

CURRICULUM VITAE - ALESSANDRA BIANCHI

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Italian citizenship.

Born: December 31, 1977, Novafeltria (RN), Italy.

EDUCATION

- 1999-2003
 - Undergraduate student of Mathematics at the University of Bologna. Title of the *laurea* thesis: *Thermodynamic Limit for Mean-Field Spin Models*. Advisor: P. CONTUCCI. The thesis was defended on July 2003.
- 2003-2007
 - Ph.D. student in Mathematics at the University of Roma Tre. Title of the thesis : *Mixing time for Glauber dynamics beyond \mathbb{Z}^d* . Advisor: F. MARTINELLI. Referees: A. BOVIER, G. POSTA, E. OLIVIERI. The thesis was defended on April 2007.
- 2007-2009
 - Postdoctoral fellow at the Weierstrass Institute for Applied Analysis and Stochastic (WIAS) of Berlin, in the team “Interacting Random Systems” headed by A. BOVIER.
- 2009-2012
 - Postdoctoral fellow at the Department of Mathematics of the University of Bologna. Title of the project: *Autosimilar and long-range dependence processes*. Supervisor: M. CAMPANINO.

ACTUAL POSITION

- 2012-present
 - Researcher in Probability at the Mathematics Department of the University of Padova.

LANGUAGE SKILLS

English, French, German, Italian (native speaker).

RESEARCH INTERESTS

Statistical Mechanics, Probability Theory.

Main topics include:

- Interacting particle systems.
 - Random walks on random structures.
 - Random graphs.
 - Metastability of Markov processes.
 - Stochastic dynamics and relaxation time.
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PUBLICATIONS

- (1) A. BIANCHI, P. CONTUCCI, C. GIARDINÀ (2003). Thermodynamic Limit for Mean-Field Spin Models. *Math. Phys. El. J.*, **9**(6).
- (2) A. BIANCHI, P. CONTUCCI, A. KNAUF (2004). Stochastically Stable Quenched Measures. *J. Stat. Phys.*, **117**(5/6), 831-844.
- (3) A. BIANCHI (2008). Glauber dynamics on hyperbolic graphs: Boundary conditions and mixing time. *Electr. J. Prob.*, **13**, 1980–2012.
- (4) A. BIANCHI, A. BOVIER, D. IOFFE (2008). Sharp asymptotics for metastability in the random field Curie-Weiss model. *Electr. J. Prob.*, **14**, 1541-1603.
- (5) A. BIANCHI, A. BOVIER, D. IOFFE (2011). Pointwise estimates and exponential laws in metastable systems via coupling methods. *Annals of Probability*, **40**(1), 339-371.
- (6) A. BIANCHI, M. CAMPANINO, I. CRIMALDI (2012). Asymptotic normality of a Hurst parameter estimator based on the modified Allan variance. *International J. of Stochastic Analysis*, vol. **2012**, 1-20.
- (7) A. BIANCHI, S. BREGNI, I. CRIMALDI, M. FERRARI (2012). Analysis of a Hurst parameter estimator based on the modified Allan variance. In: *2012 IEEE Globecom Workshops*, Anaheim, California, USA, 3-7 December 2012. p. 1716-1721.
- (8) A. BIANCHI, G. CRISTADORO, M. LENCI, M. LIGABÒ (2015). Random walks in a one-dimensional Lévy random environment. *J. Stat. Phys.*, **163**(1), 22-40.
- (9) A. BIANCHI, A. GAUDILLIERE (2016). Metastable states, quasi-stationary and soft measures, mixing time asymptotic via variational principles. *Stochastic Process. Appl.*, **126**(6), 1622-1680.
- (10) A. BIANCHI, S. DOMMERS, C. GIARDINÀ (2017). Metastability in the reversible inclusion process. *Electronic Journal of Probability*, **22** No. 70, 1-34
- (11) A. BIANCHI, M. LENCI, FRANÇOISE PÈNE (2019). Continuous-time random walk between Lévy-spaced targets in the real line. *Stochastic Process. Appl.*, **130** No. 2, 708-732.
- (12) A. BIANCHI, A. GAUDILLIERE, P. MILANESI (2020). On soft capacities, quasi-stationary distributions and the pathwise approach to metastability. *J. Stat. Phys.*, **181** (3), 1052-1086.

