

BENEDETTA FERRARIO
CURRICULUM VITAE

Address

Dipartimento di Scienze Economiche ed Aziendali
Università di Pavia
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Present Position

Associate Professor of Probability and Mathematical Statistics at the University of Pavia

Education

- 1993 Graduated Cum Laude in Electronic Engineering at “Politecnico di Milano”
- 1998 Ph.D. in Mathematics at Scuola Normale Superiore di Pisa (Supervisor: F. Flandoli)

Visiting Periods/Temporary Appointments

October 1996-February 1997

Mathematisches Institut, Ruhr Universität, Bochum (Germany)

April 1999-July 1999, March 2000-August 2000, April 2001-May 2001, October 2001-September 2002

Institut für Angewandte Mathematik, Bonn University (Germany)

15 June 2001-15 August 2001

Mathematics Research Center, Warwick University, Coventry (U.K.)

23 January 2012-3 February 2012

Centre Interfacultaire Bernoulli - EPFL Lausanne (CH)

1 June- 2 June 2015

Centre Interfacultaire Bernoulli - EPFL Losanne (CH)

19-27 November 2015

University of Wyoming (U.S.A.)

March 2016-February 2019, May 2020-April 2023

Adjunct Assistant Professor at the Department of Mathematics, University of Wyoming (U.S.A.)

Teaching activity at the University of Pavia

Courses of Mathematical Analysis, Probability and Statistics for undergraduate Students of Engineering

Course of Mathematical Analysis (Matematica Generale) for undergraduate Students of Economics

Course of Probability and Statistics for undergraduate Students of Economics

Course of Statistics for undergraduate Students of Biotechnology

Course of Stochastic Processes for Master Students of Mathematics

Course of Probability and Stochastic Processes for Master Students of Economics

Course of Stochastic Differential Equations for PhD program in Mathematics

Research interests

- stochastic fluid dynamics
- infinite dimensional analysis
- SPDE's in Banach spaces
- invariant measures

Invited Talks (in the last 10 years)

Invariant Gaussian measures for shell models of 2D turbulence

Recent Developments in Stochastic Analysis - CIB-EPFL Lausanne 30 January-3 February 2012

Inviscid limit of stochastic damped 2D Navier-Stokes equations

Stochastic Partial Differential Equations and Applications - IX, Levico Terme 5-11 January 2014

On a stochastic Leray- α model of Euler equations

Advances in Mathematical Fluid Mechanics - Stochastic & Deterministic Methods, Lisbon 30 June-5 July 2014

Stochastic equations for hyperviscous fluids

Workshop Classic and Stochastic Geometric Mechanics, Lausanne - CIB 8-11 June 2015

Stochastic Navier-Stokes in \mathbb{R}^d

Stochastic Partial Differential Equations and Applications - X, Levico Terme 30 May-3 June 2016

Stochastic Navier-Stokes equations in \mathbb{R}^d with not regular multiplicative noise

11th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Orlando - Florida 1-5 July 2016

Stochastic Navier-Stokes equations in \mathbb{R}^d

First italian meeting on probability and mathematical statistics, Torino 19-22 June 2017

2D Navier-Stokes equation with cylindrical fractional Brownian noise

Workshop in Stochastic Analysis and Applications (Satellite Meeting of ICM 2018), Campinas (Brazil) 13-15 August 2018 [plenary speaker]

Stochastic hyperviscous Navier-Stokes equations

workshop "Regularity and Blow-up of Navier-Stokes Type PDEs using Harmonic and Stochastic Analysis", Banff International Research Station (BIRS) in Canada 19-24 August 2018

Absolute continuity of the law for the two dimensional stochastic Navier-Stokes equation

UMI-SIMAI-PTM Joint Meeting, Wroclaw (Poland) 17-20 September 2018

Esistenza di misura invariante per equazioni stocastiche

XXI Congresso U.M.I., Pavia 2-7 September 2019

Invariant measures for stochastic 2D damped Euler equations

Workshop "Stochastic Fluid Dynamics", Bonn - HIM 11-15 November 2019

Invariant measures for stochastic 2D damped Euler equations

Bernoulli-IMS One World Symposium, 24-28 August 2020 (online)

Invariant Measures for 2D inviscid fluids with linear damping and stochastic forcing term

