

# Fabrizio Barroero

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## Personal

Born on October 3, 1986 in Savigliano (CN), Italy.

Italian Citizen.

## Education

- 10/2010 - 11/2013: doctoral studies, TU Graz, Austria.  
Dr. techn, supervisor: R. F. Tichy. Defended on: November 22nd 2013.
- 10/2008 - 07/2010: graduate studies in Mathematics, Università degli Studi di Torino.  
Dottore Magistrale in Matematica, 110/110 cum Laude.
- 10/2005 - 10/2008: undergraduate studies in Mathematics, Università degli Studi di Torino.  
Dottore in Matematica, 110/110 cum Laude.
- 09/2000 - 07/2005: high school, Liceo scientifico "G. Arimondi", Savigliano (CN).

## Employment

- since 10/2021: Professore associato, Università degli Studi Roma Tre.
- 10/2018 - 09/2021: Ricercatore a tempo determinato di tipo b, Università degli Studi Roma Tre.
- 02/2017 - 09/2018: Research Assistant, University of Basel.
- 02/2016 - 01/2017: Research Assistant, School of Mathematics, University of Manchester.
- 02/2014 - 01/2016: Assegnista di ricerca, Scuola Normale Superiore, Pisa.
- 10/2010 - 01/2014: Project assistant , TU Graz.

## Accreditation

I have acquired accreditation (Abilitazione scientifica nazionale) for associate professor (Professore di seconda fascia) valid from 18/09/2018 until 18/09/2027 and for full professor (Professore di prima fascia) valid from 24/05/2021 to 24/05/2030

## Publications

Greatest Common Divisor results on semiabelian varieties and a Conjecture of Silverman, (with L. Capuano and A. Turchet), *submitted*, arXiv: 2205.05562.

Betti maps, Pell equation in polynomials and almost Belyi maps, (with L. Capuano and U. Zannier), *Forum Math. Sigma* 10 (2022), Paper No. e84, 23 pp.

Unlikely Intersections of Curves with Algebraic Subgroups in Semiabelian Varieties, (with L. Kühne and H. Schmidt), to appear in *Selecta Mathematica*, arXiv: 2108.12405.

Distinguished Categories and the Zilber-Pink Conjecture, (with G. Dill), *submitted*, arXiv: 2103.07422.

Multiplicative and linear dependence in finite fields and on elliptic curves modulo primes (with L. Capuano, L. Mérai, A. Ostafe and M. Sha), *Int. Math. Res. Not. IMRN* 2022, no. 20, 16094–16137.

On the Zilber-Pink conjecture for complex abelian varieties, (with G. Dill), *Ann. Sci. Éc. Norm. Supér.* (4) 55 (2022), no. 1, 261–284.

Torsion points with multiplicatively dependent coordinates on elliptic curves, (with M. Sha), *Bull. Lond. Math. Soc.* 52, No. 5 (2020), 807–815.

Unlikely Intersections in families of abelian varieties and the polynomial Pell equation, (with L. Capuano), *Proc. Lond. Math. Soc.* (3) 120 (2020), no. 2, 192–219.

CM relations in fibered powers of elliptic families, *J. Inst. Math. Jussieu* 18 (2019), no. 5, 941–956.

Unlikely intersections in products of families of elliptic curves and the multiplicative group, (with L. Capuano), *Q. J. Math.* 68, No. 4 (2017), 1117–1138.

Linear relations in families of powers of elliptic curves, (with L. Capuano), *Algebra & Number Theory*, 10 (2016), no. 1, 195–214.

Algebraic S-integers of fixed degree and bounded height, *Acta Arith.* 167 (2015), no. 1, 67–90.

Counting algebraic integers of fixed degree and bounded height, *Monatshefte für Mathematik* 175 (2014), no. 1, 25–41.

Counting lattice points and O-minimal structures, (with M. Widmer), *Int. Math. Res. Not. IMRN*, no. 18 (2014), 4932–4957.

Additive unit representations in rings over global fields – A survey, (with C. Frei and R. F. Tichy), *Publ. Math. Debrecen* 79 (2011), no. 3–4, 291–307.

## Selected Talks

2023	Jan	Seminari di Algebra e Geometria Algebrica, Politecnico di Torino.
2022	Dic	Conference: The 23rd Midrasha Mathematicae: O-Minimality and its Applications in Diophantine Geometry and Hodge Theory, IIAS Jerusalem, Israel ( <b>invited speaker</b> ).
	Nov	Number Theory seminar, Basel, Switzerland.
	Aug	BIRS workshop: “Specialisation and Effectiveness in Number Theory”, Banff, Canada.
	June	Humboldt Arithmetic Geometry Seminar, Berlin.
	Apr	Workshop: Diophantische Approximationen, Oberwolfach, Germany.
2021	Jun	Séminaire Théorie des Nombres, Institut de Mathématiques de Jussieu-Paris Rive Gauche.
	Feb	Number Theory seminar, Bordeaux (online).

