

RESEARCH INTERESTS

Mathematics. Algebraic geometry. Moduli spaces. Algebraic stacks. Geometric Invariant Theory. Enumerative invariants.

EMPLOYMENT

Ritt Assistant Professor

Postdoc

Columbia University

August 2024-
current

EDUCATION

DPhil in Mathematics

University of Oxford

Supervised by Prof. Frances Kirwan and Prof. Fabian Haiden

Thesis: *Refined Harder–Narasimhan filtrations in moduli theory*. ([pdf](#))

October 2020-
July 2024

Research visit

Cornell University

Worked with Prof. Daniel Halpern-Leistner

Funded by the Brettschneider Fund

August 2022-
December
2022

Part III of the Mathematical Tripos (MASt)

University of Cambridge

Funded by “La Caixa” Foundation

Merit

2019-2020

Erasmus year

Université Paris-Sud and École Normale Supérieure - Ulm

End-of-degree dissertation: *Le groupe de Galois absolu de $C(t)$* , supervised by Prof. Olivier Wittenberg

2018-2019

Degree in Mathematics (four-year-long programme)

University of Zaragoza

Extraordinary prize. Graduated top of year.

Average grade: 9.32 out of 10.

2015-2019

PUBLICATIONS AND PREPRINTS

1. *Stability and disconnected groups*, joint with Andres Fernandez Herrero. Preprint, 2025. *Submitted* ([arXiv](#))
2. *Intrinsic Donaldson–Thomas theory. II. Stability measures and invariants*, joint with Chenjing Bu and Tasuki Kinjo. Preprint, 2025. ([arXiv](#))

3. ***Intrinsic Donaldson–Thomas theory. I. Component lattices of stacks***, joint with Chenjing Bu, Daniel Halpern-Leistner and Tasuki Kinjo. Preprint, 2025. *Submitted* ([arXiv](#))
4. ***Cohomology of symmetric stacks***, joint with Chenjing Bu, Ben Davison, Tasuki Kinjo and Tudor Pădurariu. Preprint, 2025. *Submitted* ([arXiv](#))
5. ***Refined Harder–Narasimhan filtrations in moduli theory***. Preprint. ([arXiv](#))
6. Appendix to ***Stability Conditions in Geometric Invariant Theory***, by Ruadhaí Dervan. *The Quarterly Journal of Mathematics*, 2025. ([Journal](#), [arXiv](#))
7. ***Relative étale slices and cohomology of moduli spaces*** (joint with Mark Andrea de Cataldo and Andrés Fernández Herrero). Preprint, 2023. To appear in *Annales de l’Institut Fourier*. ([arXiv](#))

SELECTED WORKS IN PREPARATION

8. ***Intrinsic Donaldson–Thomas theory. III. Wall-crossing and applications***, joint with Chenjing Bu and Tasuki Kinjo.
9. ***Blow-ups, instability and modular lattices***.

SELECTED AWARDS

- AMS–Simons Travel Grant (2024-2026).
- La Caixa Foundation Scholarship: Postgraduate studies in Europe (2019-2020).
- Scholarship Severo Ochoa – ICMAT: Introduction to Research 2019.
- International Mathematics Competition for University Students: Second Prize (2018) and Third Prize (2017).
- 51 Spanish Mathematical Olympiad, National Round: Bronze Medal (2015).
- 51 Spanish Mathematical Olympiad, Aragón Round: First Prize (2015) and Second Prize (2014).

TALKS

- Michael Zhao Memorial Student Colloquium, Columbia University (November 2025)
- University of Texas at Austin, Algebraic Geometry Seminar (October 2025)
- Conference on Counting Invariants and Enumerative Geometry, Brin Conference Center, University of Maryland (September 2025)
- Wall-crossing: techniques and applications, American Institute of Mathematics, online (September 2025)
- Summer Research Institute in Algebraic Geometry, Colorado State University, contributed talk (July 2025)
- Workshop on moduli spaces, virtual invariants and shifted symplectic structures, KIAS, South Korea (June 2025)
- Mark Andrea de Cataldo 60th birthday conference, Stony Brook (May 2025)
- Harvard-MIT, Algebraic Geometry Seminar (April 2025)
- Yale University, Algebraic Geometry Seminar (February 2025)
- Workshop on Hyperkähler Varieties, Derived Categories, and Moduli Spaces, Columbia University (February 2025)
- Stony Brook University, Algebraic Geometry Seminar (February 2025)
- Columbia University, Enumerative Geometry Seminar (November 2024)
- University of Pennsylvania, Algebraic Geometry Seminar (November 2024).
- Cornell University, Algebraic Geometry Seminar (October 2024).
- Johns Hopkins University, Algebraic Geometry Seminar (October 2024).

