

MARIA ANGELICA CUETO

Education and Employment:

- Faculty **The Ohio State University (USA)**
Associate Professor (with tenure) (2022-present).
- Faculty **The Ohio State University (USA)**
Assistant Professor (tenure-track) (2015-2022).
- Visitor **Université Lille I, Laboratoire Paul Painlevé (France)**
CEMPI Visiting Professor (May 15 - June 15 2018).
- Visitor **The Fields Institute for Research in Mathematical Sciences (Canada)**
Mayor Thematic Program: Combinatorial Algebraic Geometry (July-Dec 2016).
- Faculty **Columbia University (USA)**
Adjunct Assistant Professor (Fall 2011 and Fall 2013).
- Postdoc **Columbia University (USA)**
NSF postdoctoral research fellow (2011-2015). On leave (2012-2013).
Mentor: Andrei Okounkov.
- Postdoc **Goethe-Universität Frankfurt (Germany)**
Alexander von Humboldt postdoctoral research fellow (Jan. 2012- July 2013).
Mentor: Annette Werner.
- Postdoc **Institut Mittag-Leffler (Sweden)**
Program: “Algebraic Geometry with a view towards applications” (Spring 2011).
- Ph.D. **University of California, Berkeley (USA)**
Mathematics (Aug. 2007 - Dec. 2010)

Tropical Implicitization
Bernd Sturmfels (Chair), Martin Olsson, John Huelsenbeck.
- Lic. **University of Buenos Aires (Argentina)**
Mathematics (equiv. M.Sc.) (2006)

Multiplicities and Discriminantal Varieties
Alicia Dickenstein (Chair), Fernando Cukierman, Pablo Solernó.

Research Interests:

Tropical Geometry and its interactions with Combinatorics, Algebraic Geometry and Topology of singularities, including the interplay between tropical varieties and non-Archimedean analytic spaces. During my PhD, I studied tropical methods for implicitization and did some work on applications of mathematics to phylogenetics.

Publications:

- 2024 22. M.A. Cueto, A. Knecht, K. Mincheva, C. Salgado, A. Sobieska and C. Yun, “Tropical degree-two del Pezzo surfaces and their 56 lines.” In preparation.
- 21. M.A. Cueto, Y. Len, H. Markwig and Y. Ren, “Tropical methods for building real space sextics with totally real tritangent planes.” In preparation.
- 2023 20. M.A. Cueto, P. Popescu-Pampu and D. Stepanov, “Local tropicalizations of splice type surface singularities” (77 pages), *Math. Ann.* <https://doi.org/10.1007/s00208-023-02755-y>.

