

DENAE VENTURA ARREDONDO

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PROFESSIONAL EMPLOYMENT

Visiting Assistant Professor
Mount Holyoke College

2025 - 2028

EDUCATION

National Autonomous University of Mexico. UNAM
Ph.D. in Mathematics. Mentor Prof. Adriana Hansberg Pastor.

2019 - 2023

National Autonomous University of Mexico. UNAM
Master in Mathematics. Mentor Prof. Amanda Montejano Cantoral.

2014 - 2017

Autonomous University of San Luis Potosí. UASLP
Bachelor in Mathematics. Mentor Prof. Amanda Montejano Cantoral.

2008 - 2013

RESEARCH INTERESTS

Combinatorics, discrete optimization, graph theory, Ramsey and extremal graph theory, additive combinatorics, and discrete geometry.

PUBLICATIONS

- 1) Eddy, J., Pesak, R., Qin, D. & Ventura. (2025). Stem-Symmetry, Comb Products, and their Relation to Amoeba Graphs. *ArXiv:2510.15086*.
- 2) De Loera, J., Ventura, D., Wang, A. & Wesley, W. (2025). Optimization Tools for Computing Colorings of $[1, \dots, n]$ with Few Monochromatic Solutions on 3-variable Linear Equations. *Discrete Applied Mathematics*, 373, 159-178.
- 3) Eslava, L., Hansberg, A., Ventura, D. & Wiederhold, T. (2025). New recursive constructions of amoebas and their balancing number. *Aequationes mathematicae*, 1-35.
- 4) Hansberg, A., & Ventura, D. (2025). Unavoidable patterns in 2-colorings of the complete bipartite graph. *Discrete Applied Mathematics*, 374, 50-60.
- 5) Hansberg, A. & Ventura, D. (2023). Extended abstract. Unavoidable patterns in 2-colorings of the complete bipartite graph. *Procedia Computer Science*, 223, 166-174.
- 6) Dailly, A., Eslava, L., Hansberg, A., & Ventura, D. (2023). The balancing number and generalized balancing number of some graph classes. *The Electronic Journal of Combinatorics*, P1-48.
- 7) Dailly, A., Hansberg, A., & Ventura, D. (2021). On the balanceability of some graph classes. *Discrete Applied Mathematics*, 291, 51-63.

TEACHING EXPERIENCE AS INSTRUCTOR

Two Sections of Calculus II (Undergraduate)
Mount Holyoke College.

Fall 2025

Discrete Mathematics (Undergraduate)
Mount Holyoke College.

Fall 2025

Reading Course on Ramsey Theory and Extremal Graph Theory (Graduate)
Department of Mathematics, University of California, Davis.

Winter 2025

Real Analysis (Undergraduate)
University of California, Davis.

Fall 2024

Reading Course on Applications of Graph Theory and Group Theory (Graduate)
Department of Mathematics, University of California, Davis.

Spring 2024

Linear Algebra (Graduate)
High Technology Unit (UAT) Faculty of Engineering, UNAM in Mexico.

Spring 2023

Olympic Math Preparation Workshops and Computer Classes (High School)
UCO Contemporary High School in Mexico.

2018 - 2022

Differential and Integral Calculus (Undergraduate) Fall 2014, Winter 2015, Fall 2017, Winter 2018, and Spring 2018
Aeronautical University in Queretaro in Mexico

Differential and Integral Calculus (Undergraduate) Polytechnic University of Queretaro in Mexico.	Winter 2014
Discrete Mathematics (Undergraduate) Polytechnic University of Queretaro in Mexico.	Spring 2014
Differential Equations (Undergraduate) Polytechnic University of Queretaro in Mexico.	Spring 2014
Calculus and Advanced Math for College Admission (Undergraduate) Faculty of Engineering at Autonomous University of Queretaro in Mexico.	Fall 2014

TEACHING EXPERIENCE AS TEACHING ASSISTANT

Graph Theory (Graduate) Institute of Mathematics, UNAM in Mexico.	2019 - 2022
Calculus (Undergraduate) Faculty of Sciences, UNAM in Mexico.	Fall 2016