- Columbia University, Algebraic Geometry Seminar (October 2024).
- Princeton University, Algebraic Geometry Seminar (October 2024).
- University of Oxford, Geometry Seminar (April 2024).
- University of Warwick, Algebraic Geometry Seminar (April 2024).
- Programme on New equivariant methods in algebraic and differential geometry, Isaac Newton Institute for Mathematical Sciences, University of Cambridge (January 2024).
- University of Cambridge, Algebraic Geometry Seminar (January 2024).
- University of Edinburgh, EGRET Seminar (October 2023).
- University of Glasgow, Algebraic Geometry Seminar (October 2023).
- Vector Bundles on Algebraic Curves conference in Essen (August 2023).
- University of Oxford, Algebraic Geometry seminar (April 2023).
- University of Southern Denmark, Center for Quantum Mathematics Seminar (June 2023).

TEACHING

- Instructor for Calculus II, one section (Columbia, Spring 2024).
- Instructor for Calculus II, two sections (Columbia, Fall 2024).
- Tutor for C3.5 Lie Groups (Oxford, Michaelmas Term 2023).
- Revision classes for Part C2.3 Representation theory of Semisimple Lie Algebras (Oxford, Trinity Term 2023).
- Tutor for B3.3 Algebraic Curves (Oxford, Hilary Term 2022).
- TA for C3.4 Algebraic Geometry (Oxford, Michaelmas Term 2021).
- TA for C2.6 Scheme Theory (Oxford, Hilary Term 2021).
- TA for C2.7 Category Theory (Oxford, Michaelmas Term 2020).

CONFERENCES ATTENDED

- Wall-crossing: techniques and applications, American Institute of Mathematics, online (September 2025)
- IPMU workshop, Japan (March 2025).
- Clay Workshop: The $P=W$ conjecture in non-abelian Hodge Theory (October 2024).
- Workshop on Moduli, Simons Centre for Geometry and Physics (July 2024).
- Equivariant methods in geometry, programme at the Newton Institute, Cambridge (January-March 2024).
- Vector Bundles on Algebraic Curves, (VBAC), University of Duisburg-Essen (August 2023).
- Cohomological Hall algebras and Vertex algebras, Isle of Skye (April 2023).
- Quivers, Clusters, Moduli and Stability, University of Oxford (January 2023).
- AGNES, University of Massachusetts (November 2022).
- Route 81 conference on Commutative Algebra and Algebraic Geometry, Queen's University (September 2022).
- Vector Bundles on Algebraic Curves, University of Warwick (July 2022).
- Geometry and Arithmetic of Moduli Spaces, Scuola Normale Superiore (July 2022).
- Moduli Spaces and Stability Conditions, Levico Terme (July 2022).
- GAeL (June 2022).
- Invariants in Algebraic Geometry, Dijon (May 2022).
- Arithmetic and Geometry of Varieties with trivial canonical bundle, Oslo (December 2021).
- Summer school in derived and triangulated categories, Wuppertal (September 2021).
- GAeL, online (July 2021).
- JAE School of Mathematics, ICMAT (2017 and 2019).

ORGANISATION

- Junior Geometry Seminar, University of Oxford, organiser (2021-2022).

OTHERS

- Degree in the Professional Music Conservatory of Zaragoza, Specialised in piano (2011-2017).
- Chetham's International Summer School and Festival for Pianists (2017).
- Volunteer at Club Excursionista del Salvador, mountaineering club for children. (2014-2018).

LANGUAGES

- Spanish: Native speaker.
- English: Fluent.
- French: Fluent.