

### Federico Fallucca

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#### Work Experience

- Research Fellow Istituto Nazionale di Alta Matematica INdAM-GNSAGA Research Unit at the University of Trento, Department of Mathematics Jun 1, 2025 - Present Research Project: Mori Dream surfaces of general type with  $p_g = q = 0$ .
- Research Fellow University of Milano Bicocca, Department of Mathematics and Applications Mar 1, 2024 - Mar 1, 2026 Research Project: On the classification of regular product-quotient surfaces of low genus and applications to the degree of the canonical map of surfaces of general type. Supervisor: Prof. Sonia Brivio.
- Research collaboration University of Trento, Department of Mathematics Nov 9, 2023 - Dec 4, 2023 Collaboration within the project "Classificazione di superfici prodotto-quoziente di genere basso".

# **Education and Training**

Ph.D. in Mathematics (cotutelle de thèse) Nov 1, 2019 - Sep 26, 2023 Thesis: On the degree of the canonical map of surfaces of general type. Supervisors: Prof. Dr. Ingrid Bauer and Prof. Dr. Roberto Pignatelli. Dottorato di ricerca in Matematica at the University of Trento, Italy. Dr. rer. Nat. at the University of Bayreuth, Germany. Cotutelle de thése program in Mathematics between the University of Trento and the University of Bayreuth. Final Grade: Magna Cum Laude.
Master's Degree in Mathematics - University of Trento, Italy Oct 24, 2017 - Oct 23, 2019 Thesis: Classification of (ℤ/2ℤ)<sup>k</sup>-abelian coverings of ℙ<sup>2</sup> with geometric genus equal to 3 and canonical linear system base point free. Supervisor: Prof. Dr. Roberto Pignatelli. Final Grade: Cum Laude.

 Bachelor's Degree in Mathematics - University of L'Aquila, Italy Aug 21, 2014 - Jul 22, 2017 Thesis: Introduction to representations of groups of matrices: The case of SO(3, ℝ).
 Supervisor: Prof. Dr. Lucio Bedulli.
 Final Grade: Cum Laude.

#### Memberships of Research Groups

• Classification problems in Algebraic Geometry: Lefschetz Properties and Moduli Spaces Mar 13, 2023 - Mar 14, 2024

Research Project coordinated by Prof. Dr. Filippo Favale, funded by GNSAGA-INdaM: 3500€.

# Memberships of Mathematical Societies

#### • GNSAGA-INdAM

Feb 1, 2020 - Present

I am a member of GNSAGA, the National Group for Algebraic and Geometric Structures and their Applications, a section of INdAM, the National Institute of High Mathematics in Rome.

# Preprints

• On rigid varieties isogenous to a product of curves, with C. Gleissner, N. Ruhland, (2025), arXiv:2504.11032.

### Publications

- On the classification of product-quotient surfaces of general type with q = 0,  $p_g = 3$  and their canonical map, Atti Accad. Naz. Lincei Cl. Sci. Fis. Mat. Natur., online first (2024),
- Examples of surfaces with canonical map of degree 12, 13, 15, 16, and 18, Ann. Mat. Pura Appl., 203, 1015-1024, (2024), doi:10.1007/s10231-023-01363-6.
- Smooth k-double covers of the plane of geometric genus 3, with R. Pignatelli, Rend. Mat. Appl., 45, 153-180, (2024), https://www1.mat.uniroma1.it/ricerca/rendiconti/45\_3\_(2024).html.
- Some surfaces with canonical maps of degree 10, 11 and 14, with C. Gleissner, Math. Nachr., 296 (11), 5063-5069, (2023), doi:10.1002/mana.202200450.
- Some surfaces with canonical map of degree 4, with R. Pignatelli, Port. Math., 80, 391-400, (2023), doi:10.4171/PM/2106.

#### **Organized Conferences and Seminar Cycles**

- Geometria in Bicocca 2024 University of Milano Bicocca Sep 9, 2024 - Sep 10, 2024
- Doc in Progress University of Trento, Department of Mathematics Sep 2020 - Jan 2023
   "Doc in Progress" consists of a series of meeting with dissemination purposes. Speakers are chosen

from among currently Ph.D. students as the name suggests, in Mathematics or related fields.

#### **Research visits**

• University of Bayreuth, Germany, Jan 13, 2025 - Jan 19, 2025

#### Participation at conferences as invited speaker

- School on Deformation Theory IV Sapienza, University of Rome, Italy. Sep 16, 2024 - Sep 20, 2024
   Title: New results on the degree of the canonical map of surfaces of general type. This talk was part of a series of mini-talks given during the lectures of the school.
- Winter Workshop on Algebraic Geometry University of Pavia, Italy. Feb 26, 2024 - Feb 28, 2024
   Title: Explicit description of coverings of the projective line from spherical systems of generators.

