

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: Max Planck Institute for Mathematics, Vivatsgasse 7, 53111 Bonn (Germany)
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EMPLOYMENT

Oct.2023-Sep.2025 Postdoc at the Max Planck Institute for Mathematics, Bonn
Oct.2020-Sep.2023 Postdoc at the University of Copenhagen (Denmark)
Apr.2020-Sep.2020 Postdoc at the University of Bonn

EDUCATION

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

Date: April 12, 2024.

- (2) *Vertical configuration spaces and their homology*, with Florian Kranhold. Quarterly Journal of Mathematics 73:4 (2022), 1279-1306.
(arXiv:2103.12137)
- (3) *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 (2022), 5461-5489.
(arXiv:2104.092537)
- (4) *Parametrised moduli spaces of surfaces as infinite loop spaces*, with Florian Kranhold and Jens Reinhold. Forum of Mathematics Sigma 20 (2022), e39.
(arXiv:2105.05772)
- (5) *An upper bound on the topological complexity of discriminantal varieties*. Homology, Homotopy and Applications 24:1 (2022), 161-176.
(arXiv:2010.09615)
- (6) *Braid groups, mapping class groups and their homology with twisted coefficients*. Mathematical Proceedings of the Cambridge Philosophical Society 172:2 (2022), 249-266.
(arXiv:1901.08028)
- (7) *On the homology of the commutator subgroup of the pure braid group*. Proceedings of the American Mathematical Society 149:6 (2021), 2387-2401.
(arXiv:1905.05099)
- (8) *Splitting of the homology of the punctured mapping class group*. Journal of Topology 13:3 (2020), 1230-1260.
(arXiv:1903.06065)
- (9) *Topological complexity of unordered configuration spaces of surfaces*, with David Recio-Mitter. Algebraic & Geometric Topology 19 (2019), 1359-1384.
(arXiv:1712.07068)

ACCEPTED PREPRINTS

- (1) *Deloopings of Hurwitz spaces*, 2021.
To appear in Compositio Mathematica.
(arXiv:2107.13081)
- (2) *Moduli spaces of Riemann surfaces as Hurwitz spaces*, 2021.
To appear in Advances in Mathematics.
(arXiv:2112.10864)
- (3) *Hurwitz-Ran spaces*, 2021.
To appear in Geometriae Dedicata.
(arXiv:2107.01167)

PREPRINTS

- (1) *On two quotients of $S^2 \times S^2$* , 2024.
(arXiv:2401.05953)
- (2) *Homology of configuration spaces of surfaces modulo an odd prime*, with Andreas Stavrou, 2023.
(arXiv:2307.08664)
- (3) *Polynomial stability of the homology of Hurwitz spaces*, with Jeremy Miller, 2023.
(arXiv:2303.11194)
- (4) *Non-trivial action of the Johnson filtration on the homology of configuration spaces*, with Andreas Stavrou, 2022.
(arXiv:2208.01608)

- (5) *Partially multiplicative quandles and simplicial Hurwitz spaces*, 2021.
(arXiv:2106.09425)

ORGANISATION OF EVENTS

- Oct.2023- 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

- Journal of Topology (1 article);
- Groups, Geometry and Dynamics (1 article);
- Proceedings A of the Royal Society of Edinburgh (1 article);
- International Journal of Algebra and Computation (1 article);
- Mathematische Annalen (1 article);
- Bulletin of the London Mathematical Society (1 article);
- Algebraic & Geometric Topology (1 article).

Quick opinions for the following journals

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

TALKS

- 19.3.2024 Algebra days. University of Caen (France).
 20.2.2024 Topology Seminar. Mathematical Institute of the 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. Mathematical Institute of the 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. Mathematical Institute of the 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. Mathematical Institute of the University of Tor Vergata, Rome
- 11.02.2022 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 (Germany, 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 Wrocław (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

