift, Nonlinear Differential Equations and Applications.

Other. Referee for the series Universitext, Springer Verlag. Referee for various European research grants. Referee for the "Fonds de recherche du Québec". Twice member of an evaluation committee for a research assistant position (Roma Tor Vergata, Roma La Sapienza).

FUNDING RECORD

2012-2016 Member of the Project BREUDS of cooperation Europe-Brasil, International Research Staff Exchange Scheme, People Marie Curie Actions.

2010-2015 Member of the research network "Contact And Symplectic Topology" (CAST), funded by the European Science Foundation and coordinated by Frédéric Bourgeois.

2009-2010 Principal Investigator for the Italian side of the Vigoni-DAAD Project "The structure of Floer homology" (the German counterpart is Matthias Schwarz, Leipzig Universität).

2009 Succesfull application for a special grant by the INDAM (Istituto Nazionale di Alta Matematica) to invite a visiting scholar (Gonzalo Contreras).

2008-2009 Personal research grant attached to a *Humboldt Research Fellowship for Experienced Researchers*.

2007 Succesfull application for a special grant by the INDAM (Istituto Nazionale di Alta Matematica) to invite a visiting scholar (Felix Schlenk).

2006-2007 Co-investigator in the project "Local discrete dynamics in one, several, infinitely many variables", by INDAM (Istituto Nazionale di Alta Matematica, Roma), Principal Investigator Marco Abate.

2003-2004 Personal research grant "Giovani Ricercatori", Scuola Normale Superiore, Pisa.

2001-2010 Co-investigator in 5 subsequent PRIN Projects "Topological and variational methods in the study of nonlinear pheomena" by MIUR (Ministero Istruzione Università e Ricerca, Italy), Principal Investigator Vieri Benci.

1999-2000 Co-investigator in the PRIN Project "Variational methods and nonlinear differential equations" by MIUR (Ministero Istruzione Università e Ricerca, Italy), Principal Investigator Antonio Ambrosetti.

1999 CNR Research Grant for spending a research year at the Courant Institute, New York University.

TEACHING ACTIVITY

2011/12 *Analysis*, Bachelor in Computer Science (University of Pisa).

Topological methods for differential equations, Master in Mathematics (University of Pisa).

2010/11 *Analysis*, Bachelor in Computer Science (University of Pisa).

Functional Analysis, Master in Mathematics (University of Pisa).

2009/10 *Functional Analysis*, Master in Mathematics (University of Pisa).

Analysis II, Bachelor in Engineering (University of Pisa).

2007/08 *Nonlinear Analysis*, Master in Mathematics (University of Pisa).

Differential operators, Bachelor in Mathematics (University of Pisa).

Advanced Combinatorics, Master in Computer Science (University of Pisa).

2006/07 *Analysis III and IV*, Bachelor in Physics (University of Pisa).

Calculus of Variations, Bachelor in Mathematics (University of Pisa).

2005/06 *Analysis I and II*, Bachelor in Physics (University of Pisa).

Advanced Analysis, Master in Mathematics (University of Pisa).

2004/05 *Advanced Analysis* for fourth year students in Mathematics (University of Pisa).

2003/04 *Advanced Analysis* for fourth year students in Mathematics (University of Pisa).

T.A. for the *Analysis* class for first year students (Scuola Normale Superiore of Pisa).

2002/03 T.A. for the *Analysis* class for first year students (Scuola Normale Superiore of Pisa).

2001/02 Ph.D. class *Floer homology* (Scuola Normale Superiore of Pisa).

T.A. for the *Analysis* class for first year students (Scuola Normale Superiore of Pisa).

Short course *Hamiltonian systems and the Arnold conjectures* (University of Pisa).

2000/01 *Calculus I* (New York University).

Intensive Calculus II (New York University).

2000 Short course *Introduction to the Arnold conjectures and to Floer homology* (S.I.S.S.A., Trieste).

1998/99 *Mathematical methods* for second year students in Chemistry (Scuola Normale Superiore of Pisa).

T.A. for *Analysis I*, for first year students in Engeneering (University of Pisa).

1997/98 *Mathematical methods* for second year students in Chemistry (Scuola Normale Superiore of Pisa).

T.A. for *Analysis III* (University of Pisa).

1995/96. T.A. for an experimental class in *Analysis*, first year students in Mathematics (University of Pisa).

1994/95. T.A. for the *Analysis* class for second year students (Scuola Normale Superiore of Pisa).

Short course *Geodesic flows on negatively curved manifolds*, inside the *Dynamical systems* course (Scuola Normale Superiore of Pisa).

