

Curriculum vitae of
Francesco Morandin
up to 2015/4/28

Personal details

Born 1975/10/4 in Conegliano (TV), Italy

Family Married with Silvia Giulia Galfrè, children: Eleonora (2007), Federico (2010), Edoardo (2013).

Institution University of Parma.

Position Ricercatore Universitario (Assistant Professor) in Probability and Statistics, since 2001/3/1.

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Studies

- I graduated in 1998 in Mathematics at Pisa University with a thesis on branching processes, nonlinear ODE's and Navier-Stokes equations.
- Degree in Mathematics of the Scuola Normale Superiore di Pisa, 1998.
- PhD program at the Scuola Normale Superiore di Pisa, 1999-2000.

Education periods

- In 2000 I attended the school *Concentrated advanced course on Lévy Processes* in Aarhus, Denmark.
- In 2000 I spent one month at MIT, invited by prof. S. K. Mitter, in order to study Information Theory and low-density convolutional codes.
- In 2000 I attended the school *Concentrated advanced course on Lévy Processes and Branching Processes* in Aarhus, Denmark.
- In 2002 I attended the summer school *Inference for stochastic processes* in Torgnon.
- In 2003 I attended a two months research period on *Probability and Statistical Mechanics in Information Science*, in Pisa.
- In 2003 I attended a two months research period on *Interacting Particles and Computational Biology*, in Pisa.
- In 2008 I attended the school and conference *3rd La Pietra Week In Probability, Stochastic Models in Physics* in Florence.
- In 2010 I attended the Saint-Flour *Summer School in Probability* (France).

Talks at international conferences

LMS Durham Symposium on Stochastic Analysis; workshop *Giornate di studi sulle equazioni della meccanica dei fluidi deterministiche e stocastiche* (Maratea); Milan University; workshop *Processi stocastici a struttura spaziale* (Verona); workshop *Topics in finite Markov chains* (Rome); meeting *Kolmogorov Equations* (Pisa); Saint-Flour *Summer School in Probability*.

Invited speaker

Workshop Probability and PDEs (2013, CRM De Giorgi, Pisa).

Scientific activity (theoretical)

Main recent research fields are nonlinear PDEs and SPDEs, in particular shell models such as the dyadic and GOY.

Secondary research fields include stochastic processes related to nonlinear equations, such as branching processes and generalized urn processes, and disordered models related to coding theory, such as Derrida's Random Energy Model.

Scientific activity (applied)

A have a rich set of collaborations in applied mathematics, multivariate statistics and data analysis, which typically do not end up with publications.

- In 2004 and 2005 I had a collaboration with the Department of Experimental Pathology, Medical Biotechnologies and Infectious Diseases of Pisa University on statistical data analysis for microarray-based identification of SNPs.
- In 2004 and 2005 I had a collaboration with Avio S.p.A. and the Department of Applied Mathematics of Pisa University on multivariate data analysis for failure detection on mechanical vibration signatures.
- In 2006 and 2011 I was asked by the burial office of Parma to evaluate the deaths and cremations dynamics and make a prevision of the graves demand for the next years.
- Since 2006 I have a collaboration with a consulting company, for multivariate analysis, industrial quality control and risk assessment, in the medical and farmaceutical fields.
- In 2010 I started a collaboration with the Unit of Urology, Surgical Department, University Hospital of Parma for data analysis and prediction of the HIFU therapy's outcome.
- In 2011 I started a collaboration with Heinz-Plasmon for quantitative methods in continuous improvement.

- In 2013 I started a collaboration with the Department of Clinical and Experimental Medicine of the University of Pisa for prenatal screening of chromosomal abnormalities.

Publications

Published papers (all of them in refereed journals).