8th ECM - Portorož (Slovenia) 20-26 giugno 2021 (online)

Large time behavior of damped inviscid fluids with stochastic forcing term

Encontro Nacional da SPM -NSPM2021 12-16 luglio 2021 (online)

Invariant measures for stochastic 2D damped Euler equations

Dynamics Days Europe XL 23-27 agosto 2021 (online)

Seminars: Bielefeld (1999), Barcellona (2000), Warwick (2001), Hull (2002), Verona (2005), Laramie (2015), Politecnico of Milano (2017), Reading (2019). **Publications in**

Refereed Journals

1. B. Ferrario, *On a unilateral problem for a Navier-Stokes type equation*, Rendiconti dell' Istit. Lombardo Accad. Sci. Lett. Rend., Sezione A 128, no.1 (1994), 83-105
2. B. Ferrario, *The Bénard problem with random perturbations: dissipativity and invariant measures*, NoDEA 4, no.1 (1997), 101-121

3. B. Ferrario, *Ergodic results for stochastic Navier-Stokes equations*, Stochastics & Stoc. Rep. 60 (1997), 271-288
4. B. Ferrario, *Stochastic Navier–Stokes equations: analysis of the noise to have a unique invariant measure*, Ann. Mat. Pura Appl. (IV), Vol. CLXXVII (1999), 331-347
5. B. Ferrario, *Some Results on Invariant Measures in Hydrodynamics*, B.U.M.I. (8) 1-B (2000), 79-94
6. B. Ferrario, *Pathwise regularity of non-linear Ito equations. Application to a stochastic Navier–Stokes equation.*, Stochastic Anal. Appl. 19, no.1 (2001), 135-150
7. S. Albeverio, B. Ferrario, *Uniqueness results for the generators of the two-dimensional Euler and Navier–Stokes flows. The case of Gaussian invariant measures.*, J. Funct. Analysis 193, no.1 (2002), 77-93
8. S. Albeverio, B. Ferrario, *2D vortex motion of an incompressible ideal fluid: the Koopman–von Neumann approach*, Infinite Dimensional Analysis, Quantum Probability and Related Topics 6, no.2 (2003), 155-165
9. B. Ferrario, *Uniqueness result for the 2D Navier–Stokes equation with additive noise*, Stochastics Stochastics Rep. 75, no.6 (2003), 435-442
10. S. Albeverio, B. Ferrario, M.W. Yoshida, *On the essential self-adjointness of Wick powers of relativistic fields and of fields unitary equivalent to random fields*, Acta Applicandae Mathematicae 80 (2004), 309-334
11. S. Albeverio, B. Ferrario, *Uniqueness of solutions of the stochastic Navier–Stokes equation with invariant measure given by the enstrophy*, Ann. Probab. 23, no.2 (2004), 1632-1649
12. R. Carbone, B. Ferrario, M. Santacroce, *Backward Stochastic Differential Equations driven by càdlàg martingales*, Teoriia Veroiatnostei i ee Primeneiia 52 no.2 (2007), 375-385. English translation from the russian in: Theory of Probability and Its Applications 52, no.2 (2008), 304-314.
13. B. Ferrario, F. Flandoli, *On a stochastic version of Prouse model in fluid dynamics*, Stoch. Proc. Appl. 118, no.5 (2008), 762-789
14. B. Ferrario, *Invariant measures for a stochastic Kuramoto-Sivashinsky equation*, Stochastic Anal. Appl. 26, no.2 (2008), 379-407
15. Z. Brzeźniak, B. Ferrario, *2D Navier-Stokes equation in Besov spaces of negative order*, Nonlinear Anal.-Theory Methods Appl. 70, no. 11 (2009), 3902-3916