- Feb ADIOS, Arithmetic Dynamics International Online Seminar (online).  
 2020 Feb Oberseminar: Algebra, Zahlentheorie und algebraische Geometrie, Albert-Ludwigs-Universität Freiburg.
- Jan Seminario di Geometria Algebrica, Università di Roma Tor Vergata.  
 2019 Sep Topics in Rational and Integral Points, University of Basel (**invited speaker**).  
 Jun Number Theory seminar, ICMAT & UAM, Madrid.
- Mar Seminari di Geometria, Roma 3.  
 2018 Dic Number theory seminar, TUGraz.  
 Oct 3rd Number Theory Meeting - Torino, University of Turin.  
 Jul Workshop on effectivity and ineffectivity for unlikely intersections, University of Manchester (**invited speaker**).  
 May Conference: Diophantine Geometry, CIRM, Luminy (**invited speaker**).  
 Apr The fourth mini symposium of the Roman Number Theory Association, Rome.  
 Mar Seminario di algebra e geometria algebrica, University of Turin.  
 Feb Joint Number Theory/Logic seminar, University of Oxford.  
 Jan Number Theory seminar, University of Manchester.  
 Jan Number Theory seminar, University of Grenoble.
- 2017 Nov Workshop on Arithmetic and Complex Dynamics, Casa Matemática Oaxaca, Mexico (**invited speaker**).  
 Jun Workshop on O-minimality and Diophantine Applications, Fields Institute, Toronto, (**invited speaker**).  
 May Workshop: O-Minimality and its Applications to Number Theory and Analysis, Oberwolfach, Germany.  
 Jan AIMS-Stellenbosch Number Theory Conference 2017, Stellenbosch, South Africa.  
 Jan Model Theory Conference, Stellenbosch, South Africa.
- 2016 Sep Meeting: O-minimality and Diophantine Geometry, University of Manchester.  
 May Number Theory seminar, Cambridge University.  
 Apr Number Theory seminar, University of Manchester.  
 Mar Lancashire Yorkshire Model Theory Seminar, University of Manchester.
- 2015 Oct BIRS workshop: The Geometry, Algebra and Analysis of Algebraic Numbers, Banff, Canada.  
 Sep Workshop: Analytic Number Theory and Diophantine Geometry, Leibniz Universität Hannover (**invited speaker**).  
 Jul Workshop: O-minimality and applications, University of Konstanz, (**invited speaker**).  
 May Seminar in Number Theory, Universität Basel.
- 2014 Nov Arbeitsgemeinschaft in Codierungstheorie und Kryptographie, University of Zürich.  
 Oct Groupe d'Etude sur les Problèmes Diophantiens, Jussieu, Paris.  
 Jul Second ERC Research Period on Diophantine Geometry, Cetraro, Italy (**invited speaker**).  
 Apr Seminari di Matematica, Scuola Normale Superiore di Pisa.
- 2013 Nov Phd defense, TUGraz.  
 Jul 28th Journées Arithmétiques, Grenoble (contributed talk).  
 Jun Seminari di Matematica, Scuola Normale Superiore di Pisa.
- 2012 Nov Algebra, Number Theory, and Combinatorics seminar, University of Texas at Austin, Austin, TX, USA.
- 2011 Jun Advanced Topics in Discrete Mathematics, TU Graz.  
 Jun Discrete Mathematics Day, TUGraz.

## Conferences and workshops attended without giving a talk

- 2021 Apr Online workshop in Unlikely Intersections, Diophantine geometry, and related fields.  
 2020 Nov BIRS workshop: Algebraic Dynamics and its Connections to Difference and Differential Equations (online).
- 2019 Jul The first Journal of Number Theory biennial Meeting, Cetraro, Italy.  
 2018 Sep Diophantine Approximation and Transcendence, CIRM, Luminy, France.  
 Jun Workshop: "Around Functional Transcendence", University of Oxford  
 2017 Sep Diophantine problems (DIOP), Manchester.  
 Jul Specialization problems in Diophantine Geometry, Cetraro, Italy.  
 Feb Workshop on Heights and Applications to Unlikely Intersections, Fields Institute, Toronto.
- 2016 Jun Leuca 2016, Celebrating Michel Waldschmidt's 70th birthday, Italy.  
 2015 Aug Arithmetic 2015: Silvermania, Brown University, Providence.  
 Jul Future directions in model theory and analytic functions, MIMS, Manchester.  
 May Final ERC meeting in Diophantine Geometry, Rome, Italy.
- 2014 May Workshop on Diophantine problems, TUGraz.  
 2013 Nov Workshop: "Heights in Diophantine geometry, group theory and additive combinatorics", ESI, Vienna.  
 Oct Festkolloquium for the 80th birthday of Prof. Wolfgang Schmidt, Vienna.  
 Sep Workshop: Applications of O-Minimality to Analysis and Number Theory, University of Passau.  
 Jul Workshop: O-minimality and Diophantine geometry, Manchester.
- 2012 Oct Research period "Diophantine Geometry", Centro de Giorgi, Pisa.  
 Jul Summer School "Model Theory", MSRI, UC Berkeley.  
 Jun Summer School "Around the Zilber-Pink conjectures", Paris.  
 Apr Workshop "Moduli Spaces Associated to Dynamical Systems", ICERM, Providence.  
 Mar Workshop "Global Arithmetic Dynamics", ICERM, Providence.  
 Feb Workshop "Complex and p-adic Dynamics", ICERM, Providence.
- 2011 Aug Paul Turán Memorial Conference, Budapest.  
 Jun 27th Journées Arithmétiques, Vilnius.  
 Mar Winter School "Heights and algebraic numbers", Tübingen.

