# Santiago Arango-Piñeros

*Website:* https://sarangop1728.github.io/
*Institutional Email:* santiago.arango@emory.edu
*Permanent Email:* santiago.arango.pineros@gmail.com
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## EDUCATION

**Emory University**                                              Atlanta, Georgia, USA
Ph.D. in Mathematics. Advisors: David Zureick-Brown and John Voight.        2020–2025 (Expected)

**Instituto de Matemática Pura e Aplicada**                          Rio de Janeiro, Brazil
M.S. in Mathematics.                                                  2017–2019

**Universidad de Los Andes**                                         Bogotá, Colombia
B.S. in Mathematics.                                                  2011–2016

**Universidad de Los Andes**                                         Bogotá, Colombia
B.S. in Environmental Engineering.                                    2011–2016

## RESEARCH INTERESTS

- **General:** Number Theory, Arithmetic Geometry.
- **Specific:** Arithmetic Statistics. I am actively thinking about abelian varieties over finite fields and counting rational points with bounded height on stacky curves.

## PUBLICATIONS AND PREPRINTS

3. **Frobenius distributions of low dimensional abelian varieties over finite fields**, with Deewang Bhamidipati and Soumya Sankar. (arXiv)

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.
   *RIMS, Volume 7, Article 19, September 2020.*

## INVITED TALKS

- **Amherst College.** Five College Number Theory Seminar.                      Spring 2024
  *Counting minimal integral points on $x^2 + y^2 = z^4$ and $5$-isogenies of elliptic curves.*
- **Dartmouth College.** Algebra and Number Theory Seminar.                      Spring 2024
  *Counting minimal integral points on $x^2 + y^2 = z^4$ and $5$-isogenies of elliptic curves.*
- **University of Georgia (UGA).** Algebra and Number Theory Seminar.            Spring 2024
  *Counting minimal integral points on $x^2 + y^2 = z^4$ and $5$-isogenies of elliptic curves.*
- **AWM Symposium.** Rethinking Number Theory Special Session.                   Fall 2023
  *$q$-Weil Galois groups of abelian surfaces.*

- **AMS Spring Central Sectional.** Special Session on Arithmetic Statistics I. Spring 2023
  *q-Frobenius distributions of abelian varieties.*
- **University of South Carolina.** Algebra, Geometry, and Number Theory Seminar. Spring 2023
  *q-Frobenius distributions of abelian varieties.*

## Contributed Talks

- **University of Georgia (UGA).** PAlmetto Number Theory Series XXXVII. Fall 2023
  *Counting minimal integral points on $x^2 + y^2 = z^4$ and 5-isogenies of elliptic curves.*
- **CIRM, Marseille.** Arithmetic statistics conference. Spring 2023
  *q-Frobenius distributions of abelian varieties.*
- **University of South Carolina.** PAlmetto Number Theory Series XXXV. Fall 2022
  *q-Frobenius distributions of abelian varieties.*
- **University of Wisconsin-Madison.** (Poster) Arithmetic and topology over Global fields. Fall 2022
  *q-Frobenius distributions of abelian varieties.*
- **Clemson University.** (Virtual) at PAJAMAS III. Fall 2021
  *Mertens' theorem for Chebotarev sets.*
- **University of Connecticut.** (Pre-recorded video) at CTNT 2020. Fall 2020
  *Global field totients.*
- **University of British Columbia.** PIMS Workshop in Arithmetic Topology. Fall 2019
  *An invitation to Arithmetic Equivalence.*

## Seminar Presentations (Expository)

- **Belyi's Theorem.** Graduate student algebra and number theory seminar at Emory. Spring 2024
- **Serre's open image theorem.** Graduate student algebra and number theory seminar at Emory. Fall 2023
- **CM of elliptic curves.** Graduate student algebra and number theory seminar at Emory. Spring 2023
- **Frobenius distributions of AVs.** Graduate student algebra and number theory seminar at Emory. Fall 2022
- **Lang's conjecture.** Unlikely intersections learning seminar at Emory. Fall 2022
- **Group schemes.** Reading seminar in Abelian varieties at Emory. Spring 2022
- **$\ell$-adic representations.** Graduate student algebra and number theory seminar at Emory. Spring 2022
- **The winding quotient.** Learning seminar on Mazur's theorem at Emory. Spring 2022
- **The Weil conjectures.** Graduate student algebra and number theory seminar at Emory. Spring 2022
- **Moduli of elliptic curves.** Learning seminar on modular forms and modular curves at Emory. Fall 2021
- **Modular curves over Q.** Learning seminar on modular forms and modular curves at Emory. Fall 2021
- **Modular Jacobians.** Learning seminar on modular forms and modular curves at Emory. Fall 2021
- **Artin-Schreier theory.** Graduate student algebra and number theory seminar at Emory. Fall 2021
- **Schanuel's theorem.** Graduate student algebra and number theory seminar at Emory. Spring 2021
- **A Mertens-Chebotarev theorem.** Graduate student algebra and number theory seminar at Emory. Spring 2021
- **The Lang-Trotter Conjecture.** Graduate student algebra and number theory seminar at Emory. Fall 2020
- **Global field totients.** Graduate student algebra and number theory seminar at Emory. Fall 2020
- **Decomposition groups of plane curves.** Master thesis presentation at IMPA. Spring 2019
- **Bernoulli numbers and the Riemann zeta function.** Graduate student seminar at IMPA. Fall 2018
- **Fermat's last theorem for regular primes.** Graduate student seminar at IMPA. Spring 2018
- **Moduli spaces of elliptic curves.** Undergraduate Thesis presentation at Los Andes. Fall 2017