- 19. M.A. Cueto, P. Popescu-Pampu and D. Stepanov, “The Milnor fiber conjecture of Neumann and Wahl, and an overview of its proof.” In “Essays in geometry-dedicated to Norbert A’Campo” (A. Papadopoulos, editor), 629-709. IRMA Lect. Math. Theor. Phys. **34**, EMS Press, Berlin, 2023, ISBN:978-3-98547-024-2.
- 18. M.A. Cueto and H. Markwig, “Combinatorics and real lifts of bitangents to tropical quartic curves”. *Discrete Computat Geom* **69**, 597-658.
<https://doi.org/10.1007/s00454-022-00445-1>.
- 2021 17. M.A. Cueto, “Maps between thin Schubert cells and inverse limits.” (6 pages). Appendix to “Initial degenerations of Grassmannians” by D. Corey. In press, *Sel. Math. New Ser.* **27**, Article 57. <https://doi.org/10.1007/s00029-021-00679-6>.
- 2019 16. M.A. Cueto and A. Deopurkar, “Anticanonical tropical cubic del Pezzos contain exactly 27 lines” (61 pages). Eprint: [arXiv:1906.08196](https://arxiv.org/abs/1906.08196) Supplementary material’s website.
- 2018 15. M.A. Cueto and H. Markwig, “Tropical geometry of genus two curves”. *J. Algebra* **517**(1), 457–512. [10.1016/j.jalgebra.2018.08.034](https://doi.org/10.1016/j.jalgebra.2018.08.034) Supplementary material’s website.
- 2017 14. C. Ciliberto, M.A. Cueto, M. Mella, K. Ranestad and P. Zwiernik, “Cremona linearizations of some classical varieties.” From Classical to Modern Algebraic Geometry: Corrado Segre’s Mastership and Legacy (G. Casnati, A. Conte, L. Gatto, L. Giacardi, M. Marchisio, A. Verra, editors). “Trends in the History of Science” series, edited by Birkhäuser.
- 2016 13. M.A. Cueto and H. Markwig, “How to repair tropicalizations of plane curves using modifications.” *Experimental Mathematics* **25** (2), 130–164. doi [10.1080/10586458.2015.1048013](https://doi.org/10.1080/10586458.2015.1048013).
- 2014 12. M.A. Cueto, M. Häbich and A. Werner, “Faithful tropicalization of the Grassmannian of planes.” *Math. Ann.* **360** (1–2), 391–437, doi [10.1007/s00208-014-1037-3](https://doi.org/10.1007/s00208-014-1037-3)
- 2013 11. E. Cattani, M.A. Cueto, A. Dickenstein, S. Di Rocco and B. Sturmfels, “Mixed discriminants.” *Mathematische Zeitschrift* **274** (3), 761–778, doi:[10.1007/s00209-012-1095-8](https://doi.org/10.1007/s00209-012-1095-8).
- 10. M.A. Cueto, S. Lin, “Tropical secant graphs of monomial curves.” *Beiträge zur Algebra und Geometrie* **54** (1), 383–418, doi [10.1007/s13366-012-0091-9](https://doi.org/10.1007/s13366-012-0091-9).
- 2012 9. M.A. Cueto, “Implicitization of surfaces via geometry tropicalization.” Eprint: [arXiv:1105.0509](https://arxiv.org/abs/1105.0509).
- 8. M.A. Cueto, “Tropical mixtures of star tree metrics.” *Annals of Combinatorics* **16** (2), 233–251, doi:[10.1007/s00026-012-0128-7](https://doi.org/10.1007/s00026-012-0128-7).
- 2011 7. D.A. Cartwright, M.A. Cueto, E.A. Tobis, “The maximum independent sets of De Bruijn graphs of diameter 3.” *Electronic Journal of Combinatorics* **18** (1), paper 194, 1–18.
- 6. M.A. Cueto, F. Matsen, “Polyhedral geometry of phylogenetic Rogue Taxa.” *Bulletin of Mathematical Biology* **73**(6), 1202–1226. doi:[10.1007/s11538-010-9556-x](https://doi.org/10.1007/s11538-010-9556-x).
- 2010 5. M.A. Cueto, “Tropical implicitization.” Ph.D. Thesis, University of California, Berkeley.
- 4. M.A. Cueto, S. Lin, “Tropical secant graphs of monomial curves.” 22nd International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2010), 669680, *Discrete Math. Theor. Comput. Sci. Proc.*, AN, Assoc. Discrete Mathematics and Theoretical Computer Science, Nancy, 2010. [dmAN0147/3170](https://arxiv.org/abs/1004.1473).
- 3. M.A. Cueto, E.A. Tobis, J. Yu, “An implicitization challenge for binary factor analysis.” *Journal of Symbolic Computation* **45**(12), 1296–1315. doi:[10.1016/j.jsc.2010.06.011](https://doi.org/10.1016/j.jsc.2010.06.011).
- 2. M.A. Cueto, J. Morton, B. Sturmfels, “Geometry of the restricted Boltzmann machine.” In *Algebraic Methods in Statistics and Probability II*, (M. Viana and H. Wynn, eds.), AMS, Contemporary Mathematics **516**, 135–153. doi:[10.1090/conm/516/10172](https://doi.org/10.1090/conm/516/10172).

- 2007 1. M.A. Cueto, A. Dickenstein, “Some results on inhomogeneous discriminants.” Proceeding of the XVI Coloquio Latinoamericano de Algebra (Colonia del Sacramento, Uruguay, August 2005), W. Ferrer Santos, G. González Sprinberg, A. Rittatore and A. Solotar eds., Biblioteca de la Revista Matemática Iberoamericana, 42–61. ISBN: 978-84-611-7907-7. Eprint: [arXiv:math.AG/0610031](https://arxiv.org/abs/math/0610031).

Editorial Activity:

- 2013 1. *Algebraic and Combinatorial Aspects of Tropical Geometry* (Proceedings of the CIEM Workshop in tropical geometry), (E. Brugallé, M.A. Cueto, A. Dickenstein, E.-M. Feichtner and I. Itenberg, eds.), American Mathematical Society, Contemporary Mathematics, **589**, x+350 pp, doi:10.1090/conm/589.