16. S. Albeverio, V. Barbu, B. Ferrario, *Uniqueness of the generators of the 2D Euler and Navier-Stokes flows*, Stoch. Proc. Appl. 118, no.11 (2008), 2071-2084; *Erratum*, Stoch. Proc. Appl., 120, no.10 (2010), 2102
17. B. Ferrario, *Absolute continuity of laws for semilinear stochastic equations with additive noise*, Communications on Stochastic Analysis, 2, no.2 (2008), 209-227; *Erratum*, 5 no.2 (2011), 431-432
18. H. Bessaih, B. Ferrario, *Invariant Gibbs measures of the energy for shell models of turbulence; the inviscid and viscous cases*, Nonlinearity 25 (2012), 1075-1097
19. B. Ferrario, *A note on a result of Liptser-Shiryaev*, Stochastic Anal. Appl. 30, no.6 (2012), 1019-1040
20. H. Bessaih, B. Ferrario, *Invariant measures of Gaussian type for 2D turbulence*, J. Stat. Phys. 149, no.2 (2012), 259-283
21. D. Barbato, H. Bessaih, B. Ferrario, *On a Stochastic Leray- α model of Euler equations*, Stoch. Proc. Appl. 124 (2014), 199-219
22. H. Bessaih, B. Ferrario, *Inviscid limit of stochastic damped 2D Navier-Stokes equations*, Nonlinearity 27, no.1 (2014), 1-15
23. B. Ferrario, *Characterization of the law for 3D stochastic hyperviscous fluids*, Electron. J. Probab. 21, no. 26 (2016), 22 pp.
24. H. Bessaih, B. Ferrario, *Statistical properties of stochastic 2D Navier-Stokes equation from linear models*, Discrete and Continuous Dynamical Systems - series B - 21, no.9 (2016), 2927-2947
25. Z. Brzeźniak, B. Ferrario, *A note on stochastic Navier-Stokes equations with not regular multiplicative noise*, Stochastics and Partial Differential Equations: Analysis and Computations 5, no.1 (2017), 53-80
26. H. Bessaih, B. Ferrario, *The regularized 3D Boussinesq equations with fractional Laplacian and no diffusion*, J. Differ. Equations 262 (2017), 1822-1849
27. B. Ferrario, M. Zanella, *Stochastic vorticity equation in \mathbb{R}^2 with not regular noise*, NoDEA 25, no.6 (2018), 33 pages
28. B. Ferrario, C. Olivera, *L^p -solutions of the Navier-Stokes equation with fractional Brownian noise*, AIMS Mathematics 3, no.4 (2018), 539-553
29. Z. Brzeźniak, B. Ferrario, *Stationary solutions for stochastic damped Navier-Stokes equations in R^d* , Indiana Univ. Math. J. 68, no.1 (2019), 105-138
30. B. Ferrario, C. Olivera, *2D Navier-Stokes equation with cylindrical fractional Brownian noise*, Annali Mat. Pura Appl. 198, no.3 (2019), 1041-1067

31. B. Ferrario, M. Zanella, *Absolute continuity of the law for the two dimensional stochastic Navier-Stokes equations*, Stoch. Proc. Appl. 129 (2019), 1568-1604
32. H. Bessaih, B. Ferrario, *Invariant measures for stochastic damped 2D Euler equations*, Commun. Math. Phys. 377 (2020), 531-549

Publications in Proceedings and Books

1. B. Ferrario, *Invariant measures for the stochastic Navier–Stokes equations*, Proceedings of the Conference on Navier-Stokes equations at Varenna , June 1997 Pitman Res. Notes Math. Ser., 388, “Navier-Stokes Equations : Theory and Numerical Methods” Ed. R. Salvi (1998), 160-173
2. S. Albeverio, B. Ferrario, *Invariant measures of Lévy-Khinchine type for 2D fluids*, Preprint N.29 SFB 611 Bonn Universität (2002) Proceedings of the Swansea 2002 Workshop “Probabilistic Methods in Fluids”, Wales, UK, 14-19 April 2002. Eds.: I.M. Davies, N. Jacob, A. Truman, O. Hassan, K. Morgan, N.P. Weatherill. World Scientific (2003), 130-143
3. S. Albeverio, B. Ferrario, *Invariant Gibbs measures for the 2D vortex motion of fluids*, Proceedings of the first Sino-German Conference on Stochastic Analysis, (A Satellite Conference of ICM 2002, Beijing - China). Eds: S. Albeverio, Z.-M. Ma, M. Röckner. World Scientific Publishing “Recent Developments in Stochastic Analysis and Related Topics” (2004), 31-44
4. B. Ferrario, *Stochastic hydrodynamics*, Encyclopedia of Mathematical Physics, eds. J.-P. Francoise, G.L. Naber and Tsou S.T. Oxford: Elsevier, 2006 (ISBN 978-0-1251-2666-3), volume 5 pag. 71-79
5. B. Ferrario, *On some problems of regularity in two-dimensional stochastic hydrodynamics*, Proceedings of 7th International Meeting on Stochastic Differential Equations and Applications, Levico 5-10 gennaio 2004. Eds: G. Da Prato, L. Tubaro. Chapman & Hall “SPDE’s and Applications - VII” Lecture Notes in Pure and Applied Mathematics 245 (2006), 97-103
6. S. Albeverio, B. Ferrario, *Some methods of infinite dimensional analysis in hydrodynamics: an introduction*, in *SPDE in Hydrodynamic: Recent Progress and Prospects*, lectures given at the C.I.M.E. Summer School held in Cetraro (2005), G. Da Prato & M. Röckner (eds.), Lecture Notes in Mathematics 1942 (2008) pp. 1-50, Springer.
7. B. Ferrario, *Well posedness of a stochastic hyperviscosity-regularized 3D Navier-Stokes equation*, Proceedings of the Conference “SPDE’s and Applications - VIII” (Levico, Jan. 6-12, 2008), Quaderni di Matematica 25 - Seconda Università di Napoli (2010), 127-138.

