
Curriculum Vitae

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Thais Gomes Ribeiro

PhD Student · Geometry and Mathematical Physics

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Research Interests

Algebraic Geometry and Computational Number Theory:

- Rational points on algebraic varieties over finite fields (especially K3 surfaces);
- Hypergeometric and A -hypergeometric functions over finite fields (especially Appell-Lauricella);
- Picard-Fuchs equations, periods and A -hypergeometric systems;
- Zeta and L-functions;
- Taylor varieties.

Education

- PhD student in Pure Mathematics**, University of Birmingham, UK. 09/2023 – present
Supervisor: Professor Dr. Tyler Kelly.
- Visiting Student**, IMPA, Brazil. 03/2023 – 06/2023
- Master's Degree in Pure Mathematics**, IMPA, Brazil. 01/2021 – 02/2023
Supervisor: Professor Dr. Carolina Bhering de Araujo.
Dissertation: Replaced with two PhD courses.
- Bachelor's Degree in Mathematics**, UNIFEI, Brazil. 03/2018 – 12/2020
Supervisor: Professor Dr. Rick Antonio Rischter.
Dissertation: Secant Defectivity of Grassmannian Varieties via Osculating Projections.

Papers

“**Hypergeometric decomposition of Delsarte K3 pencils**” with Rachel Davis, Jessamyn Dukes, Eli Orvis, Adriana Salerno, Leah Sturman, Ursula Whitcher. 2025. arXiv:2508.15049. To appear in Research in the Mathematical Sciences.

“**Some Taylor varieties with null Hessian**” with Elena Guardo, Manuela Muzika Dizdarević, Maryam Nowroozi, Pierpaola Santarsiero, Paola Supino. 2026. arXiv:2605.03923.

Visits

Visiting Research Student, University of Sydney, Feb 1 - Mar 6, 2026. Visiting Professor John Voight and the Computational Algebra Group. Funded by the University of Sydney and by the Turing Scheme Cost of Living and SEND Grant from the University of Birmingham.

Arithmetic data for Delsarte K3 surfaces - Collaborate@ICERM, Providence, Jul 7-11, 2025.

Invited talks

“**Hypergeometric Structures of Invertible Pencils of Prime Chains**”, KCL/UCL Junior Geometry Seminar, University College London, Jun 9, 2025.

“**Hypergeometric Structures of a Family of K3 Surfaces**”, PG Forum, Lancaster University, Jun 4, 2025.

Short contributed talks

“Appell hypergeometric functions”, WINGs, Apr 14, 2026.

“A hypergeometric family of quartics in \mathbb{P}^3 , periods, point counts and L -function”, CAGE, Sep 17, 2025.

“Taylor Varieties”, Women in Numbers Europe 5, A 15-minute presentation of the group’s results, delivered by the youngest member, Aug 22, 2025.

“A hypergeometric correspondence for a family of K3 surfaces”, WINGs, Apr 2, 2025.

Others

Typesetter for the K3 surfaces course, taught by Dr Ursula Whitcher in the Winter School on Number Theory and Physics at ICTP.

Past and upcoming Events

2026

Mirror Symmetry, Calabi-Yau Threefolds, and Connections to Physics, ICERM, USA, Sep 28-Oct 2.

GAeLXXXIII, Universiteit Leiden, the Netherlands, Jun 29-Jul 3.

WINGs, DoubleTree by Hilton Cheltenham-Cotswolds Hotel, Cheltenham, UK, Apr 13-16.

2025

ICTP Winter School on Number Theory and Physics, Trieste, Italy, Nov 17-28.

CRC Workshop on Zeta and L-functions, Oxford, UK, Sep 30 - Oct 1.

CAGE, Leiden, Netherlands, Sep 17-19.

WINE5, Split, Croatia, Aug 18-23.

GLEN, University of Sheffield, UK, Apr 14-15.

WINGs, Mercure Haydock Hotel, Saint Helens, UK, Mar 31 - Apr 3.

2024

Instructional Workshop on Rational Points, University of Groningen, the Netherlands, Nov 4-8.

Arithmetic geometry of K3 surfaces and related areas, Imperial College London, UK, Oct 3-4.

School on Hodge Theory and Shimura Varieties, Universität Duisburg-Essen, Germany, Sep 23-27.

UKAG Meeting Durham, University of Durham, UK, Sep 11-12.

TAGSS - Tropical Geometry and Related Topics, ICTP, Italy, Sep 2-6.

SinG School in Geometry - IHS Manifolds, University of Trento, Italy, Aug 26-30.

Mirrors in the Midlands, University of Birmingham, UK, Aug 6-9.

A wee day of rational points, University of Glasgow, UK, May 29.

WINGs, Mercure Shrewsbury Albrighton Hall Hotel & Spa, Shrewsbury, UK, Apr 15-18.

BrAG, University of Sheffield, UK, Apr 10-12.

2023

UKAG Network Winter School, University of Warwick, Coventry, UK, Dec 12-15.

Rethinking Number Theory, Virtual Workshop, Jun 12-23.

3rd emmi, IMPA, Rio de Janeiro, Brazil, May 12.

15th ALGA, IMPA, Rio de Janeiro, Brazil, Feb 06-10.

2019-2022

Conference IMPA 70 years, IMPA, Rio de Janeiro, Brazil, Oct 17-21.

1st emmi, online event, May 14.

2nd Undergraduate Research Symposium, UNIFEI, Itajubá, Brazil, Oct 21-22.

Teaching experience

Postgraduate Teaching Assistant, University of Birmingham, UK.

2024 – 2026 – Sequences and Series, Algebra and Combinatorics, and Metric Spaces and Topology.

2023 – 2024 – \LaTeX Workshops and Real and Complex Analysis.

Undergraduate Teaching Assistant, UNIFEI, Brazil.

2020 – Linear Algebra and Real Analysis I.

Intern Teaching Assistant, Instituto Educacional Livre Officio, Brazil.

2017 – High School Mathematics and Physics.

Undergraduate academic activities

Undergraduate Summer Course, IMPA, Brazil.

01/2020 – 02/2020 – **Analysis over \mathbb{R}** .

Undergraduate Research, UNIFEI, Brazil.

03/2018 – 02/2019 – **Concrete Mathematics**.

Studied the first five chapters of the book Concrete Mathematics: A Foundation for Computer Science, under the guidance of Professor Dr. Rick Rischter.

Grants

Turing Scheme Cost of Living and SEND Grant, University of Birmingham, 02/2026.

School of Mathematics Scholarship, University of Birmingham, 09/2023 – 03/2027.

Financial Assistance for Visiting Students, IMPA, 03/2023 – 07/2023.

Master's Scholarship, Academic Excellence Program - PROEX/CAPES, 04/2021 – 03/2023.

Summer Program Scholarship, IMPA, 01/2020 – 02/2020.

Undergraduate Research Scholarship, PIBIC/FAPEMIG, 03/2018 – 02/2019.

Languages

Portuguese (native) and English.