

## CURRICULUM VITAE

ANDREA BIANCHI

### PERSONAL DATA

**Date and place of birth:** October 20th, 1992, Rome (Italy)

**Nationality:** Italian

**Current position:** Postdoc at the University of Copenhagen

**Professional address:** Mathematics Institute, University of Copenhagen, Universitetsparken  
5, 2100 Copenhagen

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### EMPLOYMENT

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 (Germany) 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.

2015-16 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) *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)

(2) *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 )

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*Date:* March 21, 2023.

- (3) *An upper bound on the topological complexity of discriminantal varieties*. Homology, Homotopy and Applications 24:1 (2022) 161-176.  
(arXiv:2010.09615)
- (4) *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)
- (5) *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)
- (6) *Splitting of the homology of the punctured mapping class group*. Journal of Topology 13:3 (2020) 1230-1260.  
(arXiv:1903.06065)
- (7) *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) *On Generators and Relations of the Rational Cohomology of Hilbert Schemes*, with Alexander Mangulad Christgau and Jonathan Sejr Pedersen, 2022.  
To appear in Journal of Algebraic Combinatorics.  
(arXiv:2201.13353)
- (2) *Vertical configuration spaces and their homology*, with Florian Kranhold, 2021.  
To appear in Quarterly Journal of Mathematics.  
(arXiv:2103.12137)

## PREPRINTS

- (1) *Polynomial stability of the homology of Hurwitz spaces*, with Jeremy Miller, 2023.  
(arXiv:2303.11194)
- (2) *Non-trivial action of the Johnson filtration on the homology of configuration spaces*, with Andreas Stavrou, 2022.  
(arXiv:2208.01608)
- (3) *Moduli spaces of Riemann surfaces as Hurwitz spaces*, 2021.  
(arXiv:2112.10864)
- (4) *Deloopings of Hurwitz spaces*, 2021.  
(arXiv:2107.13081)
- (5) *A coordinate-free definition of Hurwitz spaces*, 2021.  
(arXiv:2107.01167)
- (6) *Partially multiplicative quandles and simplicial Hurwitz spaces*, 2021.  
(arXiv:2106.09425)

## ORGANISATION OF EVENTS

- 18-22.7.2022 Coorganiser of the “Young Topologists Meeting”. Copenhagen.
- 15-19.11.2021 Coorganiser of the workshop “Homology and homotopy of configuration spaces”. Copenhagen.
- Jan.2021- Coorganiser of the weekly Algebra and Topology Seminar at the University of Copenhagen.

## REFeree JOBS

Referee reports for the following journals

- Journal of Topology (1 article);
- Groups, Geometry and Dynamics (1 article);
- International Journal of Algebra and Computation (1 article);
- Mathematische Annalen (1 article).

Quick opinions for the following journals

- Journal of Topology (1 article).

## TALKS

- 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 (USA).  
 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

- 6-17.3.2023 Masterclass on Higher Representation Theory. Copenhagen.  
 30.1-3.2.2023 Masterclass “Topological Hochschild Homology and Zeta Values”. Copenhagen.  
 14-18.11.2022 Masterclass “Cluster Algebras and Representation Theory”. 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. Copenhagen.
- 6-14.7.2022 Geometry and Topology, ICM sectional workshop. 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”. 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”. Copenhagen.
- 28.6-2.7.2021 Masterclass “High dimensional cohomology of moduli spaces”. 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.
- 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. 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 (Sweden).
- 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

- 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

- 2022 “The fundamental quandle of a knot” by Johanne Hvidberg Conradsen, University of Copenhagen
- 2022 “A Calculation on Cobordism” by Sophus Valentin Willumsgaard, University of Copenhagen

## Supervision of master theses

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

## Supervision of other short research projects (master study level)

- 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