Grants:

- 2023 2028 NSF RTG Grant DMS-2231565: RTG: Arithmetic, Combinatorics, and Topology of Algebraic Varieties (Co-PI, joint with David Anderson, Jennifer Park and Stefan Patrikis).
- 2023 KOALA 2023: Workshop of the Kentucky ALgebra Alliance. MRI conference grant (joint with David Anderson and Eric Katz). Period: March-July.
- 2021 Tropical degree-two del Pezzo surfaces and their 56 lines. Collaborate@ICERM Program, Providence, RI, US (joint with Amanda Knecht, Kalina Mincheva, Aleksandra Sobieska and Claudia Yun.) Period: August 16-20.
- 2020-2023 NSF Standard Grant DMS-1954163: Combinatorial and Tropical Degenerations of del Pezzo surfaces and their Moduli. (PI).
- 2020 Enumerative geometry of real and tropical tangent planes. RiP Program at MFO, Oberwolfach, Germany (joint with Yoav Len, Hannah Markwig and Yue Ren.) Period: March 8-21.
- 2019 OSU Graduate Advisor Workshop. MRI Conference grant (joint with David Penneys, Krystal Taylor and Daniel Thompson). Period March-July.
- 2017-2022 NSF Standard Grant DMS-1700194: Combinatorial and Tropical Degenerations of Classical Moduli Spaces (PI).
- 2017 A tropical approach to Milnor fibers of rational surface singularities. Bernoulli Brainstorm scheme at Centre Interfacultaire Bernoulli CIB, Lausanne, Switzerland (joint with Patrick Popescu-Pampu and Dmitry Stepanov). Period: July 9-26.
- 2016 PEAK 2017 conference. DFG Conference Grant DFG HA 4383/7-1 (PI, joint with Christian Haase, Alex Kronya and Gregory Smith).
- 2014 Tropical Geometry and Singularities. Research in Pairs at CIRM, Marseille, France (joint with Patrick Popescu-Pampu and Dmitry Stepanov). Award Number 1173. Period: Jan 27-Feb 7.
- 2013-2014 MEGA 2013. NSF Conference Grant DMS-1303109 (associated personnel).
- 2013 PEAKs 2013 conference. DFG Conference Grant HA4383/6-1 (PI, joint with Christian Haase and Gregory Smith).
- 2011-2012 Tropical geometry workshop at CIEM. NSF Conference Grant DMS-1138935 (Co-PI, joint with Josephine Yu).
- 2011-2015 NSF Postdoctoral Fellowship DMS-1103857 (PI).

Honors and Awards:

Fellowships:

- 2012-2013 Alexander von Humboldt Postdoctoral Research Fellowship. Goethe Universität Frankfurt (Germany). Scientific Sponsor: Annette Werner.

- 2011-2015 NSF Mathematical Sciences Postdoctoral Research Fellowship. Columbia University (USA). Scientific Sponsor: Andrei Okounkov.
- 2011 AXA Mittag-Leffler Institute postdoctoral fellow of the Spring 2011 special program “Algebraic Geometry with a view towards applications” (Sweden).
- 2007-2009 University of California, Berkeley, Chancellor’s Fellowship (USA).
- 2005 University of Buenos Aires, “Beca Estímulo” (fellowship for undergraduate research). UBA-CYT Programación Científica 2004-2007. Proyecto X042- “Geometría Algebraica y Aplicaciones.” (Argentina)

Research Assistanships:

- 2008-2010 Graduate Student Researcher, Department of Mathematics, UC Berkeley (3 semesters total).

Prizes:

- 2002-2005 “Competencia Matemática E. Paenza” (math contest for teams of two members for universities in Argentina and Uruguay):
2nd Prize (2005), 4th Prize (2004), 5th Prize (2003, 2002).
- 2002 5th Iberoamerican Mathematical Olympiad: Honor Prize.

Conferences and Symposia organized:

- 2024 May RTG Workshop “Local systems in Algebraic Geometry. The Ohio State University, Columbus, OH, USA (with David Anderson, Jennifer Park and Stefan Patrikis).
- 2023 Dec KOI Combinatorics Lectures II. The Ohio State University, Columbus, OH, USA (with Kyle Binder, Eric Katz and Max Kutler).
- 2023 May KOALA 23: Workshop of the Kentucky Ohio ALgebra Alliance. The Ohio State University, Columbus, OH, USA (with David Anderson and Eric Katz).
- 2019 June OSU Graduate Advisor Workshop. The Ohio State University, Columbus, OH, USA (with David Penneys, Krystal Taylor and Daniel Thompson).
- 2018 Mar. Special session on “Algebraic and Combinatorial Aspects of Tropical Geometry”. Central Sectional meeting of the American Mathematical Society, Columbus, OH, USA (with Yoav Len and Martin Ulirsch).
- 2017 Feb. PEAK 2017: Workshop on Perspectives and Emerging Topics in Algebra and Konvexity, Haus Bergkranz, Austria (with Christian Haase, Alex Küronya and Greg Smith).
- 2015 Aug. Three Minisymposia on Tropical Geometry, SIAM Conference on Applied Algebraic Geometry, Daejeon, Korea (with Anders Jensen and Josephine Yu).
- 2014 -2018 Bi-annual Algebraic and Tropical Meetings of Brown and YaLE (with Dan Abramovich, Asher Auel, Melody Chan, José González, Nathan Kaplan, Sam Payne and Nathan Pflueger).
- April BIRS Workshop on Specialization of Linear Series for Algebraic and Tropical Curves (14w5133), Banff International Research Station, Canada (with Matt Baker, Lucia Caporaso, Eric Katz and Sam Payne).
- 2013 June Effective Methods in Algebraic Geometry MEGA 2013, Goethe-Universität Frankfurt, Germany. Member of the local committee.
- Mar. PEAKs 2013: Workshop on Perspectives and Emerging Topics in Algebra and Combinatorics, Haus Bergkranz, Austria (with Christian Haase and Greg Smith).
- 2011 Dec. Workshop on Tropical Geometry, CIEM, Cantabria, Spain (with Erwan Brugallé, Eva-Maria Feichtner, Tomás Recio, Martin Sombra, Luis F. Tabera and Josephine Yu).

Colloquia and Seminar series organized:

- 2015 -pres. Algebraic Geometry Seminar, The Ohio State University.
 2016 -2020 Geometry, Combinatorics and Integrable Systems Seminar, The Ohio State University.
 2016 -2017 Departmental Colloquium, The Ohio State University (with Facundo Mémoli and Daniel Thompson).
 — Aut Weekly Colloquium, Fall 2016 Mayor Program on Combinatorial Algebraic Geometry, Fields Institute, Toronto, ON, Canada.
 2010 Fall Mirror symmetry and tropical geometry seminar, UC Berkeley (with Helge Ruddat).

Lecture series and talks (112 total):**Short Courses (international audience):**

- 2025 Jan. Minicourse at the Research School “Logarithmic and non-archimedean methods in singularity theory”, CIRM, Luminy, Marseille, France (3 hours). Topic: A proof of the Neumann-Wahl conjecture on Milnor fibers of splice type surface singularities.
 2020 July Team leader, Women in Algebraic Geometry Workshop, ICERM, Providence, RI, US (1 week). Topic: Tropical degree-two del Pezzo surfaces, quartic curves and their bitangents.
 2018 May Minicourse at the Université de Lille I, Laboratoire Paul Painlevé (6 hrs.). Topic: Berkovich analytic spaces from the tropical perspective.
 2016 Dec. Minicourse lecturer at the 2016 Mayor Program on Combinatorial Algebraic Geometry (Tapas series), Fields Institute, Toronto, ON, Canada (6 hrs.). Topic: Berkovich analytic spaces from the tropical perspective.
 — July Minicourse lecturer at the 2016 Summer School “Geometry of Valuations”, Goethe Universität Frankfurt, Germany (4 hrs.). Topic: Valuations of function fields and projective geometry.
 2015 July Mentor of the graduate student BOOTCAMP for the 2015 AMS Summer Research Institute in Algebraic Geometry, University of Utah, USA (14 hrs). Topic: Tropical Geometry and applications to algebraic geometry.

Invited (international audience):

- 2023 Dec. Special Session on Algebraic Surfaces, 8th Iberoamerican Congress on Geometry, Reserch Center ”Geometry at the Frontier”, Universidad de la Frontera, Pucón, Chile: “Tropical del Pezzo surfaces of low degree.”
 — May Algebraic Geometry Seminar, University of Trento, Trentino, Italy: “Splice type surface singularities and their local tropicalizations.”
 — May Tropical Methods in Geometry, Mathematisches Forschungsinstitut Oberwolfach, Germany. “Local Tropicalization: a combinatorial approach to isolated singularity links.”
 2022 Aug LMS-Bath Symposium on Combinatorial Algebraic Geometry 2022, Bath, UK. “Splice type surface singularities and their local tropicalizations.”
 — June Combinatorial, Computational, and Applied Algebraic Geometry. Conference in honor of Bernd Sturmfels’ 60th birthday. University of Washington, Seattle, WA, US. “Lines in the tropics”.
 — June MEGA 2022 (Effective Methods in Algebraic Geometry), Krakow, Poland. “Lines in the tropics”.
 — Feb. LAGARTOS (Latin American Geometria Algebraica Real y TrOpical Seminar) online seminar. “Splice type surface singularities and their local tropicalizations.”
 2021 Nov. Conference “Faces of singularity theory”, Jean-Morlet thematic semester in Singularity Theory at C.I.R.M, Luminy, France. “Splice type surface singularities and their local tropicalizations.”

