

Tiago J. Fonseca

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📄 <https://tjfonseca.github.io/>

Professional activity

- 2021-present **Research Associate (JP Fapesp Fellow)**, *State University of Campinas (Unicamp)*, Campinas, Brazil.
Fapesp Young Investigator Grant "Periods and Algebraicity". <https://bv.fapesp.br/en/auxilios/108313/periods-and-algebraicity/>
- 2018-2021 **Postdoctoral Research Associate**, *University of Oxford*, Oxford, United Kingdom.
Part of the ERC project "Galois Theory of Periods" under the direction of Francis Brown.
- 2019-2020 **Stipendiary Lecturer**, *Hertford College*, Oxford, United Kingdom.
Temporary teaching position.
- 01-09/2018 **Postdoctoral researcher**, *Max-Planck-Institut für Mathematik (MPIM)*, Bonn, Germany.
- 09-12/2017 **ATER**, *Université Paris-Saclay*, Orsay, France.
(An ATER is a form of temporary research contract with teaching load)

Education

- 2014-2017 **Ph.D. Mathematics**, *Université Paris-Saclay*, Orsay, France.
Thesis: *Integral curves: transcendence and geometry*. Supervisor: *Jean-Benoît Bost*.
- 2012-2014 **M.S. Mathematics**, *Université Paris-Saclay*, Orsay, France.
Memoir: *Integrality in Mirror Symmetry*. Supervisor: *Jean-Benoît Bost*.
- 2008-2011 **B.S. Mathematics**, *Universidade de São Paulo*, São Carlos, Brazil.

Publications and preprints

- 2022 **A note on the Gauss-Manin connection for abelian schemes**, with Nils Matthes. *Preprint (submitted)*.
eprint [arXiv:2201.06402](https://arxiv.org/abs/2201.06402)
- 2020 **Towards algebraic iterated integrals for elliptic curves via the universal vectorial extension**, with Nils Matthes. *RIMS Kokyuroku*, No. 2160 (2020), 114-125.
eprint [arXiv:2009.10433](https://arxiv.org/abs/2009.10433)
- 2019 **On coefficients of Poincaré series and single-valued periods of modular forms**, *Res Math Sci* 7, 33. <https://doi.org/10.1007/s40687-020-00232-5>.
eprint [arXiv:1912.02277](https://arxiv.org/abs/1912.02277)
- 2019 **A geometric introduction to transcendence questions on values of modular forms**, In *H. Movasati, Modular and automorphic forms & beyond, Monographs in Number Theory: Volume 9, World Scientific (2021)*.
eprint [arXiv:2011.14401](https://arxiv.org/abs/2011.14401)
- 2018 **Higher Ramanujan equations and periods of abelian varieties**, *Memoirs of the AMS*, *accepted*.
eprint [arXiv:1807.11044](https://arxiv.org/abs/1807.11044)
- 2018 **Algebraic independence for values of integral curves**, *Algebra & Number Theory* 13-3 (2019), 643–694. DOI 10.2140/ant.2019.13.643.
eprint [arXiv:1710.00563](https://arxiv.org/abs/1710.00563)

Talks (selection)

Jun 2022	Workshop 'Special Values of L-functions, Periods, and Fundamental Groups' - Oxford, UK	
Jun 2022	Workshop 'Arithmetic geometry, cycles, ..., periods and heights', INI, Cambridge, UK	video
May 2022	Seminário Latinoamericano de teoria dos números, LATeN (Online)	video
Feb 2022	Fields Number Theory Seminar - The Fields Institute, Canada	video
Apr 2021	International Seminar on Automorphic Forms - TU Darmstadt, Germany	
Jan 2021	Geometric, Arithmetic and Differential equations of Periods seminar - IMPA, Brazil	video
Sep 2020	LMS Lecture series 'A crash course in modular forms and cohomology' - UK	website
May 2020	Brazilian Algebraic Geometry Seminar - IMPA, Brazil	video
May 2020	Research School "Geometry and Dynamics of Foliations" - CIRM, France	video
Mar 2020	London Number Theory seminar - London, UK	
Jan 2020	Geometry and Number Theory seminar - Nottingham, UK	
Dec 2019	Number Theory Seminar - Basel, Switzerland	
Nov 2019	Young Researchers in Algebraic Number Theory - Warwick, UK	
May 2019	Young Mathematicians Academic Forum at USTC - Hefei, China	
Mar 2019	Number Theory Seminar - Oxford, UK	
Jul 2018	Workshop "Transcendence and foliations" - Tatihou, France	
Apr 2018	Oberseminar at MPIM - Bonn, Germany	
Dec 2017	Number Theory Seminar at KU - Copenhagen, Denmark	
Aug 2017	Summer School "Motives for Periods" at FU - Berlin, Germany	
Jul 2017	Workshop "Classification of foliations in codim 1" - Porquerolles, France	
May 2017	Number Theory Seminar at ETH - Zürich, Switzerland	
May 2017	Réseau d'étudiants en géométrie algébrique at IHP - Paris, France	
Aug 2015	Seminário Genet-Roussel at ICMC - São Carlos, Brazil	

