Javier González Anaya Last updated: November 2026
Department of Mathematics and Computer Science, Santa Clara University
Email: jgonzalezanaya@scu.edu Web: javiergoa.github.io ORCID: 0000-0002-4930-0165

Current Position

Assistant Professor, Santa Clara University — *September 2025 – present*
Research interests: Algebraic geometry and its interactions with combinatorics and commutative algebra. Santa Clara, CA, USA

Previous Appointments

Quarterly Lecturer, Santa Clara University — *July 2025 – August 2025*
Santa Clara, CA, USA

Visiting Assistant Professor, Harvey Mudd College — *July 2023 – June 2025*
Duties: Teaching, mentoring a senior thesis student, and faculty advisor for a capstone Clinic project. Claremont, CA, USA

Visiting Assistant Professor, University of California, Riverside — *September 2020 – June 2023*
Duties: Teaching 2 courses per quarter, leading reading courses and student research projects. Riverside, CA, USA

Teaching Assistant, University of British Columbia — *August 2015 – June 2020*
Classes: Pre-calculus, first-year calculus (differential, integral, both single and multivariate), proof-based linear algebra, proof-based number theory, mathematical logic, complex analysis. Vancouver, BC, Canada
Responsibilities: Head TA, directing discussion sessions, grading, helping students at the Mathematics Learning Center.

Teaching Assistant, Universidad Nacional Autónoma de México — *August 2012 – June 2015*
Classes: Linear Algebra I and II, Modern Algebra: Modules and homological algebra. CU, Mexico City, Mexico
Responsibilities: Designing discussion sessions and grading.

Education

Ph.D. in Mathematics, University of British Columbia — *August 2015 – June 2020*
Thesis: *Negative curves in blowups of weighted projective planes.* Vancouver, BC, Canada

M.Sc. in Mathematics, Universidad Nacional Autónoma de México (UNAM) — *August 2013 – June 2015*
Thesis: *Study of the Lie algebra of vector fields that preserve the conformal structure of Minkowski spacetime.* CU, Mexico City, Mexico

Licenciatura en Física, Universidad Nacional Autónoma de México (UNAM) — *August 2007 – June 2014*
Thesis: *Maxwell equations, the Clifford algebra of Minkowski spacetime and the Dirac operator; with an associated generalization to the Lie algebra of the conformal transformations of a Lorentz metric.* CU, Mexico City, Mexico

Semester abroad, Department of Physics, UC Berkeley — *August – December 2011*
Graduate classes: Quantum Field Theory. Berkeley, CA, USA
Undergraduate classes: Particle Physics, Modern Physics and Advanced Electrical Laboratory.

Publications and Preprints

Preprints * denotes an undergraduate coauthor

12. *The Chow ring of a wonderful compactification*. With P. Gallardo and J.L. González. Submitted. arXiv:2611.07507, 2026.
11. *Toric structure of the moduli space of points in projective space*. With M. Bit*, D. Karp, and Y. Luo*. Submitted. arXiv:2511.23456, 2025.
10. *Dynamics of projectivized toric vector bundles*. With B. Nasserden and S. Zotine. Submitted. arXiv:2510.26757, 2025.
9. *Hypergraph associahedra and compactifications of moduli spaces of points*. With J. Bown*. arXiv:2409.08611, 2024.

Published

8. *Polymatroids and moduli of points in flags*. With P. Gallardo and J.L. González. Forum of Mathematics, Sigma **14** (2026), Paper No. e77. doi:10.1017/fms.2026.10219
7. *Higher-dimensional Losev–Manin spaces and their geometry*. With P. Gallardo, J.L. González, and E. Routis. International Mathematics Research Notices (IMRN) **2025**, no. 23, Paper No. rnaf347. doi:10.1093/imrn/rnaf347
6. *Enumeration of max-pooling responses with generalized permutohedra*. With L. Escobar, P. Gallardo, J.L. González, G. Montúfar, and A.H. Morales. Annals of Combinatorics (2025), published online. doi:10.1007/s00026-025-00782-x
5. *The geography of negative curves*. With J.L. González and K. Karu. Michigan Mathematical Journal **75** (2025), no. 1, 89–118. doi:10.1307/mmj/20226215
4. *Nonexistence of negative curves*. With J.L. González and K. Karu. International Mathematics Research Notices (IMRN) **2023**, no. 16, 14368–14400. doi:10.1093/imrn/rnac355
3. *Curves generating extremal rays in blowups of weighted projective planes*. With J.L. González and K. Karu. Journal of the London Mathematical Society (2) **104** (2021), no. 3, 1342–1362. doi:10.1112/jlms.12461
2. *Constructing non-Mori Dream Spaces from negative curves*. With J.L. González and K. Karu. Journal of Algebra **539** (2019), 118–137. doi:10.1016/j.jalgebra.2019.08.005
1. *On a family of negative curves*. With J.L. González and K. Karu. Journal of Pure and Applied Algebra **223** (2019), no. 11, 4871–4887. doi:10.1016/j.jpaa.2019.02.019