- (13) A. BIANCHI, G. BET, M. LENCI, E. MAGNANINI, S. STIVANELLO (2021). Limit theorems for Lévy flights on a 1D Lévy random medium. *Electronic Journal of Probability*, **26**, 1-34.
 - (14) A. BIANCHI, F. COLLET (PREPRINT 2021). Convergence to equilibrium for a bipartite Curie-Weiss model.
 - (15) A. BIANCHI, F. COLLET, E. MAGNANINI (PREPRINT 2021). Limit theorems for exponential random graphs.
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RESEARCH ACTIVITIES

- Research Projects

- From 2011 to 2013, participant of the project PRIN - Percolation, Markovian evolutions and long-range systems;
- From 2012 to 2016, responsible of the Bologna unit for the project FIRB - Stochastic Processes and Interacting Particle Systems: duality, metastability and their applications;
- From 2013 to 2015, participant of the SID-project - Stochastic processes and applications to complex systems - founded by the University of Padova;
- From 2017 to 2019, participant of the project PRIN - Large Scale Random Structures.
- From 2019, responsible of the BIRD-project- Stochastic processes and applications to disordered systems - founded by the University of Padova;

- Visiting

- On March 2007, May 2008 and May 2009, visitor at the Technion Israel institute of technology of Haifa (Israel), invited by Prof. D. Ioffe.
- On February 2009 visitor at EURANDOM (Eindhoven, The Netherlands) invited by Prof. A. Bovier.
- On April 2009 visitor at the University of Bonn (Germany), invited by Prof. A. Bovier.
- On September and October 2010, on November 2011 and on June 2013 visitor at the Laboratoire d'Analyse, Topologie, Probabilités (LATP), Université de Provence (Marseille, France) invited by Dr. A. Gaudilliere.
- On March 2015, visitor at the Istitute IHP of Paris (France).
- On April 2015, visitor at the research Institute ICERM of the Brown University (Providence, USA).
- From August 20 to September 20 2016, visitor at the research Institute IMPA of Rio de Janeiro (Brazil).

- Organization

- 2009 Co-organizer of the "Summer School in Probability" that was held in Bologna (Italy) on 6-8 July 2009.
- 2012 Co-organizer and member of the scientific committee of the "Summer School in Probability 2012" that was held in Bologna (Italy) on 3-7 September 2012.

- 2019 Co-organizer and member of the scientific committee of the "Winter School in La Habana 2019" that was held in La Habana (Cuba) on 28 January - 8 February 2019.
- 2020 Co-organization of the cycle of online seminars of the national group DAI - The Community of Italian Dynamicists. Webpage <https://www.dinamici.org/dai-seminar/>
 - Since 2013 co-organization of the Probability seminars at the Mathematics Department of Padova. Webpage <https://www.math.unipd.it/bianchi/seminari/>
- Other research activities
 - From 2013 to 2016, supervisor of two post-doc fellowships in the framework of the FIRB project - Stochastic Processes and Interacting Particle Systems: duality, metastability and their applications.
Post-doc fellows: Francesca Collet e Sander Dommers.
 - From 2018 to 2020, supervisor of the PhD thesis in Mathematics of Samuele Stivanello.
 - Since april 2020, supervisor of a research fellowship in the framework of the BIRD2019 project - Stochastic Processes and applications to disordered systems.
Post-doc fellow: Elena Magnanini.

TALKS AND CONFERENCE AS INVITED SPEAKER

- 28–30 Oct. 2004 Assemblée Scientifica G.N.F.M., Montecatini Terme, Italy.
- 11 Jan. 2007 Seminar of the Mathematics Department, University of Bologna, Italy.
- 15 Apr. 2007 Seminar of the Mathematics Department, University of L'Aquila, Italy.
- 09–11 Jan. 2008 Metastability, EURANDOM, Eindhoven, The Netherlands.
- 18–07 Mar. 2008 From Dynamical Systems to Statistical Mechanics, CIRM, Marseille, France.
- 10–14 Mar. 2008 Statistical Mechanics on Random Structures, EURANDOM, Eindhoven, The Netherlands.
- 17–20 Mar. 2008 Random Systems from Physics to Biology, TU Berlin, Germany.
- 04 May 2008 Seminar at the Faculty of Industrial Engineering and Management, Technion Israel Institute of Technology, Haifa, Israel.
- 17–19 Nov. 2008 Second workshop on Random Dynamical Systems, Bielefeld, Germany.
- 20 Nov. 2008 Probability seminar of the Mathematics Department, Bonn, Germany.
- 27 February 2009 Probability seminar at EURANDOM, Eindhoven, The Netherlands.
- 2-4 April 2009 Mathematical Models from Physics and Biology, Hausdorff Center for Mathematics, Bonn, Germany.
- 6-8 July 2009 Summer School in Probability, Villa Pallavicini, Bologna, Italy.
- 5 Oct. 2009 Probability seminar of the Mathematics Department, University of Bologna, Italy.

