Alejandro De Las Peñas Castaño

Curriculum Vitae

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Education

2016	**B.Sc. in Mathematics**, *Universidad Nacional Autónoma de México*, Ciudad de México, México
2022	**M.Sc. in Mathematics**, *University of Virginia*, Charlottesville, VA
2020–Now	**Ph.D. candidate**, *University of Virginia*, Charlottesville, VA

Publications

Papers

[CP22] Alejandro De Las Penas Castano and Badri Vishal Pandey. Inversion formulas for the j-function around elliptic points. *Archiv der Mathematik*, 119, 2022.

[DLPC25] Alejandro De Las Penas Castano. Zero cycles on products of elliptic curves over local fields with supersingular reduction, 2025. Preprint, https://arxiv.org/abs/2512.00568.

Scholarships and Awards

2025-Now	**Jefferson Dissertation Year Fellowship**, *Jefferson Scholars Foundation* The Jefferson Fellowship is premier graduate fellowship offered for Ph.D. candidates to complete their thesis. It covers a full year of stipends and travel.
March 2023	**Departmental Graduate Teaching Award**, *University of Virginia Department of Mathematics*

Talks

- "Inversion Formulas for the j-function Around Elliptic Points" – Lightning talk at *100 Years of Mock Theta Functions* Conference at Vanderbilt University, May 2022
- "Classification of Imaginary Quadratic Fields with Unique Factorization" – UVA Graduate Student Seminar, Aug 2022
- "Group Cohomology and Elementary School Arithmetic: A Nontrivial Intersection" – UVA Graduate Student Seminar, Feb 2023
- "Inversion Formulas for the j-function Around Elliptic Points" – *35th Automorphic Forms Workshop at LSU*, Baton Rouge, May 2023
- "Computing Galois Groups with Number Theory" – UVA Graduate Student Seminar, Oct 2023
- "Inversion Formulas for the j-function Around Elliptic Points" – *AMS Spring Eastern Sectional Meetings* at Howard University, Washington DC, April 2024
- "Inversion Formulas for the j-function Around Elliptic Points" – *Joint Mathematics Meetings* at the special session on Modular Forms, Hypergeometric Functions, and related topics, Seattle, January 2025

o "Zero cycles on products of elliptic curves over local fields with supersingular reduction" – Palmetto Number Theory Series, Clemson, December 2025

Experience

Teaching

2014–2016 **Teaching Assistant**, *Universidad Nacional Autónoma de México*, Mexico City
Assistant to Mat. Julio César Guevara Bravo for the following courses:
SPRING 2014 Linear Algebra I and Number Theory II
SPRING 2015 Analytic Number Theory
FALL 2015 Number Theory I and Linear Algebra I
SPRING 2016 Analytic Geometry I
FALL 2016 Algebraic Number Theory

2019–2020 **Lecturer**, *Universidad Nacional Autónoma de México*, Mexico City
Instructor of Record for the following courses:
SPRING 2017 Number Theory I
FALL 2018 Number Theory I
SPRING 2019 Number Theory I
FALL 2019 Number Theory II
SPRING 2020 Number Theory I

2020–2021 **Teaching Assistant**, *University of Virginia*, Charlottesville
Responsibilities:
FALL 2020 Grading for the course *MATH 3310: Basic Real Analysis*.
FALL 2020 Running a discussion session in the course *MATH 2310: Calculus III*.
SPRING 2021 Running discussion sessions in two different sections of the course *MATH 3310: Basic Real Analysis*.

2021–2023 **Lecturer**, *University of Virginia*, Charlottesville
Responsibilities:
FALL 2021 Main instructor in coordinated course under flipped classroom method for *MATH 1220: A survey of Calculus II*.
SPRING 2022 Main instructor in coordinated course under flipped classroom method for *MATH 1320: Calculus II*.
FALL 2022 Main instructor in coordinated course under flipped classroom method for *MATH 1220: A survey of Calculus II*
FALL 2023 Main instructor in coordinated course under flipped classroom method for *MATH 1220: A survey of Calculus II*
SPRING 2025 Main instructor in coordinated course under flipped classroom method for *MATH 1320: Calculus II*.

Leadership and Mentorship

Summer 2022 **Mentor for the University of Virginia REU in Number Theory**
Advised a project on Hecke nilpotency of modular forms modulo 2.

Summer 2023 **Mentor for the University of Virginia REU in Number Theory**
Advised a project on class number formulas for biquadratic fields.

Fall 2022 - **Mentor for the Directed Reading Program of UVA**, *University of Virginia*, Charlottesville
Fall 2024 During each of the five semesters in this period, I was a mentor in the DRP program working with five different undergraduate students who were interested in advanced math topics. The projects were (in order): Lattice based Cryptography, Unique Factorization of rings of integers, The Congruent Number Problem and Elliptic Curves, Classification of Cubic Polynomials with Galois Theory, Structure Theorem of Finitely Generated Groups.

Spring 2023 - present	**Founding Vice President of the American Mathematical Society's Graduate Student Chapter at UVA,**, *University of Virginia*, Charlottesville Together with four other graduate students, and funding from the AMS, we organize social and math outreach events for the graduate students in the mathematics department such as career panels, math book clubs, grading parties, etc.
Fall 2024 - present	**Committee member for Directed Reading Program of UVA**, *University of Virginia*, Charlottesville I help organize the DRP, for example: accepting undergraduate students and assigning mentees to mentors; help organize lunches or dinners for the participants of DRP, etc.

Miscellaneous

Referee Service

For the following journals: Advances in Mathematics, The Ramnujan Journal, Research in Number Theory, Journal of Number Theory