# CURRICULUM VITAE

### ANDREA BIANCHI

### PERSONAL DATA

**Date and place of birth:** October 20th, 1992, Rome (Italy)
**Nationality:** Italian
**Current position:** Postdoc at the Max Planck Institute for Mathematics, Bonn
**Professional address:** Department of Mathematics, University of Bologna, Piazza di Porta San Donato 5, 40126 Bologna (Italy)
**Email:** andrea.bianchi37@unibo.it
**Website:** https://www.unibo.it/sitoweb/andrea.bianchi37/

### EMPLOYMENT

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|---|---|
| Dec.2025- | Tenure Track Researcher at the University of Bologna |
| Oct.2023-Nov.2025 | Postdoc at the Max Planck Institute for Mathematics, Bonn (Germany) |
| Oct.2020-Sep.2023 | Postdoc at the University of Copenhagen (Denmark) |
| Apr.2020-Sep.2020 | Postdoc at the University of Bonn |

### EDUCATION

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|---|---|
| 2020 | On April 28th, PhD in Mathematics at the University of Bonn with the thesis "Moduli spaces of branched coverings of the plane", supervisor Prof. Carl-Friedrich Bödigheimer, mark 0.0 summa cum laude. |
| 2016-2020 | PhD student at the University of Bonn under the supervision of Prof. Carl-Friedrich Bödigheimer. |
| 2016 | On July 16th, Master degree in Mathematics at the University of Pisa (Italy) with the thesis "Embeddings of Braid groups into Mapping class groups", supervisor Prof. Ulrike Tillmann, cosupervisors Prof. Mario Salvetti and Dr. Filippo Callegaro, mark 110/110 magna cum laude. |
| 2015-2016 | Visiting student at the University of Oxford (United Kingdom); preparation of the Master thesis under the supervision of Prof. Ulrike Tillmann. |
| 2014 | On February 3rd, Bachelor degree in Mathematics at the University of Pisa with the thesis "Algebras on hyperplane arrangements", supervisor Dr. Filippo Callegaro, mark 110/110 magna cum laude. |
| 2011-2016 | Undergraduate student of Mathematics at the University of Pisa and student of the Science Class at the Scuola Normale Superiore in Pisa. |

### PUBLICATIONS

(1) *On two quotients of $S^2 \times S^2$*. Journal of Homotopy and Related Structures 20:549-553, 2025.
(arXiv:2401.05953)

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*Date*: January 12, 2026.

(2) *Partially multiplicative quandles and simplicial Hurwitz spaces.* Documenta Mathematica 30(3): 611–672, 2025.
(arXiv:2106.09425)

(3) *Polynomial stability of the homology of Hurwitz spaces*, with Jeremy Miller. Mathematische Annalen 391:4117-4144, 2025.
(arXiv:2303.11194)

(4) *Deloopings of Hurwitz spaces.* Compositio Mathematica 160:1651-1714, 2024.
(arXiv:2107.13081)

(5) *Homology of configuration spaces of surfaces modulo an odd prime*, with Andreas Stavrou. Journal für die reine und angewandte Mathematik 2024(813): 197-258, 2024.
(arXiv:2307.08664)

(6) *Moduli spaces of Riemann surfaces as Hurwitz spaces.* Advances in Mathematics 430:109217, 2023.
(arXiv:2112.10864)

(7) *Hurwitz-Ran spaces.* Geometriae Dedicata 217:84, 2023.
(arXiv:2107.01167)

(8) *On Generators and Relations of the Rational Cohomology of Hilbert Schemes*, with Alexander Mangulad Christgau and Jonathan Sejr Pedersen. Journal of Algebraic Combinatorics 57:829-857, 2023.
(arXiv:2201.13353)

(9) *Vertical configuration spaces and their homology*, with Florian Kranhold. Quarterly Journal of Mathematics 73(4):1279-1306, 2022.
(arXiv:2103.12137)

(10) *Mapping class group actions on configuration spaces and the Johnson filtration*, with Jeremy Miller and Jennifer Wilson. Transactions of the American Mathematical Society 375(8):5461-5489, 2022.
(arXiv:2104.092537)

(11) *Parametrised moduli spaces of surfaces as infinite loop spaces*, with Florian Kranhold and Jens Reinhold. Forum of Mathematics Sigma 20:e39, 2022.
(arXiv:2105.05772 )

(12) *An upper bound on the topological complexity of discriminantal varieties.* Homology, Homotopy and Applications 24(1):161-176, 2022.
(arXiv:2010.09615)

(13) *Braid groups, mapping class groups and their homology with twisted coefficients.* Mathematical Proceedings of the Cambridge Philosophical Society 172(2):249-266, 2022.
(arXiv:1901.08028)