1993/94 T.A. for *Analysis* for second year students in Computer Science (University of Pisa).

THESIS ADVISOR

1. Luca Asselle, Master Thesis, University of Pisa, *The Horocycle flow from a Hamiltonian viewpoint*, 2012.
2. Libera Damiano, Bachelor Thesis, University of Pisa, *Harmonic maps from the plane to the sphere*, 2012.
3. Dario Domingo, Bachelor Thesis, University of Pisa, *Hilbert's fourth problem*, 2011.
4. Gabriele Benedetti, Master Thesis, University of Pisa, *An approach to the Weinstein conjecture via J-holomorphic curves*, 2011.
5. Umberto Lardo, Bachelor Thesis, University of Pisa, *The Poincaré-Birkhoff fixed point theorem*, 2011.
6. Angelo Lucia, Master Thesis, University of Pisa, *Old and new implicit function theorems*, 2011.
7. Luca Asselle, Bachelor Thesis, University of Pisa, *Billards and Aubry-Mather theory for twist maps*, 2010.
8. Gabriele Benedetti, fourth year Colloquium, Scuola Normale, *J-holomorphic curves and the Weinstein conjecture*, 2010.
9. Marco Mazzucchelli, PhD Thesis, University of Pisa, *Periodic orbits of Tonelli Lagrangian systems*, 2009.
10. Daniele Garrisi, PhD Thesis, Scuola Normale, *Ordinary differential equations in Banach spaces and the spectral flow*, 2008.
11. Raul Tozzi, Master Thesis, University of Pisa, *Every infinite dimensional Hilbert manifold has an open embedding into a Hilbert space*, 2007.
12. Mircea Petrache, third year Colloquium, Scuola Normale, and Bachelor Thesis, University of Pisa, *The non-squeezing theorem of Gromov*, 2006.
13. Alessandro Bernardi, Bachelor Thesis, University of Pisa, *The Weyl problem*, 2006.
14. Davide Schipani, third year Colloquium, Scuola Normale, and Bachelor Thesis, University of Pisa, *The Poincaré last geometric theorem*, 2004.

At the moment I have one PhD student.

COMMITTEES

1. Member of the Admission Committee for the *Corso Ordinario della Classe di Scienze* of Scuola Normale Superiore, 2010.

2. Many times member of the Admission Committee for the Ph.D. program of the Scuola Normale Superiore.

3. Many times member of the Admission Committee for the Scuola Galileiana of Padova.

4. Many times member of the Bachelor, Master and Ph.D. Committees at the University of Pisa.

5. External referee for the Ph.D. Thesis of :

   (a) Nils Waterstraat (Universität Göttingen, 2011, Advisor Thomas Schick);

   (b) Will J. Merry (University of Cambridge, 2011, Advisor Gabriel Paternain);

   (c) Muriel Heistercamp (Université Libre de Bruxelles - Université de Neuchâtel, 2011, Advisor Felix Schlenck);

   (d) Remi Janner (ETH, Zurich, 2010, Advisor Dietmar Salamon);

   (e) Sonja Hohloch (Leipzig, 2007, Advisor Matthias Schwarz);

   (f) Sergio Rolando (Torino, 2006, Advisor Vieri Benci).

POPULARIZATION OF MATHEMATICS

I have an intense activity in the popularization of mathematics at different levels and with different tools: this activity involves mainly lectures and workshops for high school students or undergraduates in scientific faculties, but also some publications, the construction of various expository models, the production of small movies. Part of this material is available on my web page. Here I list some of the lectures I gave.

1. Series of lectures and labs on *Criptography* at the Istituto Tecnico-Commerciale di Pontedera, April-May 2012.

2. Lecture *The mathematics of the rainbow* at the Open Week 2011 of the University of Pisa, October 2011.

3. One lecture and one lab on *Mathematical billiards* at the Alfaclass Update Mathematics Spring School, Progetto Diderot, Fondazione CRT, Biella, May 20-22, 2011.

4. Series of lectures and labs on *Game theory* at the Istituto Tecnico-Commerciale di Pontedera, Progetto Lauree Scientifiche, April-May 2011.

5. Mathematical lab *Mathematical billiards*, Settimana di orientamento in Matematica (a week-long stage for high school students who would like to study mathematics), University of Pisa, 2011.

6. Mathematical lab *How to analyse a game*, Settimana di orientamento in Matematica (a week-long stage for high school students who would like to study mathematics), University of Pisa, 2010.

