

Lorenzo Ruffoni

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1 Employment

Assistant Professor, *Binghamton University, USA.* 2024-
Norbert Wiener Assistant Professor / Fellow, *Tufts University, USA.* 2021-2024
Dean's Postdoctoral Scholar, *Florida State University, USA.* 2018-2021
Postdoctoral Researcher, *University of Bologna, Italy.* 2017-2018

2 Education

PhD in Mathematics, *University of Bologna, Italy.* 2013-2017
Title: *The geometry of branched complex projective structures on surfaces.*
Advisor: *Stefano Francaviglia.*
MSc & BSc in Mathematics, *University of Bologna, Italy.* 2008-2013

3 Research Interests

Geometry and Topology: geometric group theory; geometric structures on manifolds, cell complexes.

4 Grants and Awards

NSF-DMS 2309427, "Groups, Actions, and Geometries" conference. 2023
Marie Curie Alumni Association Micro-Grant. 2023
AMS-Simons Travel Grant. 2021-2023
Postdoctoral Undergraduate Research Mentor Award, FSU. 2019-2020
Postdoctoral Scholars Career Development Travel Award, FSU. 2019-2020
Marco Polo Fellowship, University of Bologna (to conduct research abroad). 2015-2016

5 Publications

Published/accepted:

13. J. Lafont, L. Ruffoni, "*Special cubulations of strict hyperbolizations*", *Inventiones Mathematicae*, 236 (2024), 925–997.
12. C. Retsa, A. H. Ariza, N. W. Noordanus, L. Ruffoni, M. M. Murray, B. Franceschiello, "*A psychophysically tuned computational model of human primary visual cortex produces geometric optical illusions*", accepted in *Current Research in Neurobiology* (2024), bioRxiv 2020.07.01.182329.

11. Y.-C. Chang, L. Ruffoni, “*A graphical description of the BNS-invariants of Bestvina–Brady groups and the RAAG recognition problem*”, accepted in *Groups, Geometry, and Dynamics* (2023), arXiv:2212.06901.
10. S. Ballas, P. Bowers, A. Casella, L. Ruffoni, “*Tame and relatively elliptic $\mathbb{C}P^1$ -structures on the thrice-punctured sphere*”, accepted in *Algebraic and Geometric Topology* (2023), arXiv:2107.06370.
9. L. Ruffoni, “*Manifolds without real projective or flat conformal structures*”, *Proceedings of the American Mathematical Society*, 151 (2023), 3611-3620.
8. S. Francaviglia, L. Ruffoni, “*Local deformations of branched projective structures: Schiffer variations and the Teichmüller map*”, *Geometriae Dedicata*, 214 (2021), 21–48.
7. E. Barquintero, L. Ruffoni, K. Ye, “*Graphical splittings of Artin kernels*”, *Journal of Group Theory*, 24 (2021), no. 4, 711-735.
6. L. Ruffoni, “*Bubbling complex projective structures with quasi-Fuchsian holonomy*”, *Journal of Topology and Analysis*, 13 (2021), no. 3, 843-887.
5. L. Ruffoni, F. Tripaldi, “*Extending an example by Colding and Minicozzi*”, *The Journal of Geometric Analysis*, 30 (2020), no. 1, 1028–1041.
4. L. Ruffoni, “*Multi(de)grafting quasi-Fuchsian complex projective structures via bubbles*”, *Differential Geometry and its Applications*, 64 (2019), 158–173.
3. G. Faraco, L. Ruffoni, “*Complex projective structures with maximal number of Möbius transformations*”, *Mathematische Nachrichten*, 292 (2019), no. 6, 1260–1270.

Submitted:

2. P. Bowers, L. Ruffoni, “*Infinite circle packings on surfaces with conical singularities*”, arXiv: 2305.03505.
1. J. Lafont, L. Ruffoni, “*Relative cubulation of relative strict hyperbolization*”, arXiv: 2304.14946.

6 Extended Research Stays

Yale University	2017-2018
École Normale Supérieure de Paris	2015-2016

7 Selected Invited Talks

- Topology Seminar, Cornell University (USA), 2024.
 AMS-UMI Joint Meeting, Palermo (Italy), 2024.
 Geometry/Topology Seminar, Brown University (USA), 2024.
 Topology Seminar, Rice University (USA), 2024.
 Geometry, Topology and Dynamics Seminar, Boston College (USA), 2024.
 Joint Math Meeting, San Francisco (USA), 2024.
- Topology Seminar, Cornell University (USA), 2023.
 Algebra/Topology Seminar, University at Albany (USA), 2023.
 Geometry of Subgroups, Centre de Recherches Mathématiques, Montreal (Canada), 2023.
 Geometry Seminar, University of Virginia (USA), 2023.
 Geometry and Topology seminars at Unimib, Università di Milano-Bicocca (Italy), 2023.
 Geometric Topology Seminar, Columbia University (USA), 2023.
- Mathematical Sciences Department Colloquium, Worcester Polytechnic Institute (USA), 2022.
 Topology Seminar, University of Wisconsin at Milwaukee (USA), 2022.
 Topology Seminar, University of Texas at Austin (USA), 2022.
 Geometry and Topology Seminar, Warwick (UK), 2022.
 Geometry and Topology Seminar, Georgia Tech (USA), 2022.