(14) *On the homology of the commutator subgroup of the pure braid group.* Proceedings of the American Mathematical Society 149(6):2387-2401, 2021.
(arXiv:1905.05099)

(15) *Splitting of the homology of the punctured mapping class group.* Journal of Topology 13(3):1230-1260, 2020.
(arXiv:1903.06065)

(16) *Topological complexity of unordered configuration spaces of surfaces*, with David Recio-Mitter. Algebraic & Geometric Topology 19:1359-1384, 2019.
(arXiv:1712.07068)

## ACCEPTED ARTICLES

(1) *Segal K-theory of vector spaces with an automorphism*, with Florian Kranhold, 2024.
To appear in International Mathematics Research Notices.
(arXiv:2407.01482)

## PREPRINTS

(1) *Universal property of graph cobordisms*, with Adela Yiyu Zhang, 2026.
(arXiv:2601.03766)
(2) *String topology and graph cobordisms*, 2025.
(arXiv:2511.14978)
(3) *Poincaré Duality Pairs of $\infty$-Categories*, with Kaif Hilman, Dominik Kirstein and Christian Kremer, 2025.
(arXiv:2510.20646)
(4) *Symmetric monoidal extensions and graph cobordisms between finite sets*, 2025.
(arXiv:2509.22575)
(5) *Non-trivial action of the Johnson filtration on the homology of configuration spaces*, with Andreas Stavrou, 2022.
(arXiv:2208.01608)

## ORGANISATION OF EVENTS

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| Oct.2023-Nov.2025 | Coorganiser of the WIQI Topology Seminar. MPIM, Bonn. |
| 18-22.7.2022 | Coorganiser of the "Young Topologists Meeting". University of Copenhagen. |
| 15-19.11.2021 | Coorganiser of the workshop "Homology and homotopy of configuration spaces". University of Copenhagen. |
| Jan.2021-Sep.2023 | Coorganiser of the weekly Algebra and Topology Seminar. University of Copenhagen. |

## REFEREE JOBS

Referee reports for the following journals

- Algebraic & Geometric Topology (1 article);
- Annals of Mathematics (1 article);
- Bulletin of the London Mathematical Society (2 articles);
- Geometriae Dedicata (1 article);
- Groups, Geometry and Dynamics (1 article);
- International Journal of Algebra and Computation (1 article);
- Journal of the London Mathematical Society (1 article);
- Journal of Topology (1 article);
- Mathematische Annalen (1 article);
- Proceedings of the Royal Society of Edinburgh, Section A: Mathematics (1 article);
- Ricerche di Matematica (1 article);
- Topological Methods in Nonlinear Analysis (1 article);
- Transactions of the American Mathematical Society (1 article).

Quick opinions for the following journals

- Algebraic & Geometric Topology (1 article);
- Journal of Topology (1 article);
- Transactions of the American Mathematical Society (1 article).

## Talks

3.11.2025 Algebra and Topology seminar. University of Copenhagen.

28.8.2025 Topology Seminar. Purdue University, West Lafayette (USA)

30.6.2025 Topology Seminar. University of Münster.

1.4.2025 Algebra and Geometry Seminar. University of Bologna (Italy).

11.6.2024 Topology Oberseminar. University of Bonn.

5.6.2024 Topology Seminar. University of Münster.

19.3.2024 Algebra days. Algebraic aspects of configuration spaces and moduli spaces. University of Caen (France).

20.2.2024 Topology Seminar. University of Stockholm (Sweden).

1.2.2024 Mini-Workshop "Artin Groups meet Triangulated Categories". Oberwolfach Research Institute for Mathematics (Germany).

9.1.2024 Geometry Seminar. Max Planck Institute for Mathematics in the Sciences, Leipzig (Germany).

30.11.2023 Mini-Workshop "Flavors of Rabinowitz Floer and Tate Homology". Oberwolfach Research Institute for Mathematics.

24.10.2023 Topology Seminar. Ludwig Maximilian University of Munich (Germany).

20.7.2023 Conference "Stability in Topology, Arithmetic, and Representation Theory", Purdue University, West Lafayette (USA, online).

