# Santiago Arango-Piñeros
*Curriculum Vitae*

(Last updated May 7, 2025)

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Atlanta, Georgia, USA      arXiv, MathSciNet, GitHub

## Education

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|---|---|
| 2020 – | Ph.D. Mathematics, Emory University |
| | Advised by David Zureick-Brown; co-advised by 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

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.

4. *Galois groups of low dimensional abelian varieties over finite fields*,
   with Sameera Vemullapali and Sam Frengley.

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.

## Articles in preparation

- *Generalized Fermat equations and stacky curves*, my Ph.D. thesis.

## Teaching

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|---|---|
| 2025 Fall | Project assistant at the Arithmetic geometry workshop at UNT |
| | 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

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|---|---|
| 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

Emory University

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| 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

## Selected conference and workshop participation

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| 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. |

## Expository seminar presentations

I have contributed a number of talks on the graduate student seminars at Emory and IMPA. Here are the titles of some of them:

- The generalized Fermat equations $x^2 + y^3 = z^n$. (Emory)
- Belyi's Theorem. (Emory)
- Serre's Open Image Theorem. (Emory)
- Complex Multiplication of Elliptic Curves. (Emory)
- Frobenius Distributions of Abelian Varieties. (Emory)

- Lang's Conjecture. (Unlikely intersections learning seminar at Emory)
- Group Schemes. (Learning seminar on abelian varieties at Emory)
- $\ell$-adic Representations of Abelian Varieties. (Emory)
- The Winding Quotient. (Learning seminar on Mazur's theorem at Emory)
- The Weil Conjectures. (Emory)
- Moduli of Elliptic Curves. (Learning seminar on modular curves at Emory)
- Modular Curves over $\mathbf{Q}$. (Learning seminar on modular curves at Emory)
- Modular Jacobians. (Learning seminar on modular curves at Emory)
- Artin-Schreier Theory. (Emory)
- Schanuel's Theorem. (Emory)
- A Mertens-Chebotarev Theorem. (Emory)
- The Lang–Trotter Conjecture. (Emory)
- Global Field Totients. (Emory)
- Decomposition Groups of Plane Curves. (Master thesis presentation at IMPA)
- Bernoulli Numbers and the Riemann Zeta Function. (IMPA)
- Fermat's Last Theorem for Regular Primes. (IMPA)
- Moduli Spaces of Elliptic Curves. (Undergraduate thesis presentation at Los Andes)

## 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.