



Matteo Migliorini

Curriculum Vitae

Education

- 2023-current **Postdoctoral researcher**, *Karlsruher Institut für Technologie*, Karlsruhe.
- 2019-current **PhD Student in Mathematics**, *Scuola Normale Superiore*, Pisa.
- 2014-2019 **Student in Corso Ordinario**, *Scuola Normale Superiore*, Pisa, 100/100 cum laude.
- 2017-2019 **Master Student in Pure Mathematics**, *University of Pisa*, Pisa, 110/110 cum laude.
- Thesis title: Taut foliations on 3-manifolds
 - Advisor: prof. Bruno Martelli
 - Graduation date: 20/09/2019
- 2014-2017 **Bachelor Student in Mathematics**, *University of Pisa*, Pisa, 110/110 cum laude.
- Thesis title: L'omologia singolare come teoria di bordismo
 - Advisor: prof. Riccardo Benedetti
 - Graduation date: 14/07/2017

Research interests

Geometric topology: hyperbolic geometry, circle-valued Morse functions and fibrations, PL geometry; geometric group theory: Dehn functions, finiteness properties of groups. I like in particular using combinatorial tools to study geometry, such as, for example, constructing manifolds by attaching polyhedra, or studying their topology by using discrete and PL Morse theory.

Publications and preprints

- 2023 **G. Italiano, B. Martelli, and M. Migliorini**, *Hyperbolic 5-manifolds that fiber over S^1* , *Invent. math.*, 231, 1-38.
doi.org/10.1007/s00222-022-01141-w
- 2022 **G. Italiano, B. Martelli, and M. Migliorini**, *Hyperbolic manifolds that fiber algebraically up to dimension 8*, *Journal of the Institute of Mathematics of Jussieu*, 1-38.
doi:10.1017/S1474748022000536

- 2018 **C. Antonucci, M. Gobbino, M. Migliorini, and N. Picenni**, *On the shape factor of interaction laws for a non-local approximation of the Sobolev norm and the total variation*, *Comptes Rendus Mathématique*.
www.sciencedirect.com/science/article/pii/S1631073X1830178X
- 2017 **C. Antonucci, M. Gobbino, M. Migliorini, and N. Picenni**, *Optimal constants for a non-local approximation of Sobolev norms and total variation*, *Analysis & PDE*, 13.
 10.2140/apde.2020.13.595

Awards

- 2023 **Frontiers of Science Award**, *International Congress of Basic Science*, Beijing Institute of Basic Science, Beijing.
 The award was assigned for the paper “Hyperbolic 5-manifolds fibering over S^1 ”, in collaboration with Giovanni Italiano and Bruno Martelli.

Invited talks

- Mar 2023 **Smoothing circle-valued Morse functions**, *Manifolds and groups in Bologna*, University of Bologna.
- Jan 2022 **Hyperbolic manifolds fibering over S^1** , *Differential Geometry Seminar*, Heidelberg University.

Contributed talks

- Feb 2023 **Hyperbolic manifolds fibering over S^1** , *Young Geometric Group Theory XI*, Münster.
- Sep 2022 **Hyperbolic manifolds fibering over S^1** , *Workshop on Topological Methods in Geometry*, Centre de Recerca Matemàtica, Barcelona.

Other Seminars

- Nov 2021 **Varietà iperboliche che fibrano su S^1 (Hyperbolic manifolds fibering over S^1)**, *Young Geometry and Topology Seminars*, University of Pisa.
- Mar 2020 **Norma di Thurston (Thurston Norm)**, *Young Geometry and Topology Seminars*, University of Pisa.
- Apr 2018 **Gerarchie di superfici in 3-varietà (Surface hierarchies in 3-manifolds)**, *Undergraduate colloquia*, Scuola Normale Superiore.

Other Experience

- 2021 **Teaching Assistant**, *Istituzioni di Geometria*, Università di Pisa.
 I was responsible for grading exercises submitted by the students, and was one of the two examiners of this course, which is the main course in Geometry in the Master’s degree at the University of Pisa.

- 2020,2021 **Tutoring**, *Scuola Normale Superiore*, Complementi di Matematica.
I was the tutor to some first year students for the Mathematics course in Scuola Normale; I was therefore responsible for answering any questions they might have had about the course (or about any first-year course in general), as well as helping them solve exercises left during lesson.
- 2019,2022 **Teacher for Stage Senior**, *Mathematical Olympiads*, Pisa.
I was responsible for teaching high school students part of the Combinatorics course, held to train them for the International Mathematical Olympiads.
- 2018 **Coordinator**, *European Girls' Mathematical Olympiads*, Florence.
I was coordinator for the third problem of the European Girls' Mathematical Olympiads; I was therefore responsible for grading the contestants' papers, and discussing the assigned scores with the representatives of the various nations.

Competitions

- May 2014 **Italian Mathematical Olympiads**, *National Competition*, Cesenatico, 2nd place.

Computer skills

- Good Python, HTML/CSS, Javascript, Django, LaTeX, AutoCAD (2D)
Basic MySQL, Bash, PHP

Languages

- Italian **Mothertongue**
English **Advanced** *FCE, grade A*
French **Conversational**
German **Basic**