- F. Morandin, A resummed branching process representation for a class of nonlinear ODEs, *Electronic Communications of Probability* **10** (2005), 1–6.
- M. Fedrigo, F. Flandoli, F. Morandin, A large deviation principle for the free energy of random Gibbs measures with application to the REM, *Annali di Matematica Pura e Applicata*, (2006) doi: 10.1007/ s10231-006-0011-4.
- A. Cozza, F. Morandin, S. G. Galfrè, V. Mariotti, R. Marangoni, S. Pellegrini, TAMGeS: a Three-Array Method for Genotyping of SNPs by a dual-colour approach, *BMC Genomics* (2007), **8**:10, doi: 10.1186/ 1471-2164-8-10.
- D. Barbato, F. Flandoli, F. Morandin, Uniqueness for a stochastic inviscid dyadic model, *Proc. Amer. Math. Soc.* **138** (2010), no. 7, 2607–2617.
- D. Barbato, F. Flandoli, F. Morandin, A theorem of uniqueness for an inviscid dyadic model, *C. R. Acad. Sci. Paris, Ser. I* **348** (2010), no. 9-10, 525–528, doi:10.1016/j.crma.2010.03.007.
- D. Barbato, F. Flandoli, F. Morandin, Anomalous dissipation in a stochastic inviscid dyadic model, *Annals of Appl. Probability* **21** (2010), no. 6, 2424–2446, doi:10.1214/11-AAP768.
- D. Barbato, F. Flandoli, F. Morandin, Energy dissipation and self-similar solutions for an unforced inviscid dyadic model, *Trans. Amer. Math. Soc.* **363** (2011), 1925–1946, doi:10.1090/S0002-9947-2010-05302-4.
- D. Barbato, F. Morandin, M. Romito, Smooth solutions for the dyadic model, *Nonlinearity* **24** (2011), no. 11, 2607–2617, doi:10.1088/0951-7715/24/11/004.
- D. Barbato, L.A. Bianchi, F. Flandoli, F. Morandin, A dyadic model on a tree, *J. of Math. Phys.* **54** (2013), no. 2, article number 021507, doi:10.1063/1.4792488.
- D. Barbato, F. Morandin, Positive and non-positive solutions for an inviscid dyadic model: Well-posedness and regularity, *Nonlinear Differential Equations and Applications NoDEA* **20** (2013), no. 3, 1105–1123, doi:10.1007/s00030-012-0200-3.
- D. Barbato, F. Morandin, Stochastic inviscid shell models: Well-posedness and anomalous dissipation, *Nonlinearity* **26** (2013), no. 7, 1919–1943, doi:10.1088/0951-7715/26/7/1919.

- D. Barbato, F. Morandin, M. Romito, Global regularity for a logarithmically supercritical hyperdissipative dyadic equation, *Dynamics of Partial Differential Equations* **11** (2014), no. 1, 39–52, doi:10.4310/DPDE.2014.v11.n1.a2
- D. Barbato, F. Morandin, M. Romito, Global regularity for a slightly supercritical hyperdissipative Navier-Stokes system, *Analysis & PDE* **7** (2014), no. 8, 2009–2027, doi:10.2140/apde.2014.7.2009

Other

- I revised and translated the undergraduate book by Sheldon Ross *Introduction to probability and statistics for engineers and scientists*, 2nd, 3rd and 5th editions (2003, 2008 and 2015).
- In 2011 I gave some contribution to a technical document by Farmacopeia on Near Infrared Spectroscopy, specifically in the section *Chemometric methods applied to analytical data*.

Research supervision

I have been advisor for 7 bachelor degree thesis in Mathematics, for 3 master degree thesis in Mathematics, for 16 master degree thesis in Industrial Engineering, and co-advisor for 17 more.

Teaching activity

- Elementary course in Probability, Statistics and Stochastic Processes for Industrial Engineering, 80 hours: 2001, 2002.
- Elementary course in Probability and Statistics for Industrial Engineering, 45 hours: 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009.
- Advanced course of Statistical Methods for Decisions for Industrial Engineering, 80 hours: 2005, 2006, 2007, 2008, 2009.
- Advanced course of Mathematical Models for Decisions for Industrial Engineering, 50 hours: 2010, 2011, 2012.
- Elementary course in Probability for Mathematics and Computer Science, 60 hours: 2006.
- Elementary course in Probability and Statistics for Mathematics and Computer Science (complements), 12 hours: 2008, 2009, 2010.
- Advanced course in Probability for Mathematics, 60 hours, 2007. (The course was recorder and has become e-learning ever since; I still give exams for some students every year.)
- Post graduate course on Stochastic Analysis for Mathematics, 45 hours, 2012, 2013.

- Post graduate course of Multivariate Statistics, 45 hours, 2015.
- In 2009 I was invited to teach a crash course on random walks, in the summer school *Alpha Class* organized by the University and Polytechnic of Turin.
- Since 2004 I contribute to the organization and teaching in the Italian Mathematical Olympiad training program.
- I gave a number of mathematics lectures for non-experts. Some of the arguments were: gambling and probability, compression codes, error-correcting codes, Nim and other games with a winning strategy.

Other

- Winner of 1994 Italian Mathematical Olympiad. International Mathematical Olympiad contestant in 1993 and 1994 with a bronze medal award in 1993.
- Languages (CEFR level): Italian: native, English: B2 (speaking), C1 (reading, writing), French: A1.
- Computer proficiencies: advanced (Windows, Office, C, R, Matlab, \LaTeX), basic (Linux).

Parma, April 28, 2015.

I authorize the handling of my personal data in accordance with Italian Law 675/96.