# Giovanni Rebaudo

**CONTACT INFORMATION**

**Office at University of Turin:** Room 3.23, Corso Unione Sovietica 218/bis, 10134 Turin, Italy
**Office at Collegio Carlo Alberto:** Room 216, Piazza Arbarello 8, 10122, Turin, Italy
**Email:** giovanni.rebaudo@unito.it
**Website:** https://giovannirebaudo.github.io

**CURRENT POSITIONS**

**University of Turin**, Turin, Italy

**Assistant Professor** of Statistics (RTDA STAT-01)                     **3/2023–Present**

Department of Economics, Social Studies, Applied Mathematics and Statistics (ESOMAS)

**Collegio Carlo Alberto**, Turin, Italy

**Carlo Alberto Affiliate**                                             **4/2025–Present**

**Research Affiliate**, "de Castro" Statistics Initiative                 **3/2023–Present**

**Bocconi Institute for Data Science and Analytics (BIDSA)**, Milan, Italy

**Research Affiliate**, Bayesian Learning Laboratory (Bayes Lab)          **6/2020–Present**

**PAST POSITIONS**

**University of Texas at Austin**, Texas, USA

**Postdoctoral Research Fellow**, Department of Statistics and Data Sciences          **10/2020–2/2023**

Mentors: Peter Müller and Abhra Sarkar

**EDUCATION**

**Bocconi University**, Milan, Italy

Ph.D. in Statistics, awarded with honors          **9/2016–9/2020 (Thesis Defense 2/2021)**

- Thesis title: *Bayesian Inference for Complex Data Structures: Theoretical and Computational Advances*
- Advisors: Antonio Lijoi and Igor Prünster

**University of Trieste**, Trieste, Italy

M.Sc. in Statistical and Actuarial Sciences. Final mark: 110/110 with honors          **9/2014–7/2016**

- Thesis title: *Bayesian Hierarchical Model: Theory and Application*
- Advisors: Francesco Pauli and Nicola Torelli

**University of Milan-Bicocca**, Milan, Italy

B.Sc. in Statistical and Economic Sciences. Final mark: 110/110 with honors          **9/2011–7/2014**

- Thesis title: *A New Technique for Estimation of Logarithmic Time Series Models: Forecast Comparison Based on Economic Data*
- Advisor: Matteo Maria Pelagatti

**RESEARCH INTERESTS**

Bayesian Methods and Computation, Cluster Analysis, Bayesian Nonparametrics, Dimensionality Reduction, Time Series Analysis, Econometrics, Predictive Inference, Categorical Regression, Auditory Neuroscience.

**PUBLICATIONS**

**Papers in Peer-Reviewed Journals**

1. Rebaudo, G. and Müller, P. (2025). **Graph-aligned random partition model (GARP).** *Journal of the American Statistical Association (Theory & Methods)*, 120, 486–497. DOI: 10.1080/01621459.2024.2353943.

2. Roark, C. L., Paulon, G., Rebaudo, G., McHaney, J. R., Sarkar, A., and Chandrasekaran, B. (2024). **Individual differences in working memory impact the trajectory of non-native speech category learning.** *PLoS ONE*, 19: e0297917, 1–26. DOI: 10.1371/journal.pone.0297917.

3. Franzolini, B. and Rebaudo, G. (2024). **Entropy regularization in probabilistic clustering.** *Statistical Methods & Applications*, 33, 37–60. DOI: 10.1007/s10260-023-00716-y.

4. Ascolani, F., Lijoi, A., Rebaudo, G., and Zanella, G. (2023). **Clustering consistency with Dirichlet process mixtures.** *Biometrika*, 110, 551–558. DOI: 10.1093/biomet/asac051.

5. Lijoi, A., Prünster, I., and Rebaudo, G. (2023). **Flexible clustering via hidden hierarchical Dirichlet priors.** *Scandinavian Journal of Statistics*, 50, 213–234. DOI: 10.1111/sjos.12578.

6. Fasano, A., Rebaudo, G., Durante, D., and Petrone, S. (2021). **A closed-form filter for binary time series**. *Statistics and Computing*, 31:47, 1–20. DOI: 10.1007/s11222-021-10022-w.