7. Conference *The time arrow* at the yearly stage organized by Scuola Normale Superiore, Rovereto, 2009.

8. Mathematical lab *Games and dilemmas*, Settimana di orientamento in Matematica (a week-long stage for high school students who would like to study mathematics), University of Pisa, 2008.

9. Conference *The time arrow*, Mathematical Festival "TrePerTre" of Suvereto, 2008.

10. Mathematical lab *Proofs and refutations: from polyhedra to robots*, Settimana di orientamento in Matematica (a week-long stage for high school students who would like to study mathematics), University of Pisa, 2007.

11. Co-organizer of the mathematical competition "L'eroe mai cantato", University of Pisa, 2007.

12. Conference *The EPR paradox and the Bell inequalities* at the yearly stage organized by Scuola Normale Superiore, Camigliatello Silano, 2007.

13. Conference *Proofs and refutations* at the yearly stage organized by Scuola Normale Superiore, Colle Val d'Elsa, 2006.

14. Series of lectures *Combinatorics* at the Liceo Scientifico of Forte dei Marmi, 2006.

15. *Proofs and refutations*, series of lectures organized by the University of Pisa for high school students, 2001.

16. Series of lectures *Dynamical systems*, Winter School for biology students, Venice, 1998.

LANGUAGES

Italian is my mother tongue. I am almost as fluent in English as in Italian and I have regularly taught in English in American Univerisities. My German is decent (I have a C2 "Oberstufe" Goethe-Institut Zertifikat and I am currently starting to teach in German). My French and my Spanish allow me to follow a conversation and to be understood, but no more than that (although I once had to give a series of lectures in French, and I somehow managed to do it).

List of publications - Alberto Abbondandolo

RESEARCH PAPERS

1. A. Abate, A. Abbondandolo, P. Majer – Stable manifolds for holomorphic automorphisms, *J. Reine Angew. Math.* (to appear), published online on August 2, 2012.

2. A. Abbondandolo, M. Schwarz – On product structures in Floer homology of cotangent bundles in "Global differential geometry", Springer Proceedings in Mathematics 17 (2012), 491-521.

3. A. Abbondandolo, M. Schwarz – Floer homology of cotangent bundles and the loop product, *Geometry & Topology* 14 (2010), 1569-1722.

4. A. Abbondandolo, M. Schwarz – Estimates and computations in Rabinowitz-Floer homology, *Journal of Topology and Analysis* 1 (2009), 307-405.

5. A. Abbondandolo, M. Schwarz – A smooth pseudo-gradient for the Lagrangian action functional, *Adv. Nonlinear Studies* 9 (2009), 597-623.

6. A. Abbondandolo, P. Majer – Infinite dimensional Grassmannians, *J. Operator Theory* 61 (2009), 16-62.

7. A. Abbondandolo, M. Schwarz, A. Portaluri – The homology of path spaces and Floer homology with conormal boundary conditions, *J. fixed point theory appl.* 4 (2008), 263-293.

8. A. Abbondandolo, P. Majer – A Morse complex for Lorentzian geodesics, *Asian J. Math.* 12 (2008), 299-320.

9. A. Abbondandolo, A. Figalli – Invariant measures of Hamiltonian systems with prescribed asymptotic Maslov index, *J. fixed point theory appl.* 3 (2008), 95-120.

10. A. Abbondandolo and A. Figalli – High action orbits for Tonelli Lagrangians and superlinear Hamiltonians on compact configuration spaces, *J. Differential Equations*, 234 (2007), 626-653.

11. A. Abbondandolo, M. Schwarz – On the Floer homology of cotangent bundles, *Communications in Pure and Applied Mathematics* 59 (2006), 254-316.

12. A. Abbondandolo, P. Majer – On the global stable manifold, *Studia Math.*, 177 (2006), 113-131.

13. A. Abbondandolo, P. Majer – A Morse Complex for infinite dimensional manifolds, Part I. *Advances in Mathematics*, 197 (2005), 321-410.

14. A. Abbondandolo, P. Majer – When the Morse index is infinite, *International Mathematics Research Notices* 71 (2004), 3839-3854.

15. A. Abbondandolo – On the Morse index of Lagrangian systems, *Nonlinear Analysis: Theory, Methods, and Applications* 53 (2003), 551-566.

16. A. Abbondandolo, P. Majer – Ordinary differential operators on Hilbert spaces and Fredholm pairs, *Mathematische Zeitschrift* 243 (2003), 525-562.

17. A. Abbondandolo, V. Benci, D. Fortunato and A. Masiello – On the Morse inequalities for geodesics on Lorentzian manifolds, *Math. Res. Lett.* 10 (2003), 435–445.

