Santiago Arango-Piñeros

Curriculum Vitae

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UMass Amherst
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arXiv, MathSciNet, GitHub

Appontments

2025 - **UMass Amherst**
Visiting Assistant Professor (Postdoc)

Education

2025 Ph.D. Mathematics, Emory University
Advised by David Zureick-Brown and John Voight.
2019 M.S. Mathematics, IMPA, Rio de Janeiro, Brazil
2017 B.S. Mathematics, Universidad de los Andes, Bogotá, Colombia
2017 B.S. Environmental Engineering, Universidad de los Andes, Bogotá, Colombia

Research interests

Broad Number theory and arithmetic algebraic geometry.

Specific Elliptic curves and abelian varieties, Galois representations, Honda–Tate theory, low degree points on curves, modular curves, generalized Fermat equations, stacky curves, arithmetic statistics, computational and algorithmic aspects.

Articles

9. *Counting primitive integral solutions to spherical generalized Fermat equations*, part of my Ph.D. thesis.
8. *Fermat Descent*, part of my Ph.D. thesis.

7. *Galois groups of simple abelian varieties over finite fields and exceptional Tate classes*, with Sam Frengley and Sameera Vemullapali.
6. *Counting 5-isogenies of elliptic curves defined over the rationals*, with Changho Han, Oana Padurariu, Sun Woo Park.
5. *Bounds for the relative class number problem for function fields*, with María Chara, Asimina S. Hamakiotes, Kiran S. Kedlaya, and Gustavo Rama. **Journal of Number Theory**, 278 (2026), 977-1010.
4. *Galois groups of low dimensional abelian varieties over finite fields*, with Sam Frengley and Sameera Vemullapali.
3. *Frobenius distributions of low dimensional abelian varieties over finite fields*, with Deewang Bhamidipati and Soumya Sankar. **International Mathematics Research Notices**, Vol. 2024, No. 16, pp. 11989-12020, August 2024.
2. *Mertens' theorem for Chebotarev sets*, with Daniel Keliher and Christopher Keyes. **International Journal of Number Theory**, Vol. 18, No. 08, pp. 1823-1842, April 2022.
1. *The global field Euler function*, with Juan Diego Rojas. **Research in the Mathematical Sciences**, Vol. 7, No. 19, September 2020.

Teaching

	UMass Amherst, Instructor of Record
2025 Fall	Math 411: Introduction to Abstract Algebra 1
	Arizona Winter School
2024 Spring	Study Group Leader at AWS 2024
2023 Fall	Problem Set Leader at PAWS 2023
	Emory University, Instructor of Record
Fall	Math 111: Calculus I
2022 Fall	Math 111: Calculus I
	Emory University, Teaching Assistant
Spring	Math 116: Calculus for life sciences
2021 Fall	Math 221: Linear Algebra
	Universidad de Los Andes, Teaching Assistant
2020 Spring	Mate 1203: Cálculo Diferencial
2019 Fall	Mate 1203: Cálculo Diferencial
Spring	Mate 1207: Cálculo Vectorial

Invited Seminar Talks

2025	University of California San Diego, Number theory seminar
2024	University of Illinois Chicago, Number theory seminar

Tufts University, Number theory seminar
Boston University, Algebra and number theory seminar
Brown University, Algebra seminar
Emory University, Algebra and number theory seminar
Amherst College, Algebra and number theory seminar
Dartmouth College, Algebra and number theory seminar
University of Georgia, Athens, Algebra and number theory seminar
2023 University of South Carolina, Number theory seminar

Departmental Service

UMass Amherst
2025 – Five College Number Theory Seminar, co-organizer
Emory University
2024 – 2025 Algebra and Number Theory Seminar, main organizer
2022 – 2024 Graduate student algebra and number theory seminar, co-organizer

Referee work

Sixteenth Algorithmic Number Theory Symposium, Rocky Mountain Journal of Mathematics, Mathematische Zeitschrift

Selected conference and workshop participation

2025 Algebraic points on curves, ICERM, Providence, RI.
2024 Nilpotent counting problems in arithmetic statistics, AIM, Pasadena, CA.
Number theory in the Americas 2, Casa Matemática Oaxaca, Oaxaca, México.
XVI Algorithmic Number Theory Symposium. MIT, Boston, MA.
The Mordell conjecture 100 years later. MIT, Boston, MA.
Hypergeometric motives in the LMFDB. MIT, Boston, MA.
Shimura curves in the LMFDB. Dartmouth, Hanover, NH.
Arizona Winter School: Abelian Varieties. Tucson, AZ.
2023 PAlmetto Number Theory Series XXXVII. UGA, Athens, GA.
LuCaNT: LMFDB, Computation, and Number Theory. ICERM, Providence, RI.
MRC: Explicit computations with stacks. Buffalo, NY.
PAlmetto Number Theory Series XXXVII. UGA, Athens, GA.
Conference in Arithmetic Statistics. CIRM, Marseille, France.
Spring school in Arithmetic Statistics. CIRM, Marseille, France.
Arizona Winter School: Unlikely Intersections. Tucson, AZ.
Introductory Workshop: Diophantine Geometry. MSRI, Berkeley, CA.
Connections Workshop: Diophantine Geometry. MSRI, Berkeley, CA.
2022 PAlmetto Number Theory Series XXXV. U of SC, Columbia, SC.

AGNES: Summer school in higher dimensional moduli. Brown, Providence, RI.
PCMI: Number theory informed by computation. Park City, UT.
CTNT: Connecticut summer school in number theory. UCONN, Storrs, CT.
GAGS: Georgia Algebraic Geometry Symposium. Emory, Atlanta, GA.
Arizona Winter School: Automorphic forms beyond GL_2. Tucson, AZ.

2021 PCMI: Inverse Galois Problem. Online.

Software and Databases

2023 *L*-functions and Modular Forms Data Base (LMFDB), https://www.lmfdb.org
I have made modest contributions. Most recently:

- I developed the Zigzag pictures for the hypergeometric motives pages. See this random family.
- I updated the Newton polygon pictures for abelian varieties over finite fields, see this random isogeny class.

Skills

Language Spanish (native speaker), English, Portuguese.
Computer Python, Magma, SageMath.

Awards

2025 Graduate Student Research Award, Emory University Math Department