## Papers under Review

7. Anceschi, N., Fasano, A., Franzolini, B., and Rebaudo, G. **Scalable expectation propagation for generalized linear regressions.** *arXiv: 2407.02128.*

8. Fasano, A., Lijoi, A., Prünster, I., and Rebaudo, G. **Probabilistic discovery of new species and homogeneous subpopulations.**

9. Fasano, A. and Rebaudo, G. **Mean-field variational Bayes for sparse probit regression.**

10. Franzolini, B., Lijoi A., Prünster, I., and Rebaudo, G. **Multivariate species sampling models.** *arXiv: 2503.24004.*

11. Rebaudo, G., Lin, Q., and Müller, P. **Separate exchangeability as modeling principle in Bayesian nonparametrics.** *arXiv: 2112.07755.*

12. Rebaudo, G., Llanos, F., Chandrasekaran, B., and Sarkar, A. **Bayesian mixed multidimensional scaling for auditory processing.** *arXiv: 2209.00102.*

## Discussions

13. Franzolini, B. and Rebaudo, G. (2025). **Invited discussion on: "A tree perspective on stick-breaking models in covariate-dependent mixtures", by Horiguchi, A., Chan, C., and Ma, L.** *Bayesian Analysis*, 20, 1182–1187. DOI: 10.1214/24-BA1462.

14. Catalano, M., Fasano, A., Giordano, M., and Rebaudo, G. (2025). **A discussion on: "Data fission: splitting a single data point" by Leiner, J., Duan, B., Wasserman, L., and Ramdas, A.** *Journal of the American Statistical Association*, 120, 158–158. DOI: 10.1080/01621459.2024.2412183.

15. Catalano, M., Franzolini, B., Giordano, M., and Rebaudo, G. (2025). **A discussion on: "Sparse Bayesian factor analysis when the number of factors is unknown" by Frühwirth-Schnatter, S., Hosszejni, D., and Lopes, H. F.** *Bayesian Analysis*, 20, 313–315. DOI: 10.1214/24-BA1423.

16. Catalano, M., Fasano, A., Giordano, M., and Rebaudo, G. (2024). **A discussion on: "Root and community inference on the latent growth process of a network" by Crane, H., and Xu, M.** *Journal of the Royal Statistical Society: Series B*, 86, 874–875. DOI: 10.1093/jrsssb/qkae051.

17. Catalano, M., Fasano, A., and Rebaudo, G. (2023). **A discussion on: "Martingale posterior distributions" by Fong, E., Holmes, C., and Walker, S.** *Journal of the Royal Statistical Society: Series B*, 85, 1406–1407. DOI: 10.1093/jrsssb/qkad095.

18. Rebaudo, G., Fasano, A., Franzolini, B., and Müller, P. (2023). **A discussion on: "Evaluating sensitivity to the stick-breaking prior in Bayesian nonparametrics" by Giordano, R., Liu, R., Jordan, M. I., and Broderick, T.** *Bayesian Analysis*, 18, 345–347. DOI: 10.1214/22-BA1309.

## Conference Proceedings and Book Chapters (Peer-Reviewed)

19. Fasano, A., Rebaudo, G., Rimella, L. (2025). **Empirical Bayes for the ridge penalty in probit models.** *Book of Short Papers - SIS 2025*, 3, 200–205. DOI: 10.1007/978-3-031-95995-0.

20. Anceschi, N., Fasano, A., and Rebaudo, G. (2023). **Expectation propagation for the smoothing distribution in dynamic probit.** *Bayesian Statistics, New Generations New Approaches (BaYSM2022), Springer Proceedings in Mathematics and Statistics*, 435, 105–115. DOI: 10.1007/978-3-031-42413-7_10.

21. Fasano, A., Anceschi, N., Franzolini, B., and Rebaudo, G. (2023). **Efficient computation of predictive probabilities in probit models via expectation propagation.** *Book of Short Papers - CLADAG 2023*, 449–452. ISBN 9788891935632.

22. Franzolini, B., Bondi, L., Fasano, A., and Rebaudo, G. (2023). **Bayesian forecasting of multivariate longitudinal zero-inflated counts: an application to civil conflict.** *Book of Short Papers - CLADAG 2023*, 465–468. ISBN 9788891935632.

23. Fasano, A., Anceschi, N., Franzolini, B., and Rebaudo, G. (2023). **Efficient expectation propagation for posterior approximation in high-dimensional probit models.** *Book of Short Papers - SIS 2023*, 1133–1138. ISBN 9788891935618.

24. Fasano, A., Rebaudo, G., and Anceschi, N. (2022). **Bayesian inference for the multinomial probit model under Gaussian prior distribution.** *Book of Short Papers - SIS 2022*, 871–876. ISBN 9788891932310.