## Teaching

- Spring 2023 Lecturer for the course "Heights and diophantine equations", Roma Tre.  
 Fall 2022 Lecturer for the course "Algebra 2", Roma Tre.  
 Spring 2022 Lecturer for the course "Introduction to Number Theory", Roma Tre.  
 Fall 2021 Lecturer for the course "Algebra 1", Roma Tre.  
 Spring 2021 Lecturer for the course "Heights and diophantine equations", Roma Tre.  
 Fall 2020 Lecturer for the course "Algebra 2", Roma Tre.  
 Spring 2020 Lecturer for the course "Algebraic Number Theory", Roma Tre.  
 Fall 2019 Lecturer for the course "Algebra 1", Roma Tre.  
 Spring 2019 Lecturer for the course "Introduction to Number Theory", Roma Tre.  
 Fall 2018 Lecturer for the course "Introduction to Logic", University of Basel.  
 Spring 2018 Teaching assistant for "Diophantine equations and heights" (Prof. Habegger), University of Basel.  
 Fall 2017 Teaching assistant for "Algebraic Number Theory" (Prof. Habegger),

	University of Basel.
Spring 2017	Teaching assistant for "Lineare Algebra II" (Prof. Habegger), University of Basel.
Fall 2016	Teaching assistant for MATH19801 Mathematics oB1 (Dr. Steele), University of Manchester.
2014-2015	Tutor for the course "Complementi di algebra, geometria e analisi complessa" (Prof. Zannier), Scuola Normale Superiore di Pisa.
Fall 2014	Teaching assistant for the course "Analisi Matematica I" for Energy Engineers (Prof. Novaga), Università di Pisa.
Fall 2008	Tutor for the course "Informatica" (Computer science for mathematicians, Prof. Berardi), Università di Torino.

## Student's supervision

### *PhD students*

since 2021: Luca Ferrigno.

2018-2021: Tako Boris Fouotsa (co-supervision with Christophe Petit), defense date: 25/02/2022.

### *Bachelor and Master Dissertations*

October 2020: Ilaria Ciarletti (Laurea Magistrale).

October 2022: Davide Massinelli (Laurea Triennale)

## Participation to research projects

2017-2018: "Diophantine Problems, o-Minimality, and Heights", SNSF grant 165525.

2016: "Model theory, functional transcendence and diophantine geometry",  
EPSRC grant EP/N007956/1'.

2014-2016: "Integral and Algebraic Points on Varieties, Diophantine Problems on Number Fields and Function Fields", ERC-Advanced Grant 267273.

since 2012: "Explicit Problems in Diophantine Analysis and Geometry", Austrian Science Fund (FWF): P24574 .

2010-2013: Doctoral Program "Discrete Mathematics", Austrian Science Fund (FWF): W1230.

## Awards

2013 award of the doctoral school Mathematics and Scientific Computing, Graz.

## Co-organized events

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| 2023 | May | The Seventh Mini Symposium of the Roman Number Theory Association, Rome.   |
| 2022 | May | Leuca2022: Celebrating Claude Levesque's, Damien Roy's and Michel Waldschmidt's birthdays, joint with the sixth mini symposium of the Roman Number Theory Association, Leuca, Italy. |
| 2019 | Apr | The Fifth Mini Symposium of the Roman Number Theory Association, Rome.   |
| 2018 | Jul | Donau-Rhein Modelltheorie und Anwendungen, 3rd meeting, Basel.   |
| 2015 | May | Final ERC meeting in Diophantine Geometry, Rome.   |
| 2014 | Jul | Second ERC Research Period on Diophantine Geometry, Cetraro, Italy.  |

## Service

December 2022: Rapporteur and jury member for the PhD defense of Emanuele Tron, Université de Bordeaux.

Since 2022: Member of the "Commissione didattica di Matematica", Dipartimento di Matematica e Fisica, Università degli studi Roma Tre.

Since 2020: Member of the "Commissione web", Dipartimento di Matematica e Fisica, Università degli studi Roma Tre.

Since 2019: Member of the "Collegio dei Docenti del Dottorato in Matematica", Dipartimento di Matematica e Fisica, Università degli studi Roma Tre.

Fall 2016: organizer (with D. Loughran) of the Number Theory Seminar at the University of Manchester.

Reviewer for Mathematical Reviews.

Referee for various international journals.

Last updated: June 8, 2023