Brandeis Topology Seminar, Brandeis University (USA), 2021.
 Topology et al. Seminar, Wesleyan University (USA), 2021.
 Topology Seminar, Osaka University (Japan), 2021.
 Geometry & Topology Seminar, Indian Institute of Science (India), 2021.
 Columbia Geometric Topology Seminar, Columbia University (USA), 2021.
 Algebra/Topology Seminar, University of Copenhagen (Denmark), 2021.

 Geometry and Topology Seminar, University of Bristol (UK), 2020.
 Seminario a distancia de Teoría Geométrica de Grupos, UNAM (Mexico), 2020.

 Summer Circle Packing Symposium, University of Tennessee at Knoxville (USA), 2019.
 Geometric aspects of Higgs bundles, Oregon (USA), 2019.
 Higher Teichmüller Theory and Related Topics, University of Pavia (Italy), 2019.

 Geometric Group Theory Seminar, The Ohio State University (USA), 2018.
 Geometry and Topology Seminar, Yale University (USA), 2018.

 Moduli Spaces, Ventotene (Italy), 2017.
 Geometry Seminar, Heidelberg (Germany), 2017
 Geometry and Topology Seminar, Luxembourg, 2017.
 Journées Isomonodromie, Strasbourg (France), 2017.

8 Mentoring Experience

Master and capstone theses

- Relative hyperbolicity and right-angled Artin groups, Tufts, 2023-2024.
- Classifying 2-Generator 1-Relator Groups, Bentley, 2021-2022.
- Abelian splittings of right-angled Artin groups and subgroups, FSU, 2020.

Summer research

- A geometric understanding of Baumslag-Solitar groups, Tufts, 2023.
- Computational Aspects of Geometric Group Theory, co-mentor for 4 students, Tufts, 2021.

Semester/year-long directed research

- Quadratic differentials on Riemann surfaces, Tufts, 2021.
- Visualizing triangular structures on the sphere, co-mentor for 3 students, FSU, 2020-2021.
- Right-angled Artin groups and their kernels, FSU, 2019-2020.

Mentoring in the **Mathematical Sciences Workshop**, Rice University, 2023

9 Teaching Experience

Instructor of record

- **Differential Geometry**: undergraduate, Binghamton, 2024.
- **Algebraic Topology 2**: graduate, Tufts, 2023.
- **Algebraic Topology**: graduate, FSU, 2021.
- **General Topology**: graduate, FSU, 2020.
- **Bridge to Higher Mathematics**: Tufts, 2022, 2024.
- **Introduction to Advanced Mathematics**: FSU, 2020.
- **Calculus 2**: FSU, 2018, 2019, 2021. Tufts, 2021-2024.

Reports from teaching observations available upon request (Tufts, FSU).

10 Organizing Experience

Groups, Actions, and Geometries Conference <i>Tufts University</i>	2023
Subgroups in Nonpositive Curvature Special session at the AMS 2022 Spring Eastern Sectional Meeting <i>Tufts University/ virtual</i>	2022
Geometric Group Theory and Topology Seminar at Tufts <i>Tufts University</i>	2021-2023
Interactions Between Algebra, Geometry and Topology in Low Dimensions Special session at the AMS 2020 Fall Southeastern Sectional Meeting <i>University of Tennessee at Chattanooga / virtual</i>	2020
Career Development Workshop <i>Florida State University / virtual</i>	2020
UF/FSU Topology and Geometry Meeting <i>Florida State University</i>	2019
Perspectives in Physical Mathematics <i>University of Bologna</i>	2014

11 Other Service

Mentor for Penne Amiche della Scienza (Science Penfriends) (since 2018).

Mentor for Tutorato Alumni Collegio Superiore (since 2018).

Board member for Postdoctoral Association (FSU, 2018-2021).

Calculus Committee (FSU, 2020).

12 References

Philip Bowers (*Florida State University*): bowers@math.fsu.edu - postdoctoral mentor

Ruth Charney (*Brandeis University*): charney@brandeis.edu

Stefano Francaviglia (*University of Bologna*): stefano.francaviglia@unibo.it - PhD advisor

Jean-François Lafont (*The Ohio State University*): jlafont@math.ohio-state.edu

Yair Minsky (*Yale University*): yair.minsky@yale.edu

Todd Quinto (*Tufts University*): todd.quinto@tufts.edu - teaching reference

Genevieve Walsh (*Tufts University*): genevieve.walsh@tufts.edu - postdoctoral mentor