25. Franzolini, B. and Rebaudo, G. (2022). **A regularized-entropy estimator to enhance cluster interpretability in Bayesian nonparametric.** *Book of Short Papers - SIS 2022*, 387–398. ISBN 9788891932310.

26. Fasano, A. and Rebaudo, G. (2021). **Variational inference for the smoothing distribution in dynamic probit models.** *Book of Short Papers - SIS 2021*, 1076–1081. ISBN 9788891927361.

**Academic Awards**

[2025]   ESOMAS department research award 2024, University of Turin.
[2025]   ESOMAS department teaching award 2024, University of Turin.
[2024]   Blackwell–Rosenbluth award 2024, International Society for Bayesian Analysis [ISBA and J-ISBA].
[2024]   National scientific qualification (ASN) for associate professor in Statistics (13/D1).
[2023]   Assistant Professor research prize (Premialità RTD), University of Turin.
[2020]   Special financial support, Bocconi University.
[2020]   Research fellowship, Bocconi University.
[2016–20] Merit-based Ph.D. fellowship, Bocconi University.

**Data Competitions**

[2018]   **Predictive challenge:** best objective prediction. **Stat Under the Stars 4**.
[2017]   **Predictive challenge:** first position. YoungCLADAG data contest.

**Travel Awards**

[2025]   Travel award, BNP world meeting (500$).
[2024]   Travel award, BNP networking workshop (200$).
[2024]   Travel award, ISBA world meeting (300$).
[2023]   Travel award, IISA conference (750$).
[2022]   Travel award, BNP world meeting (1000$).
[2022]   Travel award, ISBA world meeting (300$).
[2019]   Travel award, O'Bayes conference (400£).

**Referee** (alphabetical order)

• Annals of Applied Statistics • Annals of Statistics • Bayesian Analysis • Bayesian Young Statisticians Meeting • Biometrika • Computational Statistics and Data Analysis • Electronic Journal of Statistics • Italian Statistical Society Meeting • Journal of Business & Economic Statistics • Journal of Classification • Journal of Machine Learning Research • Journal of the American Statistical Association (Theory & Methods) • Operations Research • Scandinavian Journal of Statistics • Statistical Methods & Applications • Statistical Science • Stochastic Processes and their Applications.

**Editor**

• *New Trends in Probability and Mathematical Statistics: Proceedings of the 24th European Young Statisticians Meeting* - Springer Proceedings in Mathematics & Statistics (forthcoming).

**Evaluator/Committee Member for Paper Competitions and Academic Awards**

• Blackwell-Rosenbluth award, International Society for Bayesian Analysis [ISBA and J-ISBA] (2025).
• Student Paper Competition for Section on Bayesian Statistical Science (SBSS) of the American Statistical Association [ASA] (2026, 2024, 2023).

**External Ph.D. Thesis Evaluator**

• Ph.D. in Economics, Statistics and Data Science at the University of Milan-Bicocca.
• Ph.D. in Mathematics, Computer Science, and Statistics at the University of Florence.

**Organization of Scientific Events**

• **(Local and Scientific) Organizer** of European Young Statisticians Meeting (EYSM 2025) of the Bernoulli Society, Collegio Carlo Alberto, Turin, Italy.

**Session Organizer**

• 2026 ISBA World Meeting. Nagoya, Japan.
• Fifth Italian Meeting on Probability and Mathematical Statistics. Palermo, Italy.

**Public Engagement (Terza Missione)**

• European Researchers' Night. Turin, Italy (2025, 2024).
• European Researchers' Night. Milan, Italy (2019).

**Students and Postdocs Supervised at the University of Turin**

**Postdocs (with first placement)**

Lorenzo Rimella (4/2024–7/2025) – Assistant Professor (RTT) at the University of Bergamo.

**Current Ph.D. Students**

Francesco Furlan (10/2025–Present, co-supervised with M. Ruggiero).