8.6.2023 Masterclass "Homology of groups and functors", University of Lille (France).

24.5.2023 Topology Seminar. University of Tor Vergata, Rome.

17.5.2023 Workshop on homology of configuration spaces. Sorbonne University, Paris (France).

12.5.2023 Algebra and Topology Seminar. University of Copenhagen.

12.1.2023 Topology Seminar. University of Karlsruhe (Germany).

20.12.2022 Topology Seminar. University of Göttingen (Germany).

30.11.2022 Differential Geometry and Topology seminar, University of Cambridge.

31.10.2022 Topology Seminar. University of Minnesota, Minneapolis (USA, online).

10.10.2022 Workshop "Cobordisms, Strings, and Thom Spectra". Banff (Canada, online).

22.09.2022 Topology Seminar. Fudan University, Shanghai (China, online).

18.08.2022 Topology Seminar. University of Michigan, Ann Arbor (USA).

17.08.2022 Topology Seminar. Purdue University, West Lafayette.

11.03.2022 Algebra and Representation Theory Seminar. University of Tor Vergata, Rome

11.02.2022 Research programme "Higher algebraic structures in algebra, topology and geometry". Institute Mittag-Leffler, Djursholm (Sweden)

30.11.2021 "Moduli and Friends" Seminar. Mathematical Institute of the Romanian Academy, Bucharest (Romania, online)

11.11.2021 Algebraic Topology Seminar. IMUNAM, Mexico City (Mexico, online)

8.11.2021 Geometry and Topology Seminar. University of Glasgow (United Kingdom, online)

18.05.2021 Topology Seminar. University of Warwick (United Kingdom, online)

04.05.2021 Topology Seminar. University of Bonn (online)

20.04.2021 Topology Seminar. Northeastern University, Boston (USA, online)

17.12.2020 AATRN Topological Complexity Seminar (online)

9.9.2020 Topology Seminar. Purdue University, West Lafayette (online).

25.5.2020 Topology Seminar. University of Münster (online).

27.1.2020 Algebra and Topology Seminar, University of Copenhagen.

26.7.2019 Young Topologists Meeting. EPFL, Lausanne (Switzerland).

18.6.2019 Topology Seminar. University of Bochum (Germany).

21.5.2019 Topology Seminar. University of Bonn.

08.5.2019 Differential Geometry and Topology Seminar. University of Cambridge (United Kingdom).

18.9.2018 Joint Meeting of UMI-SIMAI-PTM: Geometric Aspects of Applied Topology. University of Wroclaw (Poland).

18.6.2018 International Conference on Manifolds, Groups and Homotopy. Skye (United Kingdom).

8.3.2018 Doctoral Seminar. University of Strasbourg (France).

10.6.2016 Junior Geometry Seminar. Imperial College of London (United Kingdom).

## CONFERENCES ATTENDED

12-16.1.2026 Geometry, arithmetic and cohomology of higher dimensional varieties. University of Bologna.

9-12.12.2025 ItaLean: Bridging Formal Mathematics and AI. University of Bologna.

30-31.10.2025 Nancy Hingston Celebration. University of Copenhagen.

11-15.8.2025 Masterclass "Infinity Operads and Applications to Geometry". University of Copenhagen.

17-21.2.2025 Masterclass on "Cobordism categories". University of Copenhagen.

11-12.11.2024 Workshop on "Unstable Homotopy Theory". Max Planck Institute for Mathematics, Bonn.

9-12.9.2024 Workshop on "Dualisable Categories and Continuous K-theory". Max Planck Institute for Mathematics, Bonn.

13-17.5.2024 Conference on "Homology Growth in Topology and Group Theory". Max Planck Institute for Mathematics, Bonn.

26.4.2024 NRW Topology Meeting. University of Wuppertal (Germany).

18-20.3.2024 Algebra Days. Algebraic aspects of configuration spaces and moduli spaces. University of Caen.

28.1-2.2.2024 Mini-Workshop "Artin Groups meet Triangulated Categories". Oberwolfach Research Institute for Mathematics.

26.11-1.12.2023 Mini-Workshop "Flavors of Rabinowitz Floer and Tate Homology". Oberwolfach Research Institute for Mathematics.

4-8.9.2023 Workshop "Parametrized homotopy theory". University of Copenhagen.

17-21.7.2023 Stability in Topology, Arithmetic, and Representation Theory. Purdue University, West Lafayette (online).

3-7.7.2023 29th Nordic Congress of Mathematicians. University of Aalborg (Denmark).

8-9.6.2023 Masterclass "Homology of groups and functors". University of Lille.

15-17.5.2023 Workshop on homology of configuration spaces. Sorbonne University, Paris.

6-17.3.2023 Masterclass on Higher Representation Theory. University of Copenhagen.

30.1-3.2.2023 Masterclass "Topological Hochschild Homology and Zeta Values". University of Copenhagen.

14-18.11.2022 Masterclass "Cluster Algebras and Representation Theory". University of Copenhagen.