8. B. Ferrario, *Uniqueness and absolute continuity for semilinear SPDE's* (2013), 85-94. Proceedings of "Seminar on Stochastic Analysis, Random Fields and Applications-VII", Ascona 2011. Birkhäuser. Series: Progress in Probability, Vol. 67; R. Dalang, M. Dozzi, F. Russo (Eds.).

Grants

- Italian Ministry of Education, PRIN 1998: member of the research team (national coordinator: I. Capuzzo Dolcetta)
- Italian Ministry of Education, PRIN 1999: member of the research team (national coordinator: M. Pratelli)
- Italian Ministry of Education, PRIN 2001: member of the research team (national coordinator: A. Gandolfi)
- Italian Ministry of Education, PRIN 2003: member of the research team (national coordinator: A. Gandolfi)
- Italian Ministry of Education, PRIN 2004: member of the research team (national coordinator: A. Visintin)
- Italian Ministry of Education, PRIN 2008: member of the research team (national coordinator: A. Lunardi)
- Italian Ministry of Education, PRIN 2010-11: member of the research team (national coordinator: M. Fuhrman)
- Istituto nazionale di Alta Matematica, GNAMPA 2012: leader of the project for Visiting Professors, title "On some stochastic models of turbulence" (Prof. H. Bessaih has been visiting the Department of Mathematics of Pavia in April 2012)
- Istituto nazionale di Alta Matematica, GNAMPA 2014: leader of the research team "Regolarità e dissipazione in fluidodinamica"
- Istituto nazionale di Alta Matematica, GNAMPA 2016: member of the research team "Distribuzioni invarianti in fluidodinamica" (coordinator: D. Barbato)
- Italian Ministry of Education, PRIN 2015: member of the research team (national coordinator: A. Lunardi)
- Agenzia Nazionale di Valutazione del sistema Universitario e della Ricerca (AN-VUR), Fondo per il Finanziamento delle Attività base di Ricerca (FFABR 2017): individual fund
- Istituto nazionale di Alta Matematica, GNAMPA 2018: leader of the project for Visiting Professors (Prof. H. Bessaih has been visiting the Department of Mathematics of Pavia in February 2019)

- Istituto nazionale di Alta Matematica, GNAMPA 2019: grant for “Organizzazione Incontri Scientifici” (Conference in Pisa, 18-20 July 2019)
- Istituto nazionale di Alta Matematica, GNAMPA 2020: member of the research team “Equazioni di Kolmogorov in dimensione elevata o infinita: aspetti teorici e numerici” (coordinator: F. Flandoli)

Awards and scholarships

“Perfezionamento” grant awarded from the Scuola Normale Superiore of Pisa (1993-1996)

Alexander von Humboldt Fellowship (October 2001-September 2002)

FFABR 2017

Qualification as Full Professor in Probability and Mathematical Statistics

Membership: U.M.I. (Unione Matematica Italiana), I.N.d.A.M.-G.N.A.M.P.A. (Istituto Nazionale di Alta Matematica-Gruppo Nazionale per l’Analisi Matematica, la Probabilità e le loro Applicazioni)

Languages

Italian: mother tongue

French: very good

English: good

German: basic

Pavia, September 17th, 2021