- April Algebraic Geometry and Polyhedra (online workshop), ICERM, Providence, RI, US. “Combinatorics and real lifts of bitangents to tropical quartic curves.”
- Feb. Sage/Oscar Days for Combinatorial Algebraic Geometry (Online workshop), ICERM, Providence, RI, US. “Computational challenges for tropical del Pezzo surfaces.”
- 2018 June Combinatorial Algebraic Geometry Retrospective Workshop, Fields Institute, Toronto, ON, Canada. “Tropical Geometry of genus two curves.”
- Mar. Spring 2018 research program on “Tropical Geometry, Amoebas and Polytopes”. Institut Mittag-Leffler, Djursholm, Sweden: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- 2017 Oct. Canadian Western Algebraic Geometry Symposium. University of Alberta, Edmonton, AB, Canada: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- 2016 Oct. Workshop on Convexity in Algebraic Geometry. Fields Institute, Toronto, ON, Canada: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- 2015 Dec. Departmental Colloquium, Institute of Mathematical Sciences, Chennai, Tamil Nadu, India: “Non-Archimedean Combinatorics.”
- Jan. Departmental Colloquium, Queen’s University, Kingston, ON, Canada: “Non-Archimedean Combinatorics.”
- 2014 Dec. ECR Plenary speaker, 8th Australia-New Zealand Mathematics Convention (ANZMC), Melbourne, Australia: “Non-Archimedean Combinatorics.”
- Dec. Special Session on Algebraic Geometry, 8th Australia-New Zealand Mathematics Convention (ANZMC), Melbourne, Australia: “Repairing tropical curves by means of linear tropical modifications.”
- Dec. Invited speaker (carrier advise presentation). Early Career Workshop of the Australian Mathematical Society, Melbourne, Australia: “The journey of a tropical geometer through four countries.”
- 2013 June Departmental Colloquium, Saarland Univeristät, Saarbrücken, Germany: “Mixed discriminants.”
- 2012 April Workshop on Tropical Geometry, International Center for Mathematical Sciences, Edinburgh, UK: “Combinatorial normal crossings and geometric tropicalization.”
- 2011 Oct. Minisymposia on Tropical Geometry, SIAM conference on Applied Algebraic Geometry (AG11), North Carolina State University, Raleigh, USA: “Implicitization of surfaces via geometry tropicalization.”
- Sep. Workshop on Tropical Geometry and Computational Biology, Universität des Saarlandes, Saarbrücken, Germany: “An implicitization challenge for binary factor analysis.”
- Aug. I Latin American School on Algebraic Geometry and Applications, La Cumbre, Córdoba, Argentina: “Implicitization of surfaces via geometry tropicalization.”
- May Discrete, Tropical and Algebraic Geometry workshop, Goethe-Universität Frankfurt, Germany: “Implicitization of surfaces via geometry tropicalization.”
- Feb. Solving polynomial equations Workshop, CIAM-KTH, Stockholm, Sweden: “Implicitization of surfaces via geometry tropicalization.”
- 2010 July Ph.D. Students Conference on Tropical Geometry, Goethe-Universität Frankfurt, Germany: “Tropical secant graphs of monomial curves.”
- June AMS-SMM Eighth International Meeting - Special Session on Singularity Theory and Algebraic Geometry, Berkeley, CA: “Tropical secant graphs of monomial curves.”
- 2009 June Effective Methods in Algebraic Geometry (MEGA), University of Barcelona, Spain: “An implicitization challenge for binary factor analysis.”
- 2006 Aug. Tercer Encuentro Nacional de Algebra (eLENA III), Vaquerías, Argentina: “Inhomogeneous discriminants.”

