

CURRICULUM

Federico Bassetti

Personal Data

Born in Milano, Italy, April 25, 1976.
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Academic positions

- January 2021 - present. *Full Professor* of Probability and Mathematical Statistics, Department of Mathematics, Politecnico of Milano.
- February, 2018- January 2021. *Associate Professor* of Probability and Mathematical Statistics, Department of Mathematics, Politecnico of Milano.
- August 2015 - February, 2018. *Associate Professor* of Probability and Mathematical Statistics, Department of Mathematics, University of Pavia.
- March, 2006 - July, 2015. *Assistant Professor* of Probability and Mathematical Statistics, Department of Mathematics, University of Pavia.
- July, 2004 - February, 2006. *Post doc* at Department of Mathematics, University of Pavia.

Education

- March, 7th, 2005. *Ph.D.* in Mathematical Statistics at University of Pavia (Università degli Studi di Pavia).
- October 2000-October 2004. *PhD Student* in Mathematical Statistics, Department of Mathematics, University of Pavia.
 - January-May, 2004. *Visiting student* at the Department of Statistics of *Stanford University* (visiting Prof. P. Diaconis), CA, USA.
 - August, 2002. Visiting student at Department of Statistics of Stanford University, (visiting Prof. P. Diaconis) CA, USA.
 - 12-19 October, 2002. Oberwolfach. "Mass transportation problems and applications." Prof. L. Ambrosio, C. Villani.
 - July, 2001. Summer school of Probability and Statistics (Bocconi University) "Large Sample Theory, problems and applications." Prof. Y.Rinott.
- July 2000. Graduated in Mathematics at University of Pavia (Università degli Studi di Pavia), 110/110 cum laude.

- July 1995. Graduated from high school (liceo classico "G.Parini", Milano), 60/60.

Scientific interests and collaborations

- ***Limit theorems for stochastic processes related to kinetic equations.*** Active collaborations: G. Toscani (Dip. Matematica, Univ. Pavia), L. Ladelli (Dip. Matematica, Polimi). Past collaborations: Prof. D. Matthes (Technical University of Munich).
- ***Probabilistic modelling in biology (cellular growth, evolution, transcription networks, horizontal gene transfert).*** Active collaborations: M. Cosentino Lagomarsino and M. Gherardi (Dip. Fisica, Univ. Statale Milano e IFOM Milano). I. Epifani and L. Ladelli (Dip. Matematica, Polimi).
- ***Exchangeability and Nonparametric Bayesian inference (species sampling models, exchangeable partitions, vectors of dependent random measures).*** Active Collaborations: L. Ladelli. and I. Epifani (Dip. Matematica, Polimi), R. Casarin (Dipartimento di Economia, Univ. Ca' Foscari, Venezia) L. Rossini (Department of Econometrics and Data Science, Vrije Universiteit, Amsterdam), M. Jacopini (Scuola Normale Pisa). Past collaborations: E. Regazzini, E. Degiuli and C. Tarantola (Univ. Pavia), F. Leisen (Department of Statistics at University of Kent) I. Crimaldi (Lucca), M. Guindani (Department of Statistics, University of California, Irvine), E. Airolidi (Department of Statistics, Harvard).
- ***Non-parametric Bayesian statistics for econometric models (Vector Autoregressive models, combination, calibration, aggregation and MCMC simulations).*** Active collaborations: R. Casarin (Dipartimento di Economia, Univ. Ca' Foscari, Venezia), M. Jacopini (Scuola Normale Pisa), M. Del Negro (Research and Statistics Group, Federal Reserve Bank of New York, USA). Past collaborations: F. Ravazzolo (Dipartimento di Economia, Univ. Bolzano).
- ***Algorithmic problems and statistical application of Wasserstein distances.*** Active collaborations: S. Gualandi, M. Veneroni and G. Auricchio (Dipartimento di Matematica, Università degli Studi di Pavia). Past collaborations: E. Regazzini (Univ. Pavia).

Metrics (20/05/2021)

SCOPUS :

Citations: 312 total citations by 231 documents; h-index: 11, Documents: 41; Co-authors 51.