Teaching

University of Oxford

- 2020-2021
 - o Tutorial - Galois Theory - Part B (Undergrad)
 - o Course, joint with Nils Matthes - Introduction to Hodge theory (PhD).
- 2019-2020
 - Stipendiary Lecturer at Hertford College - Oxford
 - o Tutorial - Analysis I - Prelims (Undergrad)
 - o Tutorial - Linear Algebra I - Prelims (Undergrad)
 - o Tutorial - Topology - Part A (Undergrad)
 - o Tutorial - Rings and modules - Part A (Undergrad)
 - o Tutorial - Number Theory (Undergrad)
 - o Tutorial - Projective Geometry (Undergrad)
- 2018-2019
 - o Tutorial - Category Theory - Part C (Master)
 - o Tutorial - Elliptic Curves - Part C (Master)
 - o TCC Course - Calculus on Schemes (PhD). 16 hours course, part of the TCC program, a collaboration between the mathematics departments at the Universities of Bath, Bristol, Imperial, Oxford and Warwick. Details: <https://tjfonseca.github.io/teaching/calculus/>.

Université Paris-Saclay

- 2017-2018
 - TA - Mathématiques de la modélisation I - L1 BCST S1 (Undergrad)
 - TA - Mathématiques de la modélisation II - L2 BCST S3 (Undergrad)
- 2016-2017
 - TA - Probabilités et Statistiques - DUT S3 (Undergrad), 2 groups
- 2015-2016
 - TA - Probabilités et Statistiques - DUT S3 (Undergrad), 2 groups
- 2014-2015
 - TA - Graphes et Automates - DUT S2 (Undergrad)
 - TA - Analyse et méthodes numériques - DUT S2 (Undergrad)

Student supervision

- 2022
 - Nelson Prata Pravato Serrano - *Fundamental groups in algebraic geometry*. Master thesis (ongoing).
- 2019-2020
 - Håvard Damm-Johnsen - *The Manin–Drinfeld theorem*. Graduate student project.
 - Rajarshi Maiti - *Irrationality of odd zeta values*. Summer research programme (informal).
- 2019-2020
 - Yiming Tang - *The AGM: from elliptic integrals to point counting*. Summer Research Programme.
- 2018-2019
 - Alex Saad - *Picard-Fuchs equations and \mathbb{F}_p -points on elliptic curves*. Graduate student project.
 - Arkadij Bojko - *Grothendieck’s comparison theorem*. Graduate student project.
 - Deepak Kamlesh - *Picard-Fuchs equations for families of elliptic curves*. Graduate student project.
 - Matija Tapuskovic - *Yukawa coupling via Hodge Theory*. Graduate student project.
 - Zhenhua Wu - *Cartier operator*. Graduate student project.

Scholarships, Fellowships, Grants

- Fapesp scholarship during the B.Sc.
- FMJH scholarship during the M.Sc. and Ph.D.
- Postdoctoral fellowship 2018-2021, Oxford (ERC project “Galois Theory of Periods”)
- Fapesp Young Investigator Grant “Periods and Algebraicity” 2021-2026.

Other information

Organisation

- PhD students seminars on Algebraic Geometry and Number Theory “*Séminaires Secrets d’Orsay*”. Orsay. [<http://ssorsay.blogspot.com/>] (2014-2017)
- Co-organiser of the WORKing seminar on Diophantine Geometry. Warwick, Oxford, Reading, and King’s College. [<https://sites.google.com/site/netandogra/working-seminar>] (2019-2020)
- Co-organiser of the GADEPs seminar at IMPA, Rio de Janeiro. [<https://w3.impa.br/~hossein/GADEPs/GADEPs.html>] (2021)
- Learning seminar on Hodge Theory (2021-2022). Campinas.

Refereeing and peer-review

- Reviews for Mathematical Reviews (MathSciNet).
- Referee for Algebra & Number Theory, SIGMA, World Scientific.

Outreach

- Monitor at *Math.En.Jeans Association* in Blaise Pascal High School, Orsay (2014-2017).