MENTORING

- Mentoring undergraduate student, Yinuo Liang, on research project *Face-vectors of a Family of Trivalent Convex Polyhedra* at **University of California, Davis**. Summer 2024-Fall 2025.
- Mentoring undergraduate students Muen Zhang and Rosie Snider on research project *Balanceability of cycles in complete bipartite graphs* at **University of California, Davis**. 2024 - 2025.
- Running a reading course on select topics in Ramsey theory and extremal graph theory for grad students at **University of California, Davis**. Winter 2025.
- Running a reading course on Applications of Graph Theory and Group Theory for grad students at **University of California, Davis**. Spring 2024.
- Mentoring and collaborating with three graduate students, Jillian Eddy, Daniel Qin and Ryan Pesak, on the research project *Stem-Symmetry, Comb Products, and their Relation to Amoeba Graphs* at **University of California, Davis**. 2023 - 2024.
- Mentoring undergraduate student, Liuyue Wang, on research project *Optimization Tools for Computing Colorings of $[1, \dots, n]$ with Few Monochromatic Solutions on 3-Variable Linear Equations* at **University of California, Davis**. Summer 2024.
- Private mentoring of more than 20 high school and college students in Mexico from 2008 to 2022.

AWARDS

Chancellor Postdoctoral Fellowship University of California, Davis (supervisor Prof. Jesús De Loera)	2023 - 2025
National Council of Science and Technology (CONACYT) Doctoral Scholarship National Autonomous University of Mexico (UNAM)	2019 - 2023
National Council of Science and Technology (CONACYT) Master Scholarship National Autonomous University of Mexico (UNAM)	2014 - 2016

RESEARCH VISITS

- Santiago, Chile. July 31 - September 30, 2022 with Prof. Maya Stein at University of Chile. *A problem on degree conditions for embedding trees*.
- Paris, France. July 18 - 22, 2022 with Prof. Antoine Dailly at University of Grenoble. *On the 2-domination number of d -dimensional grids*.

CONTRIBUTED AND INVITED TALKS

- (Invited) President's and Chancellor's Postdoctoral Fellowship Academic Spring Retreat. Lake Arrowhead California. Spring 2025.

- Canadian Discrete and Algorithmic Mathematics conference (CanaDAM) at the University of Ottawa. May, 2025.
- (Invited) Special session on Algebraic and Geometric Combinatorics at the AMS Sectional Meeting, hosted by Cal Poly in San Luis Obispo. May 2025.
- (Invited) Iowa State Discrete Math Seminar via Zoom. March 2025.
- (Invited) Mathematical Pathways to an Excellent Future Conference at the University of California, Riverside. March 2025.
- (Invited) 2025 Latinx in the Mathematical Sciences Conference (LatMath) at IPAM. March 2025.
- (Invited) Algebra Discrete Math seminar in the department of mathematics at UC Davis. January 2025.
- (Invited) Women in Combinatorics WINCOM 5th Anniversary. Virtual Conference. Winter 2024.
- VII Encuentro Colombiano de Combinatoria ECCO 2024. Popayán, Colombia. Summer 2024.
- Early Career Conference in Combinatorics ECCC. University of Illinois Urbana-Champaign, Illinois. Summer 2024.
- (Invited) 6th Meeting of Mexican Mathematicians in the World Casa Matemática. Oaxaca, Mexico. Spring 2024.
- (Invited) President's and Chancellor's Postdoctoral Fellowship Academic Spring Retreat. Lake Arrowhead California. Spring 2024.
- UC Davis Postdoctoral Symposium 2024. University of California, Davis. Spring 2024.
- (Invited) Algebra and Discrete Mathematics Seminar 2023. University of California in Davis. Fall 2023.
- XII Latin-American Algorithms, Graphs and Optimization Symposium. Oaxaca, Mexico. Fall 2023.
- Women in Algebra and Combinatorics. Northeast Conference Celebrating the Association for Women in Mathematics: 50 Years and Counting University at Albany. Albany, Washington. Spring 2023.
- 29th British Combinatorial Conference. Lancaster, United Kingdom. Summer 2022.
- Participant in the 11th International Colloquium on Graph Theory and Combinatorics. Montpellier, France. Summer 2022.
- Combinatorial, Computational, and Applied Algebraic Geometry Conference. University of Washington. Seattle, Washington. Summer 2022.
- XXXVII Coloquio Víctor Neumann-Lara de Teoría de las Gráficas Combinatoria y sus Aplicaciones. **First runner up in conference contest for best research and student talks.** Summer 2022.
- (Invited) Women in Combinatorics (WINCOM). Virtual Colloquium. Fall 2021.
- Congreso Nacional de la Sociedad Matemática Mexicana. Mexico. Fall 2012, 2013, 2015, 2016, 2019, 2021.
- Virtual graph theory seminar at University of Chile. Santiago, Chile. Summer 2021.
- XXXVI Coloquio Víctor Neumann-Lara de Teoría de las Gráficas Combinatoria y sus Aplicaciones. Virtual conference. **First runner up in conference contest for best student talk.** Mexico. Spring 2021.
- Student seminar of the Mathematics Institute. UNAM. Queretaro, Mexico. Fall 2020
- XXXV Coloquio Víctor Neumann-Lara de Teoría de las Gráficas Combinatoria y sus Aplicaciones. Mexico. Spring 2012, 2018, 2020.
- Participant. Zero-Sum Ramsey Theory: Graphs, Sequences and More Workshop. CMO Casa Matemática Oaxaca and Banff International Research Station. Oaxaca, México. Fall 2019.