Grants

- PRIN 2015. 2015SNS29B-002. *Modern Bayesian nonparametric methods*. Local coordinator, 15/02/2017-15/02/2018 (PI: I. Pruenster).
- INDAM. Gnampa 2017. *Metodi Bayesiani per l'analisi statistica di successioni scambiabili e parzialmente scambiabili, con applicazioni al campionamento di specie*. (PI: E. Dolera).
- INDAM. Gnampa 2016. *Successioni parzialmente scambiabili in statistica bayesiana* (PI: F.Bassetti).
- INDAM. Gnampa 2014. *Alcuni problemi di inferenza statistica per successioni parzialmente scambiabili* (PI: F.Bassetti).
- INDAM. Gnampa 2012. *Studio probabilistico di alcune equazioni cinetiche* (PI: F.Bassetti).
- PRIN 2008. 2008MK3AFZ. *Nuovi Sviluppi nell'Applicazione di Metodi Statistici Bayesiani* (PI: E.Regazzini).
- PRIN 2006. 2006134525. *Il punto di vista di de Finetti sul paradigma di Bayes-Laplace: nuovi sviluppi metodologici e applicazioni* (PI: E.Regazzini).

Organization

- September 2-6, 2019. Model-Guided Data Science Lake Como School of Advanced Studies - Como, Italy. (Organizing committee).
- June 13-24, 2016. Quantitative Laws II. From physiology to ecology, from interaction structures to collective behavior. Lake Como School, Como, Italy. (Organizing committee).
- June 10-11, 2016. Advances in Statistics, Probability and Mathematical Physics. A conference in honour of Eugenio Regazzini at the University of Pavia. (Organizing committee).
- 27th June - 5th July, 2013. Quantitative Laws of Genome Evolution. Lake Como School of Advanced Studies. (Organizing committee).

Conferences - workshops

December 13-15, 2019. CMStatistics 2019 (ERCIM 2019), Londra, UK (invited talk).

June 17-20, 2019. Second Italian Meeting on Probability and Mathematical Statistics, Vietri sul Mare (SA), Italy (contributed talk).

July 3-5, 2017. Statistics4atFlorence, Firenze, Italy (invited talk).

June 19-22, 2017. First Italian Meeting on Probability and Mathematical Statistics. Torino, Italy (invited talk).

December 09-11, 2016. Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2016) Higher Technical School of Engineering, University of Seville, Seville, Spain (invited talk).

December 12-15, 2015. 8th International Conference of the ERCIM WG on Computational and Methodological Statistics (CMStatistics 2015), Senate House University of London, UK (invited talk).

June 24-26, 2015. 3rd Meeting on Statistics. Athens University History Museum, Greece (invited talk).

September 12-17, 2011. XIX Congresso dell'UMI- Bologna, Italy (short communication).

July 11-15, 2011. Probabilistic Methods in Kinetic Theory, Many-body effective equations. CIRM, Luminy, France (invited talk).

June 5-17, 2011. YIRCoBL 2011. Yeditepe International Research Conference on Bayesian Learning, Istanbul, Turkey (invited talk).

February 19-11, 2011. Boltzmann equation: mathematics, modeling and simulations. In memory of Carlo Cercignani. Paris, France.

July 14-19, 2008. 7th World Congress in Probability and Statistics, Singapore (communication).

May 15-18, 2008. Kinetic equations: direct and inverse problems. Mantova, Italy (invited talk).

January 9-11, 2008. 3rd IMS-ISBA joint meeting: MCMski, Markov chain Monte Carlo in Theory and Practice. Bormio, Italy (poster).

September 24-29, 2007. XVIII Congresso dell'UMI- Bari, Italy (short communication).

September 3-7, 2007. Complex Stochastic Systems: Discrete vs. Continuous. W1 Stochastic processes and algorithms. Hausdorff Research Institute for Mathematics, Bonn, Germany (invited talk).

July 29 - August 2, 2007. Joint Statistical Meeting JMS2007. Salt lake city. USA.

May 15-17, 2006. Workshop on Probabilistic Symmetries and Their Applications. Fields Institute - University of Ottawa, Canada (communication).

April 25-29, 2005. "Analytical methods in number theory, probability and mathematical statistics". St. Petersburg Department of Steklov Institute of Mathematics and Euler International Mathematical Institute, Russia.