18. A. Abbondandolo and V. Benci – Solitary waves and Bohmian mechanics, *Proc. Nat. Acad. Sci.* 99 (2002), 15257-15261.

19. A. Abbondandolo, P. Majer – Morse homology on Hilbert spaces, *Communications in Pure and Applied Mathematics*, 54 (2001), 689-760.

20. A. Abbondandolo and J. Molina – Index estimates for strongly indefinite functionals, periodic orbits and homoclinic solutions of first order Hamiltonian systems, *Calc. Var.* 11 (2000), 395-430.

21. A. Abbondandolo – Morse theory for asymptotically linear Hamiltonian systems, *Nonlinear Anal. TMA* 39 (2000), 997-1049.

22. A. Abbondandolo – Subharmonics for two-dimensional Hamiltonian systems, *NoDEA Nonlinear Differential Equations Appl.* 6 (1999), 341-355.

23. A. Abbondandolo – An H-theorem for a class of Markov processes, *Stochastic Anal. Appl.* 17(1999), 131-136.

24. A. Abbondandolo – A new cohomology for the Morse theory of strongly indefinite functionals on Hilbert spaces, *Topol. Mathods Nonlinear Anal.* 9 (1997), 325-382.

25. A. Abbondandolo – On the homotopy type of VMO, *Topol. Methods Nonlinear Anal.* 7 (1996), 431-436.

26. A. Abbondandolo and V. Benci – Rotation numbers for Lagrangian systems and Morse theory, *Banach Center Publications* 35 (1996), 29-38.

27. A. Abbondandolo – Un indice medio per misure invarianti rispetto al flusso Lagrangiano, *Rend. Mat. Acc. Lincei* 5 (1994), 213-221.

MONOGRAPHS AND SURVEYS

28. A. Abbondandolo – Periodic orbits by variational methods, Lecture notes from a Summer school on Hamiltonian dynamics and symplectic geometry, Korea Institute for Advanced Study, Seoul, July 12-16, 2010.

29. A. Abbondandolo – The minimax principle in the calculus of variations , Encyclopedia of Mathematical Physics, eds. J.-P. Francoise, G. L. Naber, and Tsou S. T., Oxford: Elsevier 2006, volume 3, page 432.

30. A. Abbondandolo and P. Majer – Lectures on the Morse complex for infinite dimensional manifolds, in "Morse theoretic methods in nonlinear analysis and in symplectic topology", pp. 1-74, NATO Science Series II: Mathematics, Physics and Chemistry, P. Biran, O. Cornea, and F. Lalonde Eds, Springer, 2006.

31. A. Abbondandolo and M. Schwarz – Notes on Floer homology and loop space homology, in "Morse theoretic methods in nonlinear analysis and in symplectic topology", pp. 75-108, NATO Science Series II: Mathematics, Physics and Chemistry, P. Biran, O. Cornea, and F. Lalonde Eds, Springer, 2006.

32. A. Abbondandolo – *Morse theory for Hamiltonian systems*, Research Notes in Mathematics, CRC Press, Boca Raton, FL, 2001.

33. A. Abbondandolo – *Morse theory for strongly indefinite functionals and Hamiltonian systems*, PhD Thesis, Scuola Normale Superiore, Pisa, 1999.

PREPRINTS

34. A. Abbondandolo, S. Matveyev – How large is the shadow of a symplectic ball?, `arXiv:1202.3614v2 [math.SG]`, 2012.

35. A. Abbondandolo, P. Majer – Global stable manifolds in holomorphic dynamics under bunching conditions, `arXiv:1111.5197v1 [math.DS]`, 2011.

POPULARIZATION OF MATHEMATICS

36. A. Abbondandolo, G. Gaiffi – Modelli e realtà. A series of 37 short articles which explain the use of mathematics to model various kinds of problems. They are part of a 5-volumes textbook for scientific oriented high schools. Edizioni CEDAM - De Agostini. The first two volumes have been published in 2011, the last three are in process.

37. A. Abbondandolo – Il paradosso EPR e le disuguaglianza di Bell, preprint 2010.

38. A. Abbondandolo – La freccia del tempo, *XlaTangente* 11 (2008), 17-21.

39. A. Abbondandolo, M. Giaquinta, F. Ricci (editors) – Ricordando Franco Conti, Pubblicazioni della Scuola Normale Superiore di Pisa, 2004.

Other miscellaneuous material is available on the "Popularization of Mathematics" section of my web page at the University of Pisa:

http://www.dm.unipi.it/∼abbondandolo/divulgazione/divulgazione.html