- 15–20 Nov. 2009 Statistical Mechanics on Random Structures, Banff International Research Station, Banff, Canada.
- 2–7 August 2010 XIV Brazilian School of Probability, Búzios, Brazil.
- 11 August 2010 Seminar at the Brazilian Center for Physics Research, Rio de Janeiro, Brazil.
- 03-17 Sept. 2010 Disordered systems and extreme value statistics, Hausdorff Research Institute for Mathematics, Bonn, Germany.
- 08 Oct. 2010 Probability seminar of the Laboratoire d'Analyse, Topologie, Probabilités (LATP), Université de Provence, Marseille, France.
- 19–21 May 2011 Young Women in Probability, Institute for Applied Mathematics, Bonn, Germany.
- 6 June 2011 Systèmes désordonnés : Traitement probabiliste, Université de Nantes, France.
- 13–17 June 2011 La Pietra week in Probability 2011, Villa Finaly, Firenze, Italy.
- 7 July 2011 Probability seminar of Mathematics Department, Università di Roma Tre, Roma, Italy.
- 23 Nov. 2011 Probability seminar at the Humboldt Universität zu Berlin, Berlin, Germany.
- 28-2 June 2012 Workshop "Large Scale Behaviour of Random Spatial Models", Mathematics Institute of the University of Warwick, England.
- 7-8 Jan. 2013 Workshop "Condensation in Stochastic Particle Systems", Warwick Mathematics Institute (UK).
- 24 Jan. 2013 Probability seminar, Université de Orleans, Orleans, France.
- 4-15 Feb. 2013 Workshops "Equilibrium statistical mechanics" and "Dynamical and disordered systems", CIRM, Marseille, France.
- 06-10 May 2013 Random Combinatorial Structures and Statistical Mechanics, Palazzo Pesaro-Papafava, Venezia, Italia.
- 11-14 June 2013 Workshop "Dinamici: Third workshop of the (Young) Italian Dynamacists", Corinaldo, Italia.
- 05-06 July 2013 Women in Probability, Technical University of Munich, Germany.
- 9-13 Sept. 2013 German-Japanese Meeting on Stochastic Analysis 2013, Mathematics Institute of Leipzig, Germany.
- 10-11 Oct. 2013 Junior female researchers in Probability, Technical Universities of Berlin and Potsdam, Germany.
- 28 Oct.- 01 Nov. 2013 Large Scale Stochastic Dynamics, Oberwolfach, Germany.
- 22 Nov. 2013 Probability seminar of the University of Modena and Reggio Emilia, Italia.
- 04-06 June 2014 Journées scientifiques de l'Université de Nantes, Nantes, France.
- 26-30 May 2014 Probability in Dynamics at IM-UFRJ, Rio de Janeiro, Brasil.

- 19 June 2014 Probability seminar of the University La sapienza of Roma, Italia.
- 13-17 Apr. 2015 ICERM - Semester Program on Phase Transitions and Emergent Properties, Brown University, Providence, USA.
- 7-12 Sept. 2015 XX Congresso dell'Unione matematica Italiana, Siena, Italia.
- 22 Nov. 2015 Weekly Probability Seminar presso la Technical University of Leiden, The Netherlands.
- 4-8 Jan. 2016 Large Scale Behaviour of Random Spatial Models, Mathematics Institute of the University of Warwick, England.
- 3 Feb. 2016 Berliner Kolloquium presso la Technical University of Berlin, Germany.
- 18-22 Apr. 2016 Metastability, EURANDOM, Eindhoven, The Netherlands.
- 04-06 July 2016 Condensation phenomena in stochastic systems, University of Bath, UK.
- 19 Ag.- 02 Sept. 2016 First joint meeting of Brazil-Italy in Mathematics, IMPA, Rio de Janeiro, Brazil.
- 08 May 2017 One day workshop on "LARGE SCALE RANDOM STRUCTURES", Università di Roma Tre, Roma, Italia.
- 27 Nov.- 01 Dec. 2017 Particle Systems and PDE's - VI, Laboratoire J.A. Dieudonné - Université de Nice, France.
- 14 May 2018 Oberseminar stochastische Prozesse und Anwendungen in der Biologie presso la Technical University of Berlin, Germany.
- 20-22 June 2018 XXIII Convegno Nazionale di Fisica Statistica e dei Sistemi Complessi, Università di Parma, Parma, Italia.
- 23-27 July 2018 Stochastic Methods in Finance and Physics, Heraklion, Crete, Greece.
- 8-10 Apr. 2019 Equilibrium and Non-equilibrium Statistical Mechanics - A conference in honor of François Dunlop, Villa Finaly, Firenze, Italia.
- 17-20 June 2019 Interacting particle systems from a duality point of view - Second Italian Meeting on Probability and Mathematical Statistics, Vietri sul mare, Italia.
- 02-05 July 2019 Nonlinear Processes and their Applications, Sant'Etienne University, France.
- 10-11 July 2019 3rd Workshop on Large Scale Random Structures, Università di Milano Bicocca, Italia.
- 7-11 Sept. 2020 Random Polymers and Networks, IGESA Iles de Porquerolles, France
- 23 Feb. 2021 Seminario Brasileiro de Probabilidade (SBP) at IMPA - Rio de Janeiro, Brazil.