## Teaching

- **Instructor of record** at Emory University      Fall 2023
  *Calculus 1 (MATH-111)*
- **Instructor of record** at Emory University      Fall 2022
  *Calculus 1 (MATH-111)*
- **Teaching Assistant** at Emory University      Spring 2022
  *Calculus for Life Sciences (MATH-116)*
- **Teaching Assistant** at Emory University      Fall 2021
  *Linear Algebra (MATH-221)*
- **Grader** at Emory University      Spring 2021
  *Mathematical Statistics II (MATH-362)*
- **Grader** at Emory University      Fall 2020
  *Calculus II (MATH-112)*
- **Teaching Assistant** at Universidad de Los Andes      Spring 2020
  *Cálculo Diferencial (MATE 1203)*
- **Teaching Assistant** at Universidad de Los Andes      Fall 2019
  *Cálculo Diferencial (MATE 1203)*
- **Teaching Assistant** at Universidad de Los Andes      Spring 2019
  *Cálculo Vectorial (MATE 1207)*
- **Teaching Assistant** at Universidad de Los Andes      Spring 2019
  *Cálculo Diferencial (MATE 1203)*

## Mentoring and Outreach

- Study group leader at Arizona Winter School: Abelian Varieties.      Spring 2024
  *Rachel Pries' course on The Torelli locus in the moduli space of abelian varieties.*
- Mentor at Preliminari Arizona Winter School: Abelian Varieties over Finite Fields.      Fall 2023
  *I was a Problem Set Leader (teaching assistant) for the workshop.*
- Mentor at TWOPLES.      Fall 2023
  *I advised Sérgio Maciel.*
- Mentor at TWOPLES.      Fall 2020
  *I advised Camilo Martinez (Universidad del Cauca) and Leonardo Méndez (UNAM).*

## Organization

- **2023**
  - RAGE. Reading about Algebraic Groups at Emory.
    Co-organizers: Raman Parimala.
- **2022**
  - JUICE. Just an Unlikely Intersections Colloquium at Emory.
    Co-organizers: Roberto Hernández.
- **2021**
  - GASES. Geometric Arithmetic Statistics Emory Seminar.
    Co-organizers: Christopher Keyes, David Zureick-Brown.
- **2020**

- EARS. Emory ARithmetic Statistics, Student Seminar.
  Co-organizers: Christopher Keyes, David Zureick-Brown.
  (I lectured a total of 12 hours during this seminar)

- Introduction to modular forms. Bogotá Number Theory Seminar.
  Co-organizers: Xavier Caicedo, José Miguel Cruz.
  (I lectured a total of 14 hours during this seminar)

- **2019**
  - Arithmetic Equivalence. Bogotá Number Theory Seminar.
    Co-organizers: Guillermo Mantilla-Soler, José Miguel Cruz.
    (I lectured a total of 10 hours during this seminar)

## Conferences and Workshops Attended

- **PAlmetto Number Theory Series XXXVII.** Athens, GA. — December 2023
- **AWM Symposium.** Atlanta, GA. — October 2023
- **LuCaNT: LMFDB, Computation, and Number Theory.** ICERM, Providence RI. — July 2023
- **MRC: Explicit computations with stacks.** Buffalo, NY. — June 2023
- **Arithmetic Statistics Conference at CIRM.** Marseille, France. — May 2023
- **AMS 2023 Spring Central Sectional Meeting. Arithmetic Statistics I.** Cincinnati, OH. — April 2023
- **AWS 2023: Unlikely Intersections.** Tucson, AZ. — March 2023
- **Introductory workshop: Diophantine Geometry.** MSRI, Berkeley, CA. — February 2023
- **Connections workshop: Diophantine Geometry.** MSRI, Berkeley, CA. — February 2023
- **PAlmetto Number Theory Series XXXV.** Columbia, SC. — December 2022
- **Arithmetic and topology over global fields.** Madison, WI. — October 2022
- **PAlmetto Number Theory Series XXXV.** Columbia, SC. — December 2022
- **AGNES: Summer school in higher dimensional moduli.** Providence, RI. — August 2022
- **PCMI: Graduate school in number theory informed by computation.** Park City, UT. — July 2022
- **CTNT: Connecticut summer school in number theory.** Storrs, CT. — June 2022
- **ADDING: Anabelian days down in Georgia.** Athens, GA. — May 2022
- **GAGS: Georgia Algebraic Geometry Symposium.** Atlanta, GA. — April 2022
- **AWS 2022: Automorphic forms beyond $GL_2$.** Tucson, AZ. — March 2022
- **ICM: International Congress of Mathematics.** Rio de Janeiro, Brazil. — August 2018

## Scholarships

- CNPq Scholarship: Master's studies scolarship at IMPA. — 2017–2019

## Languages

- **Spanish:** native speaker.
- **English:** proficient.
- **Portuguese:** proficient.

## Computing

Familiar with Python, SageMath, and MAGMA.