Invited (domestic audience; not including seminars):

- 2023 July Colloquium PRiME 23, Claremont College, Pomona, CA, US: “Lines and curves in the tropics.”
- Feb. Departmental Colloquium, University of Pittsburgh, PA, US: “Lines in the tropics.”
- 2021 Mar. AMS Spring Eastern Sectional Meeting (online), Brown University, RI, US. Special Session on Moduli of Curves, Hilbert Schemes, and Tropical Geometry (Code: SS 10A): “Combinatorics and real lifts of bitangents to tropical quartic curves.”
- 2019 April Western Algebraic Geometry Symposium (WAGS). UC Berkeley, CA, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- Mar. Georgia Tech Tropical Arithmetic and Combinatorial Algebraic-geometry (Gattaca) conference. Georgia Institute of Technology, Atlanta, GA, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- Feb. Departmental Colloquium, University of Wisconsin-Madison, WI, US: “Lines on tropical cubic surfaces.”
- 2018 Nov Blackwell-Tapia Conference 2018. ICERM, Providence, RI, US: “Lines in the tropics.”
- 2017 May 2017 Midwest Combinatorics conference. University of Minnesota, Minneapolis, MN, US: “Tropical Geometry of genus 2 curves.”
- April ALGeCom 15 (conference on algebra, geometry and combinatorics). University of Illinois at Urbana-Champaign, Urbana, IL, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- 2016 June Minisymposium on Tropical Mathematics and its applications. SIAM conference on Discrete Mathematics DM16. Georgia State University, Atlanta, GA, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- 2015 July Contributed talk, 2015 AMS Summer Research Institute in Algebraic Geometry (Week 2), University of Utah, Salt Lake City, UT, US: “Repairing tropical curves by means of linear tropical modifications.”
- April Special session in Algebraic Geometry, 3rd AWM Research Symposium, University of Maryland, MD, US: “Repairing tropical curves by means of linear tropical modifications.”
- Mar. AGNES Conference Spring 2015, Boston College, MA, US: “Faithful tropicalization of the Grassmannian of planes.”
- Jan. Departmental Colloquium, Colorado State University, Fort Collins, CO, US: “Non-Archimedean Combinatorics.”
- 2014 Dec. Recruitment talk, The Ohio State University, Columbus, OH, US: “Non-Archimedean Combinatorics.”
- Dec. Departmental Colloquium, Binghamton University, NY, US: “Non-Archimedean Combinatorics.”
- Oct. AMS Fall Western Sectional Meeting, San Francisco State University, San Francisco, CA, US. Special Session on Combinatorics and Algebraic Geometry (Code: SS 9A): “Faithful tropicalization of the Grassmannian of planes.”
- Oct. SACNAS National Conference, Los Angeles, CA, US. Special Session on Combinatorial Algebraic Geometry.
- Sept. AMS Fall Central Sectional Meeting, University of Wisconsin-Eau Claire, Eau Claire, WI, US. Special Session on New Trends in Toric Varieties (Code: SS 4A): “Repairing tropical curves by means of linear tropical modifications.”
- 2011 Oct. AMS Fall Western Sectional Meeting, University of Utah, Salt Lake City, UT, US. Special Session on Computational and Algorithmic Algebraic Geometry (SS17A): “Implicitization of surfaces via geometric tropicalization.”

Seminars and other specialized talks:

- 2023 Oct. Invitations to Mathematics Lecture Series, The Ohio State University, Columbus, OH, US: “Combinatorics and Geometry in the tropics.”
- May Algebraic Geometry seminar, UC Davis, CA, US “Splice type surface singularities and their local tropicalizations.”
- Feb Algebra, Combinatorics, and Geometry seminar, University of Pittsburgh, PA, US: “Splice type surface singularities and their local tropicalizations.”
- Feb Algebraic Geometry Seminar, The Ohio State University, Columbus, OH, US: “Splice type surface singularities and their local tropicalizations.”
- 2022 May Algebraic Geometry Seminar, University of Buenos Aires, CABA, Argentina. “Resoluciones combinatorias de singularidades empalmadas.”
- 2021 Oct. Algebraic Geometry Seminar, UC Riverside, CA, US: “Splice type surface singularities and their local tropicalizations.”
- 2020 Sept. Algebraic Geometry Seminar, The Ohio State University, Columbus, OH, US: “Combinatorics and real lifts of bitangents to tropical quartic curves.”
- May Algebraic Geometry Seminar, UC Davis, CA, US: “Combinatorics and real lifts of bitangents to tropical quartic curves.”
- 2019 Dec. Oberseminar Algebra und Geometrie, Goethe Universitt Frankfurt, Germany: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- Dec. Forschungsseminar Diskrete Mathematik und Geometrie Seminar, Technische Universitt Berlin, Germany: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- April Algebra Seminar, Georgia Institute of Technology, Atlanta, GA, US: “Combinatorics of line arrangements on tropical cubic surfaces.”
- Feb. Geometry and Physics Seminar, University of Miami, FL, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- Feb. Algebraic Geometry and Number Theory seminar, Rice Univeristy, Houston, TX, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- 2018 Oct. Invitations to Mathematics Lecture Series, The Ohio State University, Columbus, OH, US: “Combinatorics and Geometry in the spooky tropics.”
- Oct. Geometry, Physics, and Representation Theory Seminar, Northeastern University, Boston, MA, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- Oct. Algebraic Geometry Seminar, The Ohio State University, Columbus, OH, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- Apr. Algebra Seminar, University of Tennessee, Knoxville, TN, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- 2017 Oct. Algebraic Geometry Seminar, UC Davis, CA, US: “Anticanonical tropical del Pezzo cubic surfaces contain exactly 27 lines.”
- Sep. Algebraic Geometry Seminar, The Ohio State University, Columbus, OH, US: “Tropical Geomtry of Genus 2 curves.”
- Feb. AWM Student Chapter, The Ohio State University, Columbus, OH, US: “Tropical Mathematics.”
- 2016 April Invitations to Mathematics Lecture Series, The Ohio State University, Columbus, OH, US: “An invitation to Tropical Geometry and non-Archimedean combinatorics.”
- 2015 Nov. Combinatorics Seminar, The Ohio State University, Columbus, OH, US: “Combinatorics of the compact tropical Grassmannian.”
- Oct. Algebraic and Tropical Geometry Seminar, Yale University, New Haven, CT, US: “Repairing tropical curves by means of tropical modifications.”

- Oct. Algebra Seminar, Georgia Institute of Technology, Atlanta, GA, US: “Repairing tropical curves by means of tropical modifications.”
- Oct. Algebra Seminar, University of Kentucky, Lexington, KY, US: “Repairing tropical curves by means of tropical modifications.”
- Sept. Algebraic Geometry Seminar, The Ohio State University, Columbus, OH, US: “Repairing tropical curves by means of tropical modifications.”
- May R. Rabadan Lab Meeting, Columbia University College of Physicians and Surgeons, New York, NY, US: “Combinatorial Aspects of Tropical Geometry and its interactions with phylogenetics.”
- April Algebraic Geometry Seminar, Stony Brook University, NY, US: “Repairing tropical curves by means of linear tropical modifications.”
- 2014 Nov. Graduate Student Algebraic Geometry Seminar, Columbia University, New York, NY, US: “Faithful tropicalization of the Grassmannian of planes.”
- Nov. Front Range Algebra, GeoMEtry and Number Theory Seminar, Colorado State University, Fort Collins, CO, US: “Faithful tropicalization of the Grassmannian of planes.”
- Nov. Algebraic Geometry Seminar, Courant Institute, New York, NY, US: “Repairing tropical curves by means of linear tropical modifications.”
- May Number Theory and Algebraic Geometry Seminar, Boston College, MA, US: “Faithful tropicalization of the Grassmannian of planes.”
- April Algebraic Geometry Seminar, Rice University, Houston, TX, US: “Faithful tropicalization of the Grassmannian of planes.”
- 2013 Nov. Valley Geometry Seminar. University of Massachusetts at Amherst, MA, US: “Faithful tropicalization of the Grassmannian of planes.”
- Nov. Seminar on Algebraic and Tropical Geometry, Yale University, New Haven, CT, US: “Faithful tropicalization of the Grassmannian of planes.”
- Oct. Algebra Seminar, Georgia Institute of Technology, Atlanta, GA, US: “Faithful tropicalization of the Grassmannian of planes.”
- Oct. Informal Mathematical Physics Seminar, Columbia University, New York, NY, US: “Faithful tropicalization of the Grassmannian of planes.”
- June Algebraic Geometry Seminar. Université Lille 1, France: “Mixed discriminants.”
- May Discrete Geometry Seminar, Freie Universität Berlin, Germany: “Mixed discriminants.”
- May Geometry Seminar, The University of Edinburgh, Scotland, UK: “Mixed discriminants.”
- Feb. Joint Seminar Kaiserslautern-Saarbrücken, Universität Saarbrücken, Germany: “Faithful tropicalization of the Grassmannian of planes.”
- 2012 Aug. Algebra and Combinatorics Seminar, Aalto University, Helsinki, Finland: “Mixed discriminants.”
- May Seminar in algebra and algebraic geometry, University of Oslo, Norway: “Mixed discriminants.”
- 2011 Sept. Symbolic Computation Seminar, NCSU, Raleigh, NC, US: “An implicitization challenge for binary factor analysis.”
- May Seminari Geometria Algebraica, University of Barcelona, Spain: “Implicitization of surfaces via geometric tropicalization.”
- Jan. Combinatorics Seminar, KTH, Stockholm, Sweden: “Tropical secant graphs of monomial curves.”
- Jan. Worlwide Center of Mathematics, Cambridge, MA, US: “Implicitization of surfaces via geometric tropicalization.”
- 2010 Dec. Valley Geometry Seminar. University of Massachusetts at Amherst, MA, US: “Tropical secant graphs of monomial curves.”