TEACHING EXPERIENCES (IN ITALIAN)

a) Incarichi didattici

- 2019/20 Docente del corso di *Probabilità e Statistica* per il corso di laurea magistrale in Matematica dell'Università di Padova.
- 2017/18 - 2018/19 - 2019/20 Docente del corso di *Analisi stocastica* per il corso di laurea magistrale in Matematica dell'Università di Padova.
- 2017/18 - 2018/19 Docente a contratto del corso *Probability Theory* per il Dottorato in Statistica dell'Università di Padova
(in collaborazione con i Proff. Marco Formentin e Giorgia Callegaro).
- 2014/15 - 2015/16- 2016/17- 2017/18- 2018/19 Docente del corso di *Introduzione ai modelli probabilistici* per la classe di Scienze Naturali della Scuola Galileiana di Padova. (in collaborazione con il Prof. Paolo Dai Pra)
- 2014/15 - 2015/16- 2016/17 Docente del corso di *Calcolo delle Probabilità* per il corso di laurea magistrale in Scienze Statistiche dell'Università di Padova.
- 2013/14 Docente del corso di *Introduzione ai modelli probabilistici* per la classe di Scienze Naturali della Scuola Galileiana di Padova. (in collaborazione con il Prof. Paolo Dai Pra)
- 2012/13 - 2013/2014 Docente del corso di *Statistica* per il corso di laurea in Biologia Molecolare dell'Università di Padova.
- 2012/13 Docente a contratto del corso di *Calcolo delle Probabilità e Statistica Matematica* per il corso di laurea in Informatica dell'Università di Bologna.
- 2011/12 Docente a contratto del corso di *Probabilità e Statistica Matematica* per il corso di laurea in Matematica dell'Università di Bologna.
- 2011/12 Docente a contratto di un modulo del corso di *Statistica* per il corso di laurea in Biologia dell'Università di Padova (con P. DAI PRA).

b) Tutoraggi e Collaborazioni

- 2005/06 Tutore del corso di laurea in Architettura dell'Università di Roma Tre: corso di *Istituzioni di Matematiche II*
- 2006/07 Tutore del per il corso di laurea in Fisica dell'Università di Roma Tre: corso di *Elementi di Analisi II*
- 2009/10-2010/11 Collaborazione al corso di laurea in Informatica dell'Università di Bologna: corso di *Modelli probabilistici*
- 2009/10 - 2010/11 Tutore del corso di laurea in Informatica dell'Università di Bologna: corso di *Calcolo delle Probabilità e Statistica Matematica*
- 2010/11 - 2011/12 Collaborazione al corso di laurea in Matematica dell'Università di Bologna: corso di *Probabilità e Statistica Matematica*

OTHER PROFESSIONAL ACTIVITIES

- Supervisor of about twenty thesis in Mathematics.
- **Supervisor** of the PhD thesis in Mathematics of Samuele Stivanello (XXIII cycle), with title "Statistics and stochastic modeling of complex systems: upscaling of biodiversity and random walks in random environment".
- In 2020, member of the **committee for the PhD admission** of the Mathematics department of Padova.
- In 2018, 2019 e 2020, member of the **committee for the PhD final examination** (University of Padova and University of Modena and Reggio Emilia).
- Since 2018, member of the **didactics committee** and of the **third mission and teachers formation Committe** of the Mathamatics Department of Padova.
- From 2014 to 2018, member of the **evaluation committee** of the Mathematics Department of Padova.
- From 2013 to 2017, **tutor of *Applied Mathematics*** at the Galileian School of Padova.
- On 2015, member of the **examination committee for the admission to the Galileian School** of Padova.
- On 2013, 2015 and 2017, participant of the European event ***La notte dei ricercatori*** for the Mathematics Department of Padova.
- Teacher of the **online course "Probability and Statistics"**, presented by Eduopen on 2018.