January 12-14, 2005. 2nd IMS-ISBA joint meeting: MCMski, Bormio, Italy.

June 13-16, 2004. IV Workshop Bayesian Nonparametric, Università di Roma "La Sapienza", Italy.

June 9-1, 2004. Convegno Società Statistica Italiana. XLII riunione scientifica, Bari, Italy (short communication).

September 8-13, 2003. XVII Congresso dell'Unione Matematica Italiana, Milano, Italy (short communication).

Referee

Journal of the Royal Statistical Society, Journal of Multivariate Analysis, Statistics and Computing, Kinetic and Related Modles, Metron, Internet Mathematics, Journal of Stat. Plan. and Inf., Journal of Inequalities, Journal of the Italian Statistical Society, PLOS one, Entropy, Electronic Journal of Statistics, Statistics and probability letters, Annals of Statistics, JASA, Bayesian Analysis, Journal of Statistical Physics.

Seminars

Univestità Bocconi Milano, Politecnico di Milano, Univesità degli Studi di Padova, Università Milano-Bicocca, Università Roma La Sapienza, Università degli Studi di Tornio, Università Insubria, Università Ca Foscari Venezia. Zentrum Mathematik Technische Universität München, Technische Universität Wien, Universidad de Navarra, Department of Mathematics Darmstat University.

Teaching

Phd Courses.

- 2018-2019** Probability metrics: from diffusion equations to computational issues. (with M. Muratori, Polimi). Corso dottorato per dottorato "Modelli e Metodi Matematici per l'ingegneria", Politecnico di Milano.
- 2015-2016** "Bayesian inference: foundational, modelling and computational aspects", (with A. Lijoi) inter-dottorato: università Milano Bicocca, Milano Univ. Statale, Politecnico di Milano, Univ. di Pavia.
- 2013-2014.** "Random Graphs and Complex Networks", (with F. Caravenna), inter-dottorato Milano Bicocca, Milano Univ. Statale, Politecnico di Milano, Univ. Pavia.

Undergraduate and Master programs (Laurea magistrale e triennale).

The titles of the courses are in Italian (if the course is in Italian). If not differently specified I have been the main teacher ("titolare") of the course.

- 2019-2020** *Probabilità e Statistica Matematica*, Ingegneria Gestionale, Politecnico di Milano 5 CFU (oneroso). *Fondamenti di Statistica e Segnali Biomedici*, Ingegneria Biomedica, Politecnico di Milano. 5 CFU (oneroso). *Bayesian Learning and Montecarlo simulation*, Ingegneria Elettrica, Politecnico di Milano. 5 CFU (in english).
- 2018-2019** *Probabilità e Statistica Matematica*, Ingegneria Gestionale, Politecnico di Milano. 5 CFU (oneroso). *Applied Statistics*, Ingegneria Elettrica, Politecnico di Milano. 5 CFU (in english).
- 2017-2018** *Applied Statistics*, Ingegneria Elettrica, Politecnico di Milano. 5 CFU. *Stochastic Processes* (in english), Economia (master, in english, 6 CFU), Università degli Studi di Pavia. *Elementi di Probabilità*, Matematica (laurea triennale, 9 CFU) Università degli Studi di Pavia.