Teaching Experience as Instructor of Record

Lower Division Courses

- Calculus and Analytic Geometry III (**SCU**, Math 13, Fall 2026 and Winter 2027).
- Calculus and Analytic Geometry IV (**SCU**, Math 14, two sections in Winter 2026; one section each in Spring 2026, Winter 2027, and Spring 2027).
- Multivariable Calculus (**HMC**, Math 19, two sections, Fall 2024).
- First-year Calculus I (**UCR**, Math 9A, two sections in Fall 2021, two sections in Fall 2022).
- Introduction to College Mathematics for Sciences II (Precalculus) (**UCR**, Math 6B, two sections, Spring 2021).
- First-year Calculus III (**UCR**, Math 9C, two sections, Fall 2020).
- First-year Calculus I (**UBC**, Math 100, Fall 2018).

Upper Division Courses

- Differential Geometry (**SCU**, Spring 2027).
- Survey of Geometry (**SCU**, Math 101, Spring 2026).
- Topology (**SCU**, Math 113, Fall 2025).
- Linear Algebra (**HMC**, Math 73, two sections, Spring 2025).
- Ordinary Differential Equations (**HMC**, Math 82, Fall 2024).

- Linear Algebra (**HMC**, Math 73, two sections, Spring 2024).
- Ordinary Differential Equations (**HMC**, Math 82, two sections, Fall 2023).
- Linear Algebra II (**UCR**, Math 132, Winter 2022).
- Introduction to Topology (**UCR**, Math 145, Winter 2022).
- Linear Algebra I (**UCR**, Math 131, two sections, Winter 2021).

Teacher Preparation Courses

- History of Mathematics (**UCR**, Math 153, Spring 2022).
- Polynomials and Number Systems (**UCR**, Math 140, Spring 2022).

Graduate Level Courses

- Toric Geometry: problem and discussion sessions for a week-long mini-course at the 2022 Pan-American School in Commutative Algebra (CIMAT, Guanajuato, Mexico, June 2022).
- Sheaf Theory: reading course (**UCR**, Math 194, Winter 2021).

Training

- MAA OPEN Math course "Team-based Inquiry Learning," 2023.
- UCR Mathematics Teaching Workshop, UCR, 2020 and 2021.
- Instructional Skills Workshop, UBC, 2018.
- Semester-long course: Mathematics Teaching Techniques, UBC, Fall 2015.

Mentorship

Summer REU — *June – July 2024*
10-week project with two students studying novel combinatorial aspects of moduli spaces in algebraic geometry. — Harvey Mudd College

Senior thesis advisor — *August 2023 – June 2024*
Directed a senior thesis on novel combinatorial aspects of moduli spaces. Outcome: a research paper with the student, arXiv:2409.08611. — Harvey Mudd College

Clinic advisor — *August 2023 – June 2024*
Faculty mentor for a Clinic capstone project: advised a team of five seniors solving real-world technical problems for a company. — Harvey Mudd College

Faculty Mentor, NSF-funded California Alliance for Minority Participation (CAMP) Summer Scholars program — *June – August 2022*
The program provided the student a $5,000 stipend to work full time for 10 weeks on a research project under my supervision. The student was invited to the Math Alliance's Field of Dreams Conference 2022. Outputs: poster presentations at the Summer Research in Science and Engineering (RISE) Undergraduate Research Symposium at UC Riverside (2022) and at the Annual Biomedical Research Conference for Minoritized Scientists (ABRCMS) 2022. — UC Riverside

Research Mentor, Summer REU (3 students) — *June – December 2022*
Co-organized with P. Gallardo. A project on the mathematics of machine learning, stemming from our paper "Enumeration of max-pooling responses with generalized permutohedra." — UC Riverside

Research Mentor, reading course — *January – March 2022*
Supervised one undergraduate student in a reading course on graduate-level sheaf theory. — UC Riverside

Awards and Scholarships

Excellence in Teaching: Outstanding Visiting Assistant Professor Award, Mathematics Department, UC Riverside — *June 2023*
Yearly recognition to 2 or 3 VAPs for their teaching performance. Award includes a $500 prize.