9-14.10.2022 Workshop "Cobordisms, Strings, and Thom Spectra". Banff International Research Station (online).

3-4.10.2022 Ib Fest: a celebration of Ib Madsen's lifetime contributions to mathematics. University of Copenhagen.

4-8.8.2022 Benson Farb's minicourse on mapping class groups of 4-manifolds. University of Chicago (USA).

18-22.7.2022 Young Topologists Meeting. University of Copenhagen.

6-14.7.2022 Geometry and Topology, ICM sectional workshop. University of Copenhagen.

2.6.2022 Moduli of Curves in Stockholm. Institute Mittag-Leffler, Djursholm.

31.5-1.6.2022 Göran Gustafsson Symposium. Institute Mittag-Leffler, Djursholm.

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| 30.1-19.2.2022 | Research programme "Higher algebraic structures in algebra, topology and geometry ". Institute Mittag-Leffler, Djursholm. |
| 15-19.11.2021 | Workshop "Homology and homotopy of configuration spaces". University of Copenhagen. |
| 23-27.8.2021 | Workshop "Cohomology of Arithmetic Groups: Duality, Stability, and Computations". Banff International Research Station (online). |
| 23-27.8.2021 | Masterclass "Topological field theories and factorization homology". University of Copenhagen. |
| 28.6-2.7.2021 | Masterclass "High dimensional cohomology of moduli spaces". University of Copenhagen. |
| 21-25.6.2021 | Manifolds and K-theory: the legacy of Andrew Ranicki. University of Edinburgh (United Kingdom, online). |
| 23-29.5.2021 | Seminar on cellular $E_k$-Algebras, Oberwolfach Research Institute for Mathematics (Germany, online). |
| 26.7-1.8.2020 | Topologie. Oberwolfach Research Institute for Mathematics (online). |
| 8-9.11.2019 | NRW Topology Meeting. University of Düsseldorf (Germany). |
| 22-26.7.2019 | Young Topologists Meeting. EPFL, Lausanne. |
| 10-11.5.2019 | NRW Topology Meeting. University of Bochum. |
| 30.11-1.12.2018 | NRW Topology Meeting. University of Münster. |
| 17-20.9.2018 | Joint Meeting of UMI-SIMAI-PTM. University of Wroclaw. |
| 9-13.7.2018 | Young Topologists Meeting. University of Copenhagen. |
| 18-22.6.2018 | International Conference on Manifolds, Groups and Homotopy. Skye. |
| 20-21.4.2018 | NRW Topology Meeting. University of Bonn. |
| 14-15.12.2017 | Bavarian Geometry and Topology Meeting. University of Augsburg (Germany). |
| 8-12.8.2017 | Applied Algebraic Topology. University of Sapporo (Japan). |
| 3-7.7.2017 | Young Topologists Meeting. University of Stockholm. |
| 5-9.6.2017 | Groups, Manifolds and K-Theory. University of Münster. |
| 24.4-6.5.2017 | Applied and Computational Algebraic Topology. Hausdorff Center for Mathematics, Bonn. |
| 13-15.2.2017 | Young researchers in homotopy theory and categorical structures. MPIM, Bonn. |
| 20-21.10.2016 | Configuration Spaces and Moduli Spaces in Homotopy Theory. University of Bonn. |
| 9.9.2016 | OAC-manifolds meeting. University of Cambridge. |
| 20-21.6.2016 | Algebra in Geometry. University of Copenhagen. |
| 13-14.6.2016 | ECSTATIC (Early Career Stage Topologists AT Imperial College). London. |
| 3.5.2016 | OAC-manifolds meeting. University of Aberdeen (United Kingdom). |
| 22.2.2016 | OAC-manifolds meeting. University of Oxford. |
| 28.9-2.10.2015 | Algebraic Topology: manifolds unlocking higher structures. University of Oxford. |
| 27-31.7.2015 | New developments in TQFT. University of Aarhus (Denmark). |
| 9-13.2.2015 | Perspectives in Lie Theory: Algebraic topology, geometric and combinatorial group theory. Centro di Ricerca Matematica Ennio De Giorgi, Pisa. |

## Teaching

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| Apr.2024-Jul.2024 | Lecturer for "Homology and homotopy of configuration spaces" (Master, with Luciana Bonatto), Bonn, 4h per week. |
| Feb.2023-Apr.2023 | Lecturer for "Commutative Algebra" (Master, with Prof. Søren Galatius and Oskar Henriksson), Copenhagen, 5h per week. |
| Oct.2022-Jan.2023 | Lecturer for "Categories and Topology" (Master, with Prof. Jesper Grodal and Branko Juran), Copenhagen, 4h per week |