- Aspects of Algebraic Geometry Cetraro, Italy Sep 18, 2023 - Sep 22, 2023 Title: New examples of surfaces of general type with a high degree of the canonical map.
- Algebraic Geometry in Roma Tre. A conference on the occasion of Sandro Verra's 70(+2)th birthday University of Roma Tre, Italy Jul 14, 2022 Jul 17, 2022
   Poster presentation: Surfaces with canonical map of degree 10, 11, 14. In collaboration with Prof. Dr. Christian Gleissner.
- First UMI meeting of Ph.D. students University of Padova, Italy May 26, 2022 - May 27, 2022 Title: Surfaces with canonical map of high degree.

The meeting was part of the celebrations for the 100 years of the Italian Mathematical Society and the 800 years of the University of Padova, held in Padova in the week 23-27 May 2022.

# Invited Talks

- Saarland University, Germany Jan 21, 2025
   Title: Classification of (k, p)-covers of the plane with geometric genus three.
- University of Bayreuth, Germany Jan 16, 2025 Title: Beauville manifolds and groups with a Beauville structure.
- University of Genova, Italy Nov 5, 2024 Title: Classification of (k, p)-covers of the plane with geometric genus three.
- University of Milano Bicocca, Italy May 13, 2024
   Title: On the classification of product-quotient surfaces with q = 0, p<sub>g</sub> = 3, and their canonical map.
- University of Turin, Italy
- Mar 5, 2024 **Title:** How to construct all families of product-quotient surfaces of general type from a pair of topological types of G - coverings of the projective line: theory and applications.
- Politecnico di Milano Department of Mathematics, Italy
  - Oct 5, 2023 **Title:** From a database of G - coverings of the projective line to a database of families of productquotient surfaces.
- University of Pavia, Italy
  - Oct 3, 2023 Title: Counting families of product-quotient surfaces arising from a pair of topological types of G coverings of the projective line.
- University of Bayreuth, Germany Jul 21, 2022 Title: Examples of surfaces with canonical map of degree 4.
- University of Bayreuth, Germany Oct 26, 2021 Title: On the degree of the canonical map of a product-quotient surface.

#### **Teaching Experience**

- **Teaching Assistant** of the course "Analisi 2" University of Milano Bicocca Department of Physics Oct 2024 Jan 2025
- The commitment involves delivering 24 hours of lectures and participating in five exam sessions.
- **Teaching Assistant** of the course "Geometry" Politecnico di Milano Department of Mathematics Sep 2024 - Jan 2025 The lectures are conducted in English, involving the delivery of 24 hours of lectures and participation in five exam sessions.
- Teaching Assistant of the course "Analisi 2" University of Trento Department of Engineering Oct 2, 2023 - Feb 22, 2024 The commitment involves delivering 30 hours of lectures, conducting weekly student office hours, and participating in five exam sessions.
- Teaching Assistant of the course "Geometria" University of Trento Department of Engineering Sep 27, 2023 Feb 21, 2024 The commitment involves delivering 22 hours of lectures, conducting weekly student office hours, and participating in five exam sessions.
- Teaching Assistant of the course "Geometria 1" University of Trento Department of Physics Sep 12, 2022 - Feb 22, 2023 The commitment involves delivering 28 hours of lectures, conducting weekly student office hours, and participating in five exam sessions.
- **Teaching Assistant** of the course "Geometria 1" University of Trento Department of Physics Sep 14, 2020 - Feb 22, 2021 The commitment involves delivering 28 hours of lectures, conducting weekly student office hours, and participating in five exam sessions.

# Honours and Awards

- Kovalevskaya grant ICM 2022 Saint Petersburg, Russia Jul 6, 2022 Grant to participate at ICM, the International Congress of Mathematics, awarded by ICM and UMI, the Italian Mathematical Society. The event was canceled due to the war between Russia and Ukraine.
- Ph.D. scholarship at the University of Trento
  - Nov 1, 2019 Three-year scholarship to support doctoral research studies in Mathematics at the University of Trento.
- Scholarship for undergraduate students at the University of L'Aquila Jul 22, 2015

 $3000 \in$  scholarship for deserving students enrolled in the first year of the Bachelor's degree program in Mathematics at the University of L'Aquila.

#### **Q&A Math Stack Exchange**

Account: https://math.stackexchange.com/users/531470/federico-fallucca I am a user of Q&A Math Stack Exchange website, where I enjoy answering and asking questions from every branch of Mathematics.

# Language Skills

- Mother Language: Italian.
- Other Language(s): English (level B2).

# Digital Skills

LaTeX, MAGMA, MATLAB, Java, HTML, CSS.