Candidato al Sistema Nacional de Investigadores (SNI), Consejo Nacional de Ciencia y Tecnología (CONACyT) — *November 2022*

Excellence in Teaching: Outstanding Visiting Assistant Professor Award, Mathematics Department, UC Riverside — *June 2022*
Yearly recognition to 2 or 3 VAPs for their teaching performance. Award includes a $500 prize.

Structured Quartet Research Ensembles (SQuaRE) grant, American Institute of Mathematics (AIM) — *December 2021*
AIM provides research facilities and financial support for our group to spend a week at AIM in San Jose, California. The project, "Neural network polytopes," originated in the LMRC Research Workshop and is a collaboration with L. Escobar, P. Gallardo, J.L. González, G. Montúfar, and A.H. Morales.

Latinx Mathematicians Research Community (LMRC) Research Workshop — *June 2021*
The LMRC, sponsored by AIM and the NSF, is a year-long program for early-career Latinx mathematicians which provides tiered mentoring, research and professional development opportunities, and establishes a large research network of Latinx mathematicians.

International Doctoral Scholarship, Consejo Nacional de Ciencia y Tecnología (CONACyT) — *September 2015 – August 2019*
Full tuition, medical insurance and a 1,000 CAD monthly stipend.

National Master's Scholarship, Consejo Nacional de Ciencia y Tecnología (CONACyT) — *August 2013 – May 2015*

UNAM–UC Semester Abroad Scholarship — *August – December 2011*
Full scholarship to study a semester at the Department of Physics at UC Berkeley as part of an exchange program between the University of California and UNAM.

Professional Service

Co-organizer, Bay Area Mathematical Adventures (BAMA) — *Fall 2026 – present*, Santa Clara, CA, USA
Online talk series for middle and high school students, hosted at Santa Clara University.

Co-organizer of the minisymposium "New Frontiers of Geometry and Combinatorics in Machine Learning," Parts I–III, SIAM Conference on Applied Algebraic Geometry (AG25) — *July 2025*, Madison, WI, USA
Three-part session with 8 speakers over three days. Co-organized with L. Escobar, P. Gallardo, J.L. González, G. Montúfar, and A.H. Morales.

Organizer of the special session "Combinatorial Insights into Algebraic Geometry," 2024 Joint Mathematics Meetings — *January 2024*, San Francisco, CA, USA
The session featured 16 speakers from all career stages and diverse backgrounds. Our goal was to help the participants showcase their work and strengthen and widen their professional network.

Co-organizer of the Western Algebraic Geometry Symposium (WAGS) *November 2022*
UC Riverside

Largest algebraic geometry conference in the Western United States and Canada. Raised a total of $14,000 from different UCR offices in addition to the base $30,000 allocated by the conference's NSF grant. Other duties included inviting speakers, organizing a poster session, publicity, hiring catering services, and creating and moderating a Discord channel.

Co-organizer of the Teaching Workshop of UCR's Department of Mathematics *September 2022*
UC Riverside

Teaching workshop for incoming VAPs and graduate students.

Invited Talks and Posters

Polymatroids as toric compactifications of point configuration spaces. *April 2026*
Algebraic Geometry Seminar, UC Riverside — Riverside, CA, USA

Polymatroids as toric compactifications of point configuration spaces. *April 2026*
Commutative Algebra and Algebraic Geometry Seminar, UC Berkeley — Berkeley, CA, USA

Polymatroids as toric compactifications of point configuration spaces. *March 2026*
Algebra Seminar, McMaster University — Hamilton, ON, Canada

What is a moduli space? *March 2026*
Mathematics Colloquium, San José State University — San José, CA, USA

Point configurations in flags and their moduli. *December 2025*
Mathematics Colloquium, UC Santa Cruz — Santa Cruz, CA, USA

Special Colloquium: Introducing New Faculty. *November 2025*
Mathematics and Computer Science Colloquium, Santa Clara University — Santa Clara, CA, USA

Moduli theory through examples. *October 2025*
Algebra, Geometry, and Combinatorics Seminar, San Francisco State University — San Francisco, CA, USA

What is a moduli space? *March 2025*
Mathematical Pathways to an Excellent Future Conference, UC Riverside — Riverside, CA, USA