- 2016-2017** *Elementi di Probabilità*, Matematica (laurea triennale, 9 CFU), Università degli Studi di Pavia. *Matematica con elementi di Statistica*, Chimica e Tecnologie Farmaceutiche (laurea triennale, 6 CFU), Università degli Studi di Pavia.
- 2015-2016** *Elementi di Statistica Matematica* Matematica (laurea triennale, 6 CFU), Università degli Studi di Pavia. *Matematica con elementi di Statistica*, Chimica e Tecnologie Farmaceutiche (laurea triennale, 6 CFU), Università degli Studi di Pavia.
- 2014-2015** *Elementi di Statistica Matematica*, Matematica (laurea triennale, 6 CFU), Università degli Studi di Pavia.
- 2013-2014** *Elementi di Statistica Matematica*, Matematica (laurea triennale, 6 CFU), Università degli Studi di Pavia. *Probabilità e Statistica* (Esercitazioni/ Teaching assistant, 3 CFU), Matematica, Università degli Studi di Pavia.
- 2012-2013** *Elementi di Statistica Matematica*, Matematica (laurea triennale 6 CFU), Università degli Studi di Pavia. *Probabilità e Statistica* (Esercitazioni/ Teaching assistant 3 CFU), Matematica, Università degli Studi di Pavia.
- 2011-2012** *Statistica Matematica*, Matematica (laurea specialistica, 6 CFU), Università degli Studi di Pavia. *Probabilità e Statistica*, (Esercitazioni/ Teaching assistant 3 CFU) Matematica, Università degli Studi di Pavia.
- 2010-2011** *Probabilità e Statistica*, (Esercitazioni/ Teaching assistant 3 CFU) Matematica, Università degli Studi di Pavia.
- 2009-2010** *Statistica Matematica*, Matematica (laurea specialistica), Università degli Studi di Pavia.
- 2008-2009** *Matematica e Statistica applicate alle Scienze Naturali*, (6 CFU) Scienze Naturali, Università degli Studi di Pavia. *Statistica Matematica*, Matematica (laurea specialistica, 6CFU), Università degli Studi di Pavia.
- 2007-2008** *Matematica e Statistica applicate alle Scienze Naturali*, (6 CFU) Scienze Naturali, Università degli Studi di Pavia. *Statistica Bayesiana*, Matematica (laurea specialistica 6 CFU), Università degli Studi di Pavia.
- 2006-2007** *Statistica Matematica*, Matematica (laurea specialistica 6 CFU), Università degli Studi di Pavia. *Probabilità e Statistica*, Matematica (seminari didattici 3 CFU), Università degli Studi di Pavia.
- 2004-2005** *Probabilità*, Matematica (seminari didattici/ Teaching assistant 3 CFU), Università degli Studi di Pavia.
- 2002-2003** *Probabilità*, Matematica (seminari didattici/ Teaching assistant 3 CFU), Università degli Studi di Pavia.
- 2001-2002** *Probabilità elementare e Statistica*, Matematica (seminari didattici/ Teaching assistant 3 CFU), Università degli Studi di Pavia. *Matematica e Statistica*, Scienze Naturali (seminari didattici/ Teaching assistant 3 CFU), Università degli Studi di Pavia.

Mentoring: PhD theses

- E. Nicolino (ciclo XXIX, Dottorato in Matematica e Statistica dell'Università degli Studi di Pavia).

Mentoring: undergraduate and master theses (Tesi di Laurea)

- 3 master theses in Mathematical Engineering as advisor (Politecnico Milano),
- 7 undergraduate theses in Mathematics as advisor (Univ. Pavia),
- 13 master theses in Mathematics as advisor (Univ. Pavia),
- 1 master thesis in Physics as co-advisor (Univ. Pavia),
- 2 master theses in Mathematics as co-advisor (Univ. Pavia).

Institutional duties

- From 2007-2008 to 2019 I've been member of the faculty staff ("collegio docenti") of the PhD program in Mathematics and Statistics of the University of Pavia.
- From 2015-16 to 2019 I've been member of the faculty staff ("collegio docenti") of the joint PhD program in Mathematics of Bicocca Milano University and Pavia University.
- Member of the "Progetto Nazionali Lauree Scientifiche" for the years 2006-2007, 2007-2008 and 2008-2009.