**M.Sc. Students (M.Sc. in Stochastics and Data Science)**

- Paolo Ciriacì (expected 2025, co-supervised with A. Fasano).
  Thesis topic: *Hierarchical Bayesian Nonparametric Priors.*
- Federica Mina (expected 2025, co-supervised with A. Fasano).
  Thesis topic: *Assumed Density Filtering for Binary Time-Series.*
- Francesco Furlan (2025, co-supervised with M. Ruggiero).
  Thesis topic: *Gibbs Sampling Methods for Smoothing in Fleming–Viot Driven Hidden Markov Models.*
- Luca Griso (2025, co-supervised with M. Ruggiero).
  Thesis topic: *Dynamic Clustering in Fleming–Viot Driven Hidden Markov Models.*
- Nurdaulet Kengesbek (2025, co-supervised with A. Fasano).
  Thesis title: *Expectation-Maximization for Online Inference: A Study of Relevant Cases.*

**B.Sc. Students (B.Sc. in Economics and Data Science)**

- Edoardo Lanzetti (2025).
  Thesis title: *Multidimensional and Individual Differences Scaling: A Theoretical and Applied Perspective.*
- Paolo Ciriacì (2023).
  Thesis title: *Conformal Prediction: Theory and Application.*

**Mentoring at Collegio Carlo Alberto**

Mentor, Allievi Honors Program (2025–Present).

**Committees**

- Member of the ESOMAS Department Board (Giunta di Dipartimento) at the University of Turin (2024–2027).
- Committee member for M.Sc. thesis defenses at the University of Turin (2025–Present).
- Committee member for Allievi Honors Program thesis defenses at Collegio Carlo Alberto (2024–Present).
- Committee member for the assignment of teaching positions at the University of Turin (2023–Present).
- Committee member for the assignment of postdoctoral positions at the University of Turin (2023–Present).

**Webmaster**

- "de Castro" Statistics Initiative within the Collegio Carlo Alberto website (2023–Present).

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RESEARCH NETWORKS & MEMBERSHIPS

**Member** of the (alphabetical order):
Bernoulli Society, Complex Data Modeling Research Network led by MiDaS, Institute of Mathematical Statistics [IMS], International Society for Bayesian Analysis [ISBA] (Sections: BNP-ISBA, J-ISBA), Istituto Nazionale di Alta Matematica [INDAM] (Group: GNAMPA), Italian Statistical Society [SIS] (Sections: SDS-SIS, SISBayes, y-SIS).

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GRANTS & FUNDING

**Principal Investigator of the ESOMAS Department research project** "Bayesian models for interpretable random structures." (Duration: 2023–25).

**Member of the PNRR Research Project of National Interest (PRIN-PNRR) group** "Measuring biodiversity via Bayesian nonparametrics: estimation, clustering and uncertainty quantification." (National Coordinator: Igor Prünster; Duration: 2023–25).

**Member of the Research Project of National Interest (PRIN) group** "Discrete random structures for Bayesian learning and prediction." (National Coordinator: Antonio Lijoi; Duration: 2023–25).

**Member of the NIH project research group** "Bayesian methods for optimizing combination antiretroviral therapy for mental health in people with HIV." (Principal Investigator: Yanxun Xu; Duration: 2022–27).

**Member of the NSF project research group** "Novel statistical frameworks for local inference in neuroscience of learning." (Principal Investigator: Abhra Sarkar; Duration: 2020–23).

**Member of the NSF project research group** "Collaborative research: Bayesian inference for interpretable random structures." (Principal Investigator: Peter Müller; Duration: 2020–23).

**Member of the Research Project of National Interest (PRIN) group** "Modern Bayesian nonparametric methods." (National Coordinator: Igor Prünster; Duration: 2017–20).

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| TEACHING EXPERIENCE | **Lecturer** at the **University of Turin**, Turin, Italy |

- Statistical Machine Learning - M.Sc. (AY 2025/26, 2024/25).
- Introduction to Data Science: Statistical Learning and Data Analytics - B.Sc. (AY 2025/26, 2024/25, 2023/24, 2022/23).
- Statistics - B.Sc. (AY 2023/24, 2022/23).

**Guest Lecturer** at the **University of Texas at Austin**, Texas, USA

- Monte Carlo Methods - Ph.D. (AY 2022/23).
- Mathematical Statistics I - Ph.D. (AY 2022/23).
- Introduction to Mathematical Statistics - B.Sc. (AY 2022/23).

**Teaching Assistant** at **Bocconi University**, Milan, Italy

- Machine Learning II - M.Sc. (AY 2020/21, 2019/20).
- Data Analysis - M.Sc. (AY 2019/20, 2018/19, 2017/18).

**Teaching Certificates**

- IRIDI START: Quality Teaching, Evaluation and Inclusion (University of Turin, 2024).
- Bocconi Excellence in Advanced Teaching by BUILT (**BEAT**) (2019).

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| SCHOOLS | [2018] **Graphical Models**. |

Bocco600ni Summer School in Advanced Statistics and Probability. Como, Italy.
Instructors: S. Lauritzen (University of Copenhagen) and R. Evans (University of Oxford).

