

SERGIO CRISTANCHO

Email: sergio[dot]cris[at]princeton[dot]edu

Languages: Spanish (native), English (fluent), German, Italian (intermediate).

Citizenship: Colombian.

PERSONAL STATEMENT

I am a third year graduate student in Applied and Computational Mathematics at Princeton University. I am interested in the intersection of algebra, geometry and combinatorics, and applications.

EDUCATION

Princeton University

P.h.D. in Applied Mathematics,

Princeton, New Jersey

Ongoing

Universidad de los Andes

M.S. in Mathematics,

Bogotá, Colombia

B.S. in Physics,

2023

B.S. in Mathematics,

2021

2020

TEACHING EXPERIENCE

Teaching Assistant

Abstract Algebra, Applied Algebra, Honors Linear Algebra

Princeton University

Real Analysis, Abstract Algebra, Enumerative Combinatorics, Linear Algebra

Universidad de los Andes

Mentor for the Directed Reading Program

Princeton University

RESEARCH

Publications:

- With Mauricio Velasco (2024). Harmonic Hierarchies for Polynomial Optimization. *SIAM Journal on Optimization* 2024 34:1, 590-615.

Talks:

- Lorentzian polynomials and triangular hyperfields. *Arbeitsgemeinschaft: Combinatorial Hodge Theory*, Mathematisches Forschungsinstitut Oberwolfach, October 2025.
- Inequalities for metric trees and matroids. *Discrete Math Seminar*, University of Massachusetts Amherst, September 2025.
- Three proofs of the reverse Khovanskii-Teissier Inequality. *Special Year Seminar*, Institute for Advanced Study, January 2025.
- Harmonic Hierarchies for Polynomial Optimization on Homogeneous Spaces. *SIAM Conference on Applied Algebraic Geometry 2023 (SIAM AG23)*, Eindhoven University of Technology, July 2023.
- Harmonic Hierarchies for Polynomial Optimization. *International Conference on Continuous Optimization (ICCOPT 2022)*, Lehigh University, July 2022.
- Harmonic Hierarchies for Polynomial Optimization. *Conferencia Colombiana de Matemáticas Aplicadas e Industriales (MAPI 2)*, June 2022.