Moduli spaces of points in flags of affine spaces and polymatroids. *March 2025*
IPAM's LatMath 2025 Conference — Los Angeles, CA, USA

What is a moduli space? *December 2024*
Amherst College Mathematics Colloquium — Amherst, MA, USA

Moduli spaces of points in flags of affine spaces and polymatroids. *December 2024*
Birational Geometry Seminar (BGS), organized by Joaquín Moraga — Online

The hidden structure of negative curves, poster presentation. *November 2024*
Western Algebraic Geometry Symposium (WAGS), University of Arizona — Tucson, AZ, USA

Moduli spaces of points in flags of affine spaces and polymatroids. *October 2024*
2024 Fall Western Sectional Meeting (AMS), UC Riverside — Riverside, CA, USA

Moduli spaces of points in flags of affine spaces and polymatroids. *September 2024*
2024 Fall Central Sectional Meeting (AMS), University of Texas at San Antonio — San Antonio, TX, USA

Moduli spaces through a combinatorial lens. *September 2024*
Mathematics Colloquium of the Claremont Colleges — Claremont, CA, USA

Blow-ups of weighted projective planes at a point: Exploring the parameter space of triangles and the MDS property. *April 2024*
Commutative Algebra and Algebraic Geometry in TUcSon (CAAGTUS), University of Arizona — Tucson, AZ, USA

Higher-dimensional Losev–Manin spaces and their geometry. — *March 2024*
AG@PUI Online Seminar — Online

What is a moduli space? — *March 2024*
Algebraic Geometry Seminar, UC Riverside — Online

Enumerating linearity regions of max-pooling layers in convolutional neural networks. — *February 2024*
Pomona College Applied Math Seminar — Claremont, CA, USA

Exploring combinatorial aspects of max-pooling layers with undergraduates. — *January 2024*
Joint Mathematics Meetings 2024 — San Francisco, CA, USA

Higher-dimensional Losev–Manin spaces and their geometry. — *January 2024*
Joint Mathematics Meetings 2024 — San Francisco, CA, USA

The hidden structure of negative curves. — *November 2023*
Algebra/Number Theory/Combinatorics Seminar of the Claremont Colleges — Claremont, CA, USA

What is a moduli space? — *October 2023*
Mathematics Colloquium of the Claremont Colleges — Claremont, CA, USA

Blow-ups of weighted projective planes at a point: Exploring the parameter space of triangles and the MDS property. — *February 2023*
Algebraic Geometry Seminar, University of Utah — Salt Lake City, UT, USA

The hidden structure of negative curves, poster presentation. — *November 2022*
Western Algebraic Geometry Symposium (WAGS), UC Riverside — Riverside, CA, USA

The geography of negative curves, poster presentation. — *October 2022*
Texas Algebraic Geometry Symposium (TAGS), Texas A&M — College Station, TX, USA

Symbolic Rees algebras and negative curves. — *September 2022*
Commutative Algebra Seminar, University of Nebraska–Lincoln — Lincoln, NE, USA

Una breve historia sobre la notación matemática. — *September 2022*
Matemáticas en Español Seminar, University of Nebraska–Lincoln — Lincoln, NE, USA

Introduction to divisors. — *January 2022*
Algebraic Geometry Seminar, UC Riverside — Online

Negative curves in blowups of weighted projective planes. — *December 2021*
Algebraic Geometry Seminar, UC Riverside — Online

Curvas negativas en blowups de espacios proyectivos ponderados. — *September 2021*
Seminario de Álgebra Conmutativa y Geometría Algebraica, CIMAT — Online

The geography of negative curves. — *April 2021*
Western Algebraic Geometry Symposium (WAGS) — Online

A review of the theory of varieties. — *April 2021*
Algebraic Geometry Seminar, UC Riverside — Online

Finite generation of symbolic Rees algebras from a geometric perspective. — *March 2021*
Commutative Algebra Seminar, UC Riverside — Online

Estudiando anillos de Cox mediante una reducción a característica prima. — *August 2019*
Seminario Guillermo Torres, Institute of Mathematics, UNAM — CU, Mexico City, Mexico

Constructing examples and non-examples of Mori Dream Spaces via a prime characteristic method. — *June 2019*
Algebraic Geometry Seminar, UC Riverside — Riverside, CA, USA

Constructing Mori Dream Spaces and non-Mori Dream Spaces via prime characteristic methods. *December 2018*

AG session, Winter Meeting of the Canadian Mathematical Society Vancouver, BC, Canada