

Víctor Hugo Almendra Hernández

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RESEARCH INTERESTS

Theoretical computer science, with broad interests in combinatorial and topological/geometric ideas.
High dimensional expansion, complexity theory, error correction, pseudorandomness, sampling algorithms.

EDUCATION

- 2022 - **University of Chicago**
Ph.D. in Mathematics
Advisor: Madhur Tulsiani
- 2022 - 2023 **University of Chicago**
M.S. in Mathematics
- 2017 - 2022 **Universidad Nacional Autónoma de México**
B.Sc. in Mathematics
Thesis: *On homology and cohomology of braid groups.*
Advisor: Rita Jiménez Rolland

PUBLICATIONS

Research

- V.H. Almendra-Hernández, G. Ambrus, M. Kendall. *Quantitative Helly-type theorems via sparse approximation*. *Discrete & Computational Geometry* (2022), 1-8.
- V.H. Almendra-Hernández, L. Martínez-Sandoval. *On prescribing total orders and preorders to pairwise distances of points in Euclidean space*. *Computational Geometry: Theory and Applications*, Vol. 107, 2022.

Expository

- V.H. Almendra-Hernández, J. A. Gómez Ortega. *Basic properties of medians* (Spanish). *Tzaloa: Magazine from the Mexican Mathematical Olympiad*, vol. 2020-1. 2020. pp. 1-11.
- V.H. Almendra-Hernández. *The Chinese Remainder Theorem, a powerful tool* (Spanish). *Tzaloa: Magazine from the Mexican Mathematical Olympiad*, vol. 2019-4. 2019. pp. 1-10.

AWARDS

- **Neubauer Fellowship**, 2022-2026, University of Chicago.
- **Honorable Mention at the Sotero Prieto Award**, for best bachelor thesis in mathematics, 2023, Mexican Mathematical Society.
- College competitions: **Mexican Regional of International Collegiate Programming Contest** 2019, 2021 (Fourth and Second place, selected for the 2021, 2022 World Finals), **Iberoamerican Mathematical Competition for Universities** 2018 (Silver medal).
- Math Olympiads: **International Mathematical Olympiad** 2016 (Silver medal), **Centroamerican and Caribbean Mathematics Olympiad** 2015 (Gold medal), **Romanian Masters in Mathematics** 2017 (Honorable Mention), **Iberoamerican Mathematical Olympiad** 2016 (Silver medal).

MENTORING AND TEACHING

University of Chicago:

- Spring 2024 College Fellow for MATH 16310 – Honors Calculus III (IBL).
Winter 2024 College Fellow for MATH 16210 – Honors Calculus II (IBL).
Autumn 2023 College Fellow for MATH 16110 – Honors Calculus I (IBL).

Universidad Nacional Autónoma de México

Fall 2020 Teaching Assistant for Discrete mathematics for bachelor's program in Data Science.

Mentoring

2020 - 2021 Coach in combinatorics for the teams representing Mexico in international Olympiads.

2017 - 2021 Coach for the teams of the Mexico City Mathematical Olympiad.

TALKS

- Algebraic and topological properties of braid groups (Spanish), 54 National Congress of the Mexican Mathematical Society, Fall 2021.
- On prescribing total orders and preorders to pairwise distances of points in Euclidean space, XIX Spanish Meeting on Computational Geometry, Summer 2021.
- (Joint with M. Kendall) Quantitative Helly-type theorems via sparse approximation, Young Mathematicians Conference, hosted online by Ohio State University, Summer 2021.
- On prescribing total preorders and linear orders to pairwise distances of points in Euclidean space (Spanish). XXXVI Colloquium Víctor Neumann-Lara in graph theory, combinatorics and its applications, March 2021.

EXPERIENCE

Research

Budapest Semesters in Mathematics REU (online), Summer 2021.

Project: Quantitative Helly-type results.

Supervisor: Gergely Ambrus.

XXX Summer of Scientific Research, by the Mexican Academy of Sciences, Summer 2020

Project: An introduction to fixed point metric theory in Banach spaces.

Supervisor: Berta Gamboa de Buen.

Industry

Software Engineer Intern, Facebook, Menlo Park Office, Summer 2019.

SERVICE

- 2021 Organizing Committee of the Discrete and Computational Geometry Workshop.
Within the National Computing Meeting 2021, by the Mexican Society of Computer Science.
- 2019 - 2021 Member of the National Committee of the Mexican Mathematical Olympiad.
Helped with proposal and selection of problems for the national contest.
- 2019 - 2020 Editorial Committee of Tzaloa, a magazine from the Mexican Mathematical Olympiad.