[2017] **Statistical Causal Learning**.
Bocconi Summer School in Advanced Statistics and Probability. Como, Italy.
Instructors: B. Schölkopf (Max Planck Institute for Intelligent Systems, Tübingen), I. Tolstikhin (Google AI, Zürich) and D. Lopez-Paz (Facebook AI Research, Paris).

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| PRESENTATIONS | **Invited Presentations** |

[2026] Fifth Italian Meeting on Probability and Mathematical Statistics. Palermo, Italy.
[2025] ISBA Webinar, Invited Discussion on: A. Horiguchi, C. Chan, L. Ma (2025, with B. Franzolini).
[2025] BISP 14 [Bayesian Inference in Stochastic Processes]. Milan, Italy.
[2025] BAYSM 2025 [Bayesian Young Statisticians Meeting] (Winners of the Blackwell-Rosenbluth Award, online).
[2025] Int. Conf. on Recent Developments in the Techniques of Bayesian Paradigm. Varanasi, India.
[2024] Frontiers of Bayesian Inference and Data Science [BIRS–CMO Workshop]. Oaxaca, Mexico.
[2024] ISBA-BNP Networking workshop [International Society of Bayesian Analysis - BNP]. Singapore, SG.
[2024] Interpretable Inference via Principled BNP Approaches in Biomedical Research and Beyond. Singapore, SG.
[2024] ISNPS 2024 [International Symposia on Nonparametric Statistics]. Braga, Portugal.
[2023] EcoSta 2023 [International Conference on Econometrics and Statistics]. Tokyo, Japan.
[2023] Approximation Methods in Bayesian Analysis [CIRM Workshop]. Luminy, France.
[2022] IISA Conference 2022 [International Indian Statistical Association]. Bangalore, India.
[2022] ISBA 2022 [International Society of Bayesian Analysis]. Montreal, Canada.
[2021] CMStatistics–ERCIM 2021 [14th Int. Conf. ERCIM WG, Comput. and Methodol. Stat.]. London, UK (online).
[2021] Foundations of Objective Bayesian Methodology [BIRS–CMO Workshop]. Oaxaca, Mexico.
[2021] EcoSta 2021 [International Conference on Econometrics and Statistics]. Hong Kong (online).
[2021] BISP 12 [Bayesian Inference in Stochastic Processes]. Milan, Italy, with discussion (online).
[2020] CMStatistics–ERCIM 2020 [13th Int. Conf. ERCIM WG, Comput. and Methodol. Stat.]. London, UK (online).
[2019] IISA Conference 2019 [International Indian Statistical Association]. Mumbai, India.
[2019] Second Italian Meeting on Probability and Mathematical Statistics. Vietri sul Mare, Italy.

**Contributed Presentations**

[2025] BNP14 [International Conference on Bayesian Nonparametrics]. Los Angeles, USA.
[2022] BNP13 [International Conference on Bayesian Nonparametrics]. Puerto Varas, Chile.
[2022] ENAR Meeting [Eastern North American Region International Biometric Society]. Houston, USA (online).

**Poster Presentations**

[2024] ISBA 2024 [International Society of Bayesian Analysis]. Venice, Italy.
[2019] O'Bayes 2019 [Objective Bayes Methodology Conference]. Warwick, United Kingdom.
[2019] BNP12 [International Conference on Bayesian Nonparametrics]. Oxford, United Kingdom.

**Seminars**

[2024] Mathematics & Statistics Seminar Series. Dept. of Economics at the University of Bergamo, Italy.
[2021] SDS Seminar Series. Dept. of Statistics and Data Sciences, the University of Texas at Austin, USA (online).

SOFTWARE

**Statistical Software and Programming Languages:** R, Python, SAS, Stan, Mathematica.

**Public Software [GitHub Repositories]**

- `EPglm`: R code for expectation propagation in generalized linear models.
- `SEP-BNP`: R code for separately exchangeable Bayesian nonparametric models.
- `MSSP`: R code for multivariate species sampling processes.
- `GARP`: R code for graph-aligned random partition model.
- `EPprobit-SN`: R code for efficient expectation propagation for Bayesian probit models.
- `ERC`: R code for Entropy regularization in probabilistic clustering.
- `Dynamic-Probit-EP`: R code for expectation propagation for the smoothing distribution in dynamic probit.
- `Dynamic-Probit-PFMVB`: R code for variational inference for the smoothing distribution in dynamic probit.