SERVICE AND OUTREACH

Career Advice for Junior Researchers and Q&A	Winter 2025
Speaker in panel discussion during Connections Workshop: Extremal Combinatorics at SLMath.	
XII Latin-American Algorithms, Graphs and Optimization Symposium	Fall 2023
Member of Organizing Committee.	
Day of Open Doors at Mathematics Institute UNAM	2022 - 2023
Volunteer speaker at event that promotes grad-school program in mathematics at UNAM in Mexico.	
Non-profit organization “En el semáforo se aprende” in Queretaro, Mexico	2020 - 2022
Volunteer teaching under-privileged children basic skills in mathematics, reading and writing.	
Zero-Sum Ramsey Theory: Graphs, Sequences and More Workshop. CMO Casa Matemática Oaxaca and Banff International Research Station	Fall 2019
Assistant to Organizing Committee	

Exposition of Science and Technology (EXPOCYTEC) in Queretaro, Mexico	2014 - 2016
Volunteer at annual workshop for students of all ages that promotes the importance and appeal of learning mathematics and other areas in STEM.	
Speaker in Outreach Math Talks in Peñamiller, Queretaro, Mexico	2014
Volunteer at annual outreach program organized by Exposition of Science and Technology (EXPOCYTEC) for elementary school students that promotes the importance of mathematics.	
Assistant Teacher in Marginalized Regions in Oaxaca, Mexico	Fall 2012
Universidad del Papaloapan, Loma Bonita, Oaxaca, Mexico.	

PROFESSIONAL DEVELOPMENT

Connections Workshop: Extremal Combinatorics	February 2025
Simons Laufer Mathematical Sciences Institute (SLMath)	
Introductory Workshop - Graph Theory: Extremal, Probabilistic and Structural	February 2025
Simons Laufer Mathematical Sciences Institute (SLMath)	
Monthly Postdoctoral Scholars Association Writing Retreats	2023-2025
University of California, Davis.	
Preparing for the Academic Job Market Part 2	Summer 2024
Writing a Diversity Statement Workshop. University of California, Davis	
Preparing for the Academic Job Market Part 1	Summer 2024
Writing an Impactful Teaching Statement Workshop. University of California, Davis	
President's Postdoctoral Fellowship Program's 2024 Winter Writing Retreat	Winter 2024
University of California, San Diego	
2024 Scientific Leadership and Management Skills Course	Spring 2024
University of California, Davis	

LANGUAGES

Fluent in English and Spanish