Department of Mathematics
1 Oxford Street
Cambridge, MA 02138
gundlach@math.harvard.edu
fabiangundlach.org

Fabian Gundlach

Education

2010–2012 **Bachelor's studies in mathematics (minor subject theoretical physics)**, *Ludwig Maximilian University of Munich*, Final grade 1.00 (best possible)
(Bachelor's thesis about Brauer–Manin obstructions for sums of two squares and a power; advisor: Ulrich Derenthal)

2013–2014 **Master's studies in mathematics**, *Ludwig Maximilian University of Munich*, Final grade 1.00 (best possible)
(Master's thesis about Del Pezzo surfaces fibrations of degree 4; advisors: Ulrich Derenthal, Yuri Tschinkel)

Sep–Dec 2013 **Semester abroad in preparation for the master's thesis**, *New York University*

2014–2019 **PhD studies in mathematics**, *Princeton University*
(PhD thesis about parametrizing extensions with fixed Galois group; advisor: Manjul Bhargava)

Employment

2019–2022 **Benjamin Peirce Fellow**, *Harvard University*

2022–2023 **Lecturer**, *Harvard University*

Publications and Preprints

[1] Fabian Gundlach. "Integral Brauer-Manin obstructions for sums of two squares and a power". In: *J. Lond. Math. Soc. (2)* 88.2 (2013), pp. 599–618. ISSN: 0024-6107. DOI: 10.1112/jlms/jdt042.

[2] Fabian Gundlach. *Malle's conjecture with multiple invariants*. 2022. arXiv: 2211.16698 [math.NT].

[3] Fabian Gundlach. *Parametrizing Extensions with Fixed Galois Group*. Thesis (Ph.D.)–Princeton University. ProQuest LLC, Ann Arbor, MI, 2019, p. 186. ISBN: 978-1085-77231-0.

[4] Fabian Gundlach. *Polynomials vanishing at lattice points in a convex set*. 2021. arXiv: 2107.05353 [math.AG].

Selected awards

2012 LMU research award for excellent students (for bachelor's thesis)

2015 Carathéodory prize (for master's thesis)

2014-2018 Princeton Centennial Fellowship

Fall 2020, Spring 2021, Spring 2022 Certificates of Teaching Excellence

Selected talks

2012 LMU Number Theory Oberseminar: *Brauer–Manin obstructions for sums of two squares and a power*

2015 Princeton Graduate Student Seminar: *Composition laws*

2017 Princeton Applied Math Graduate Student Seminar: *Integer factorization and primality testing*

2018 Princeton Graduate Student Seminar: *Dirichlet series with applications*

2018 MIT Number Theory Seminar: *Parametrizing field extensions*

2018 Hanover Number Theory and Arithmetic Geometry Seminar (Oberseminar Zahlentheorie und Arithmetische Geometrie): *Parametrizing field extensions*

2019 Harvard Number Theory Seminar: *Multiplication tables of Galois extensions*

2020 LMU Number Theory Oberseminar: *Multiplication tables of Galois extensions*

2020 Harvard Open Neighborhood Seminar: *Pick's theorem and beyond*

2022 Simons Symposium: *Counting Galois Extensions*

Teaching experience

Exercise sessions / Precepts

Winter 2012/13 Linear Algebra I

Summer 2013 Advanced Algebra

Summer 2014 Algebraic Number Theory I

Fall 2015 Algebraic Number Theory (Precept)

Courses (🎓: graduate course; 🎓^{t}: graduate topics course)

Spring 2018 Linear Algebra with Applications

Fall 2019 Multivariable Calculus

Fall 2019 Algebraic Number Theory 🎓

Spring 2020 Arithmetic Statistics 🎓^{t}

Fall 2020 Algebraic Number Theory 🎓

Spring 2021 Algebraic Geometry

Spring 2021 Algebraic Number Theory 🎓

Fall 2021 Algorithms in Algebra and Number Theory 🎓^{t}

Spring 2022 Algebraic Geometry

Spring 2022 Introduction to Analytic Number Theory 🎓

Fall 2022 Multivariable Calculus

Selected conferences

2013 Focus Research Group Workshop at Rice University: *Arithmetic and geometry of rational curves*

2015 Arizona Winter School: *Arithmetic and Higher-Dimensional Varieties*

2016 Arizona Winter School: *Analytic Methods in Arithmetic Geometry*

2016 Fields Medal Symposium in Honor of Manjul Bhargava

2020 Algorithmic Number Theory Symposium

2021	Workshop on Arithmetic Statistics Problems
2022	Simons Symposium on Geometry of Arithmetic Statistics

Other activities

	Helped running German olympiad selection and training camps: talks, task proposals, task preparation, grading, some work on contest management system for informatics competitions
2013	Scientific and Technical Committee of the Baltic Olympiad in Informatics
2014	Scientific and Technical Committee of the Central European Olympiad in Informatics
2021	Scientific and Technical Committee of the Baltic Olympiad in Informatics
2019–2022	Coorganized Harvard Number Theory Seminar
2019–2022	Coorganized Brandeis-Harvard-MIT-Northeastern Joint Mathematics Colloquium

Selected software

- Contributed to CMS, a contest management system for informatics competitions: `https://cms-dev.github.io/` and `https://github.com/ioi-germany/cms`
- Created Sauklaue, an application for hand-written online lecturing using an external graphics tablet: `https://github.com/fagu/sauklaue`

Selected competitions

Mathematics competitions

2006: first prize, 2007, 2008, 2009, 2010: second prize	German Mathematical Olympiad (finals)
2006/07, 2007/08, 2009/10, 2010/11: winner	National Mathematics Competition (Bundeswettbewerb Mathematik)
2009: gold medal (individual), third prize (team)	Middle European Mathematical Olympiad
2010: silver medal	International Mathematical Olympiad
2011: 17^{th} place, 2012: 10^{th} place	Vojtěch Jarník International Mathematical Competition

Physics competitions

2008: silver medal, 2009: gold medal	European Union Science Olympiad (team competition)
2009: silver medal, 2010: gold medal	International Physics Olympiad

Informatics competitions

2007/08: winner	National Informatics Competition
2009, 2010: gold medals	Baltic Olympiad in Informatics
2009, 2010: gold medals	International Olympiad in Informatics

2011, 2012: gold medals	ACM International Collegiate Programming Contest (Norwest European Regional)
2013: first place	ACM International Collegiate Programming Contest (Greater New York Regional)
2013: 32^{nd} place, 2014: 13^{th} place (best North American team)	ACM International Collegiate Programming Contest (World Finals)
2015, 2017, 2018: World finals participant	Google Code Jam