Publications

Paper on referred Journals

1. F. Bassetti, S. Gualandi, M. Veneroni (2020). On the Computation of Kantorovich-Wasserstein Distances between 2D-Histograms by Uncapacitated Minimum Cost Flows. *SIAM Journal on Optimization*. 30, No. 3, pp. 2441-2469.
2. F. Bassetti, R. Casarin, L. Rossini (2020). Hierarchical Species Sampling Models. *Bayesian Analysis* Volume 15, Number 3 (2020), 809-838.
3. Bassetti, F., Ladelli, L., (2020). Asymptotic number of clusters for species sampling sequences with non-diffuse base measure, *Statistics & Probability Letters*, 162, 1-20.
4. Auricchio, G, Gualandi, S, Veneroni, M, Bassetti, F. (2018). Computing Kantorovich-Wasserstein Distances on d-dimensional histograms using $(d + 1)$ -partite graphs *Advances in Neural Information Processing Systems* Volume 2018 December, 5793-5803.
5. F. Bassetti, E. Degiuli, E. Nicolino, C. Tarantola (2018). Multivariate Dependence Analysis via Tree Copula Models: An application to one-year forward energy contracts. *European Journal of Operational Research* 269, 1107-1121.
6. F. Bassetti, R. Casarin, F. Ravazzolo (2018). Bayesian Nonparametric Calibration and Combination of Predictive Distributions. *Journal of the American Statistical Association* Volume 113, 522.
7. F. Bassetti, I. Epifani, L. Ladelli (2017). A Cox Markov model for estimating single cell growth. *Electronic Journal of Statistics*, 11, 2931-297 .
8. Q. Zhang, F. Bassetti, M. Gherardi, M. Cosentino Lagomarsino (2017). Cell-to-cell variability and robustness in S-phase duration from genome replication kinetics. *Nucleic Acids Research*. gkx556 doi.org/10.1093/nar/gkx556
9. M. Gherardi, F. Bassetti, M. Cosentino Lagomarsino (2016). Law of corresponding states for open collaborations. *Physical Review E* **93** (4), 042307.
10. F. Bassetti, L. Ladelli, D. Matthes (2015). Infinite energy solutions to inelastic homogeneous Boltzmann equation. *Electron. J. Probab.* **20**, (89) 1-34.
11. F. Bassetti, G. Toscani (2015). Mean field dynamics of collisional processes with duplication, loss and copy. *Math. Mod. Meth. Appl. Scie.* **25** (10) 1887-1925.
12. Airoidi E., Costa T., Leisen F., Bassetti F. and Guindani M. (2014). Generalized Species Sampling Priors with Latent Beta reinforcements. *Journal of the American Statistical Association* **109** 508 1466-1480.
13. J. Grilli, M. Romano, F. Bassetti and M. Cosentino Lagomarsino (2014). Cross-species gene-family fluctuations reveal the dynamics of horizontal transfers. *Nucleic Acids Research* **42** (11) 6850-60. Doi: 10.1093/nar/gku378
14. F. Bassetti, R. Casarin, F. Leisen (2014). Beta-Product Dependent Pitman-Yor Processes for Bayesian Inference. *Journal of Econometrics* **180** 49-72.

15. F. Bassetti, G. Toscani (2014). Explicit equilibria in bilinear kinetic models. *Esaim: Proceedings and Surveys* **47** 1-16
16. F. Bassetti, D. Matthes (2014). Multi-dimensional smoothing transformations: Existence, regularity and stability of fixed points. *Stochastic Processes and their Applications* **124** 154-198.
17. F. Bassetti, L. Ladelli (2013). Large Deviations for the solution of a Kac-type kinetic equation. *Kinetic and Related Models* **6** 245 - 268.
18. F. Bassetti, E. Perversi (2013). Speed of convergence to equilibrium in Wasserstein metrics for Kac-like kinetic equations. *Electron. J. Probab.* **18** 1-35.
19. F. Bassetti, L. Ladelli (2012). Self similar solutions in one-dimensional kinetic models: a probabilistic view. *Ann. App. Prob.* **22**.
20. F. Bassetti, L. Ladelli, G. Toscani (2011). Kinetic models with randomly perturbed binary collisions. *Journal of Statistical Physics* **142** 686-709.
21. F. Bassetti, E. Gabetta (2011). Survey on probabilistic methods for the study of Kac-like equations. *Bollettino U.M.I.* (9) IV, 187-212
22. F. Bassetti, L. Ladelli, D. Matthes (2011). Central limit theorem for a class of one-dimensional kinetic equations. *Probability Theory and Related Fields*. **150** 77-109.
23. Bonomi A, Bassetti F, Gabrieli P, Beadell J, Falchetto M, Scolari F, Gomulski LM, Regazzini E, Ouma JO, Caccone A, Okedi LM, Attardo GM, Guglielmino CR, Aksoy S, Malacrida AR (2011). Polyandry is a common event in wild populations of the tsetse fly *Glossina fuscipes fuscipes* and may impact population reduction measures. *PLoS Neglected Tropical Diseases* 5: e1190.
24. F. Bassetti (2011). Quantitative comparisons between finitary posterior distributions and Bayesian posterior distributions. *Journal of Statistical Planning and Inference* **141** 787-799.
25. F. Bassetti, G. Toscani (2010). Explicit equilibria in a kinetic model of gambling. *Phys. Rev. E* **81** 066115
26. F. Bassetti, F. Leisen (2010). Maximal flow in branching trees and binary search trees. *Methodology & Computing in Applied Probability* **13** 475-486.
27. F. Bassetti, I. Crimaldi, F. Leisen (2010). Conditionally identically distributed species sampling sequences. *Advances in Applied Probability* **42** 433-459.
28. F. Bassetti (2009). On the distribution of certain functionals of two distinguished random probabilities. *Rendiconti dell'Istituto Lombardo* **142**.
29. F. Bassetti, L. Ladelli, E. Regazzini (2008). Probabilistic study of the speed of approach to equilibrium for an inelastic Kac model. *Journal of Statistical Physics* **133** 683-710.
30. F. Bassetti, E. Regazzini (2008). The unsung de Finetti's first paper about exchangeability. *Rendiconti di Matematica Istituto Nazionale di Alta Matematica F. Severi* **28** 1-17