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| Nov.2021-Jan.2022 | Lecturer for "Homological Algebra" (Bachelor and Master, with Prof. Jesper Grodal and Kaif Hilman), Copenhagen, 5h per week |
| Sep.2021-Nov.2021 | Tutor for "Topics in Geometry" (Master and PhD, with Prof. Niels Martin Møller), Copenhagen, 2h per week |
| Nov.2020-Jan.2021 | Tutor for "Topics in Algebraic Topology" (Master and PhD, with Prof. Lars Hesselholt), Copenhagen, 3h per week |
| Apr.-Sep. 2020 | Organiser of the Graduate Seminar "Operads in Algebra and Topology" (Master, with Florian Kranhold), Bonn, 2h per week |
| Apr.-Sep. 2020 | Teaching Assistant for "Topology II" (Bachelor, with Prof. C.F.Bödigheimer), Bonn, 2h per week |
| Apr.-Sep. 2019 | Tutor for "Introduction to Complex Analysis" (Bachelor, with Prof. Carl-Friedrich Bödigheimer), Bonn, 2h per week |
| Apr.-Sep. 2018 | Tutor for "Algebraic Topology II" (Master, with Prof. Carl-Friedrich Bödigheimer), Bonn, 2h per week |
| Sep.2017 - Mar.2018 | Tutor for "Algebraic Topology I" (Master, with Prof. Carl-Friedrich Bödigheimer), Bonn, 2h per week |
| Apr.-Sep. 2017 | Tutor for "Topology II" (Bachelor, with Prof. Carl-Friedrich Bödigheimer), Bonn, 2h per week |

## SUPERVISION

Supervision of Bachelor theses

2023 "Braid groups are linear" by Malthe David Søholm Mejlsted, University of Copenhagen

2022 "A Calculation on Cobordism" by Sophus Valentin Willumsgaard, University of Copenhagen

2022 "The fundamental quandle of a knot" by Johanne Hvidberg Conradsen, University of Copenhagen

Supervision of Master theses

2025 "The Madsen–Weiss Theorem" by Jan Sneeuw, with Prof. Markus Hausmann, University of Bonn

2025 "Formally Smooth Manifolds and Microbundles" by Oleksandr Kharchenko, with Prof. Peter Teichner, University of Bonn

2021 "Labeled Configuration Spaces" by Jeppe Thorup Poulsen, University of Copenhagen

2020 "Perspectives on Khovanov homology" by Oskar Henriksson, with Prof. Nathalie Wahl, University of Copenhagen

Supervision of other short research projects (master study level)

2023 "Manifolds: solving problems with surgery theory" by Daniel Expósito Patiño, University of Copenhagen

2023 "Configuration spaces are not homotopy invariant" by Linus Wegge Hjalsted, University of Copenhagen

2022 "Motion Planning and Topological Complexity" by Yuxuan Xiao, with Mikala Ørsnes Jansen, University of Copenhagen

Second referee for Master theses

2024 "On the Topological Complexity of Configuration Spaces of Graphs" by Jaime Benabent Guerrero, supervised by Prof. Markus Hausmann, University of Bonn

Second referee for Bachelor theses

2020 "Der Modulraum der zweifachen Überlagerungen Riemannscher Flächen vom Geschlecht 1" by Franca Lippert, supervised by Prof. Carl-Friedrich Bödigheimer, University of Bonn

2020 "Cubical homology" by Philipp Alexander Grzywaczyk, supervised by Prof. Carl-Friedrich Bödigheimer, University of Bonn

## Languages

**Italian** Native speaker
**English** $\sim$ C1
**German** $\sim$ C1
**French** $\sim$ B1
**Danish** $\sim$ A2

## Mathematical Olympiads

Winner of the Italian national contest for high school students (Cesenatico, Italy, May 2009).
Winner of a gold medal at the International Mathematical Olympiad (Amsterdam, Netherlands, July 2011).
Teacher at the following training courses aimed at Italian high school students: each course took place in Pisa during one week of the corresponding month.
**Senior (September)** 2012, 2013, 2014, 2015, 2016, 2017, 2018;
**Winter Camp (January)** 2013, 2015;
**PreIMO (May)** 2013, 2014, 2015.
Leader of the Italian team at the following international contests for high school students:
**Balkan Mathematical Olympiad** Tirana (Albania), May 2016
**Romanian Master of Mathematics** Bucharest, February 2013, February 2015, February 2017.
Coordinator at the following contests for high school students:
**National Italian contest, Cesenatico** May 2012, May 2013, May 2014, May 2015
**European Girls Mathematical Olympiad** Florence, Italy, April 2018