

2022– **NSF postdoc**, *University of Utah*, Salt Lake City, UT, USA
2021–2022 **Wylie Assistant Professor**, *University of Utah*, Salt Lake City, UT, USA

2015–2021 **Ph.D. in Mathematics**, *University of Michigan*, Ann Arbor, MI, USA

- Advised by Prof. Karen Smith.
- 10/2018–12/2019 Extramural study at the University of Tokyo, Japan, advised by Prof. Shunsuke Takagi.

2011–2015 **B. Sc. in Mathematics**, *Univeristy of Glasgow*, Glasgow, Scotland

- With Honours of the First Class.
- 08/2012–05/2013 Study abroad at the National University of Singapore.

- 2024 Bernstein-Sato theory modulo p^m .
 - With T. Bitoun.
 - Submitted.
- 2024 Flat morphisms with regular fibers do not preserve F -rationality.
 - With A. Simpson and A. Singh.
 - Rev. Mat. Iberoam.
- 2024 A formalism of F -modules for rings with complete local FFRT.
 - International Mathematics Research Notices.
- 2023 Bernstein-Sato theory for singular rings in positive characteristic.
 - With J. Jeffries and L. Núñez-Betancourt.
 - Transactions of the American Mathematical Society.
- 2021 Symmetry on rings of differential operators.
 - Journal of Algebra.
- 2020 Bernstein-Sato theory for arbitrary ideals in positive characteristic.
 - Transactions of the American Mathematical Society.
- 2020 Bernstein-Sato roots for monomial ideals in positive characteristic.
 - Nagoya Mathematical Journal.

- 2024 Summer Collaborators Program, Institute for Advanced Study.
 - Invites a group of collaborators to IAS for 2-3 weeks during the summer.
- 2023 Tucker Award, University of Utah.
 - Recognizes exceptional research by a postdoc in the Mathematics Department.

- 2022–2025 NSF: Mathematical Sciences Postdoctoral Research Fellowship.
- 2018 Ito Foundation for International Education Exchange Scholarship.
 - Provides funding for up to two years of study in Japan.
- 2015 Third Prize at the International Mathematics Competition for University Students.
- 2014 Ede and Ravenscroft Prize, University of Glasgow.
 - Awarded annually to the most distinguished Science graduate of the year.
- 2013 Cunninghame Medal and Prize, University of Glasgow.
 - Awarded annually to the most distinguished student in the Advanced Honours class of Mathematics at the University of Glasgow.
- 2011 Honorable Mention at the International Physics Olympiad.
- 2010 Gold Medal at the Spanish Physics Olympiad.

Service

- 2024 Co-organized the Commutative Algebra Seminar at the University of Utah.
- 2023 Co-organized a hybrid seminar on simplicial commutative algebra.
- 2023 Organized a hybrid seminar on derived rings of differential operators.
- 2022 Organized a reading seminar on the Bhatt and Lurie’s Riemann-Hilbert correspondence in positive characteristic.
- 2020, 2021 Co-organized the online Differential Operators in Commutative Algebra Seminar (DOCAS): <https://sites.google.com/umich.edu/docas>

Invited Talks

- 2024 AMS Sectional Meeting, Albany, NY.
 - Special Session on Singularities in Commutative Algebra.
- 2024 Institute of Mathematics - Johannes Gutenberg-Universität Mainz.
- 2024 Seminari de Geometria Algebraica de Barcelona.
- 2024 Algebra Seminar, Basque Center for Applied Mathematics.
- 2024 Algebra Seminar, Universidad de Sevilla.
- 2024 SLMath, Seminar Series on FFRT.
- 2023 University of Illinois at Chicago, Algebraic Geometry Seminar.
- 2023 AMS Sectional Meeting, Omaha, NE, USA.
 - Special Session on Commutative Algebra, Differential Operators, and Singularities.
- 2023 BCAM, Bilbao, Spain.
 - Meeting of the Spanish Network for Algebraic Geometry and Singularity Theory.
- 2022 Commutative Algebra Seminar at University of Minnesota.
- 2021 Mathematical Congress of the Americas.
 - Session: Differential Operators in Algebraic Geometry and Commutative Algebra.
- 2021 Singularity Seminar of Nihon University.
- 2021 Commutative Algebra Seminar at University of Illinois at Chicago.
- 2021 Joint Mathematics Meetings.
 - Special Session on Commutative Algebra in Positive Characteristic.
- 2020 Commutative Algebra Seminar at Purdue University.

- 2020 University of Arkansas Algebra Seminar.
- 2019 41st Japan Symposium on Commutative Algebra.
- 2019 Commutative Algebra and Algebraic Geometry Seminar, CIMAT.
- 2019 AMS Sectional Meeting, Madison, WI, USA
 - Special Session on Homological and Char. $p > 0$ Methods in Commutative Algebra.
- 2019 Algebra Seminar, Universidad Autónoma de Madrid.
- 2019 RIMS x OIST Joint Workshop: “On the problem of resolution of singularities and its vicinity”, Okinawa, Japan.
- 2018 Singularity Seminar of Nihon University

Teaching

As instructor of record:

University of Utah

- F2024 MATH3160 Applied Complex Variables.
- F2023 MATH1220 Calculus II.
- W2022 MATH3160 Applied Complex Variables.
- F2021 MATH1220 Calculus II.

University of Michigan

- F2020 MATH116 Calculus II.
- W2020 MATH116 Calculus II.
- W2017 MATH115 Calculus I.
- F2016 MATH105 Precalculus.

Other teaching experiences:

- 2024-2025 Supervision of senior thesis.
 - Abel Doñate Muñoz.
 - *Strength of Bernstein-Sato roots of cusp singularities*. (Preliminary title).
- 01/2024 RGAS School on Singularities.
 - Instructor for the course “Test ideals and b -functions in positive characteristic.”
 - School that brings together early career mathematicians and experts in singularities.
- 07/2023 PRAGMATIC.
 - University of Catania, Italy.
 - Teaching assistant.
 - One week of lectures and two weeks of problem solving for stimulating research in algebraic geometry and commutative algebra among young people.
- 06/2023 SLMATH CMND Summer School on Commutative Algebra.
 - University of Notre Dame, Indiana.
 - Teaching assistant for Differential Operators mini-course.
 - Two-week summer school on some topics in commutative algebra, covered across three mini-courses and problem sessions.
- 2022-2023 Supervision of senior thesis.
 - Pedro López Sancha.
 - *Bernstein-Sato theory for determinantal ideals in positive characteristic*.
 - Emmy Noether prize from Societat Catalana de Matemàtiques.

- 06/2022 Summer High School Program.
- University of Utah.
 - Director.
 - An intensive three-week program for motivated high school students.
- 08/2018 Course on Rings of Differential Operators.
- University of Michigan.
 - A one-week introductory course on rings of differential operators aimed at graduate students and advanced undergrads.
- 07/2018 Michigan Math and Science Scholars, Fibonacci Numbers.
- University of Michigan
 - Graduate Student Instructor under Prof. Melvin Hochster.
 - A two-week intensive course to introduce highly motivated high-school students to number theory, combinatorics and game theory via the study of Fibonacci numbers.
- 07/2017 Michigan Math and Science Scholars, Fibonacci Numbers.

Languages

- English — Native level.
- Spanish — Mother tongue.
- Japanese — Basic level.