- 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. Aalborg University (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 (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.
 30.1-19.2.2022 Research program “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 (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. Edinburgh (United Kingdom,
 online).
 23-29.5.2021 Seminar on cellular E_k -Algebras, Oberwolfach (Germany, online).
 26.7-1.8.2020 Topologie. Oberwolfach (online).
 8-9.11.2019 NRW Topology Meeting. Düsseldorf (Germany).
 22-26.7.2019 Young Topologists Meeting. EPFL, Lausanne.
 10-11.5.2019 NRW Topology Meeting. Bochum.
 30.11-1.12.2018 NRW Topology Meeting. Münster.
 17-20.9.2018 Joint Meeting of UMI-SIMAI-PTM. Wrocław.
 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. Bonn.
 14-15.12.2017 Bavarian Geometry and Topology Meeting. Augsburg (Germany).
 8-12.8.2017 Applied Algebraic Topology. Sapporo (Japan).
 3-7.7.2017 Young Topologists Meeting. Stockholm.
 5-9.6.2017 Groups, Manifolds and K-Theory. Münster.
 24.4-6.5.2017 Applied and Computational Algebraic Topology. Bonn.
 13-15.2.2017 Young researchers in homotopy theory and categorical structures. Bonn.
 20-21.10.2016 Configuration Spaces and Moduli Spaces in Homotopy Theory. Bonn.
 9.9.2016 OAC-manifolds meeting. Cambridge.
 20-21.6.2016 Algebra in Geometry. Copenhagen.
 13-14.6.2016 ECSTATIC (Early Career Stage Topologists AT Imperial College). London.
 3.5.2016 OAC-manifolds meeting. Aberdeen (United Kingdom).
 22.2.2016 OAC-manifolds meeting. Oxford.
 28.9-2.10.2015 Algebraic Topology: manifolds unlocking higher structures. Oxford.
 27-31.7.2015 New developments in TQFT. Aarhus (Denmark).
 9-13.2.2015 Perspectives in Lie Theory: Algebraic topology, geometric and combinatorial group theory. Pisa.

TEACHING

- Feb.2023-Apr.2023 Lecturer for “Commutative Algebra” (Master, with prof. S.Galatius and Oskar Henriksen), Copenhagen, 5h per week.
 Oct.2022-Jan.2023 Lecturer for “Categories and Topology” (Master, with prof. J.Grodal and Branko Juran), Copenhagen, 4h per week
 Nov.2021-Jan.2022 Lecturer for “Homological Algebra” (Bachelor and Master, with prof. J.Grodal and Kaif Hilman), Copenhagen, 5h per week

- Sep.2021-Nov.2021 Tutor for “Topics in Geometry” (Master and PhD, with prof. N.M.Møller), Copenhagen, 2h per week
- Nov.2020-Jan.2021 Tutor for “Topics in Algebraic Topology” (Master and PhD, with prof. L.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. C.F.Bödigheimer), Bonn, 2h per week
- Apr.-Sep. 2018 Tutor for “Algebraic Topology II” (Master, with prof. C.F.Bödigheimer), Bonn, 2h per week
- Sep.2017 - Mar.2018 Tutor for “Algebraic Topology I” (Master, with prof. C.F.Bödigheimer), Bonn, 2h per week
- Apr.-Sep. 2017 Tutor for “Topology II” (Bachelor, with prof. C.F.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

- 2021 “Labeled Configuration Spaces” by Jeppe Thorup Poulsen, University of Copenhagen
- 2020 “Perspectives on Khovanov homology” by Oskar Henriksson, University of Copenhagen (together with prof. N.Wahl)

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, University of Copenhagen (together with Mikala Ørsnes Jansen)

Second referee for bachelor theses

- 2020 “Der Modulraum der zweifachen Überlagerungen Riemannscher Flächen vom Geschlecht 1” by Franca Lippert, University of Bonn (supervised by prof. C.-F. Bödigheimer)
- 2020 “Cubical homology” by Philipp Alexander Grzywaczyk, University of Bonn (supervised by prof. C.-F. Bödigheimer)

LANGUAGES

Italian Native speaker

English ~ C1

German ~ C1

French ~ B2

Danish ~ B1

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, Italy May 2012, May 2013, May 2014, May 2015

European Girls Mathematical Olympiad Florence, Italy, April 2018