31. F. Bassetti, P.G. Bissiri (2008). Random partition model and finitary Bayesian statistical inference. *Sankhya* **70** 88-108.
32. F. Bassetti, M. Cosentino Lagomarsino, S. Mandrà (2007). Exchangeable Random Networks. *Internet Mathematics* **4** 357-400.
33. F. Bassetti, P.G. Bissiri (2007). Finitary Bayesian statistical inference through partitions tree distributions. *Sankhya* **69** 808-841.
34. F. Barbaini, F. Bassetti, E. Regazzini, A. Torre (2007). Giochi di sorte e giochi contro avversari intelligenti: probabilità ed interazione strategica. *L'insegnamento della matematica e delle scienze integrate* Vol 30 A-B n.4 441-486
35. F. Bassetti, E. Gabetta, E. Regazzini (2007). On the depth of the trees in the McKean representation of Wild's sums. *Transport Theory and Statistical Physics* **36** 421 - 438.
36. F. Bassetti, M. Cosentino Lagomarsino, B. Bassetti, P. Jona (2007). Random Networks Tossing Biased Coins. *Phys. Rev. E* **75**.
37. F. Bassetti, A. Bodini, E. Regazzini (2007). Consistency of minimum divergence estimators based on grouped data. *Statistics & Probability Letters* **77** 937-941.
38. F. Bassetti, A. Bodini, E. Regazzini (2006). On minimum Kantorovich distance estimators. *Statistics & Probability Letters* **76** 1298-1302.
39. F. Bassetti, P. Diaconis (2006). Examples comparing Importance Sampling and the Metropolis algorithm. *Illinois Journal of Mathematics* **50** 67-91.
40. F. Bassetti, E. Regazzini (2005). Asymptotic properties and robustness of minimum dissimilarity of location-scale parameters. *Teor. Veroyatn. Primen.* **50** 312-330; translation in *Theory Probab. Appl.* **50** (2006), 171-186.
41. F. Bassetti, E. Regazzini (2005). Asymptotic distribution and robustness of minimum total variation distance estimators. *Metron*, vol LXIII, 55-80.
42. F. Bassetti (2003). Variable Time-Step Discretization of Degenerate Evolution Equations in Banach Spaces. *Numerical Functional Analysis and Optimization* **24** 391-426.

Book Chapters and Lecture Notes

1. F. Bassetti, R. Casarin, F. Ravazzolo (2020). Density Forecasting. In "Macroeconomic Forecasting in the Era of Big Data", (Fuleky P., Ed.) *Advanced Studies in Theoretical and Applied Econometrics*, Springer. 465-494.
2. Auricchio, G., Bassetti, F., Gualandi, S., Veneroni, M. (2019). Computing Wasserstein Barycenters via Linear Programming. *Lecture Notes in Computer Science* (Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) 11494 LNCS, 355-363.
3. F. Bassetti, F. Leisen, E. Airolidi, M. Guindani (2015). Species sampling priors for modeling dependence: An application to the detection of chromosomal aberrations (Book Chapter). *Nonparametric Bayesian Inference in Biostatistics* pp. 97-114. Mitra, R., Muller, P. (Eds.), Springer.