- Dec. Geometry, Algebra, Singularities and Combinatorics (GASC) Seminar, Northeastern University, Boston, MA, US: “Tropical secant graphs of monomial curves.”
- July Algebraic Geometry Seminar, Freie Universität Berlin, Germany: “Tropical secant graphs of monomial curves.”
- June Seminari Geometria Algebraica, University of Barcelona, Spain: “Tropical secant graphs of monomial curves.”
- Jan. Combinatorics Seminar, UC Berkeley, CA, US: “Tropical secant graphs of monomial curves.”
- 2009 Nov. Graduate student Tropical Geometry Seminar, MSRI, Berkeley, CA, US: “An implicitization challenge for binary factor analysis.”
- Aug. Seminar on Applications of Tropical Geometry, UC Berkeley, CA, US: “Geometry of restricted Boltzmann machines.”
- July Algebraic Geometry Seminar, Universidad Complutense de Madrid, Spain: “Implicitization of statistical models via tropical geometry.”
- 2008 Oct. Discrete Math Seminar, UC Berkeley, CA, US: “Tropical mixtures of tree metrics.”
- June Seminar on Algebraic Geometry and its Applications, University of Buenos Aires, Argentina: “Tropical mixtures of phylogenetic trees with the same topology.”
- Feb. Commutative Algebra and Algebraic Geometry Seminar, UC Berkeley, CA, US: “Some results on inhomogeneous discriminants.”

Poster Sessions:

- 2011 Sept. AWM Conference “Forty Years and Counting,” ICERM, Providence, RI, US: “Tropical Secant Graphs of Monomial Curves.”
- 2010 Aug. XXII Formal Power Series and Algebraic Combinatorics (FPSAC), San Francisco, CA, US: “Tropical Secant Graphs of Monomial Curves.”
- May Western Algebraic Geometry Symposium (WAGS), University of British Columbia, Vancouver, Canada: “Tropical secant graphs of monomial curves.”
- April Algebraic Geometry Northeastern Series (AGNES) U Mass Amherst, MA, US: “Tropical secant graphs of monomial curves.”
- 2009 July LIB60BER Topology of Algebraic Varieties, Jaca, Spain: “Implicitization of surfaces via geometric tropicalization.”

Outreach Activities:

Outreach talks:

- 2021 Mar. Radical Pi series (math club), The Ohio State University, OH: “Lines in p-adic geometry.”
- 2020 Feb. Radical Pi series (math club), The Ohio State University, OH: “Finding lines in the tropics.”

Member of Panel:

- 2019 April Topic: Graduate school in Mathematics
Career Development Panel with Q&A Session organized by the Women in Math and Science student group at The Ohio State University.
- 2015 July Topic: Job search.
Career Development Panel, Graduate Student Bootcamp for the 2015 AMS Summer Research Institute in Algebraic Geometry (University of Utah, Salk Lake City, UT).
- 2014 June Topic: Job search.
MRC Summer School on Cluster Algebras, organized by the AMS (Snowbird, UT).

- 2011 Nov. Cafe con Leche event (annual meeting of the Columbia University Scholar Chapter of the Hispanic Scholarship Fund).
- 2009 Aug. Topic: career issues of female mathematicians.
Connections for Women Workshop. Parental program: Tropical Geometry (MSRI).
- Feb. Judging Panel, Physical Sciences.
Northern California Western Nevada Jr. Science and Humanities Symposium. Lawrence Hall of Science, UC Berkeley.
- Feb. Topic: Graduate School applications.
MUSA (Mathematics Undergraduate Student Association), UC Berkeley.

Services:**At The Ohio State University:**

- 2024-pres. Member, CENT (Committee for the Evaluation of Non-Tenured Faculty), The Ohio State University.
- 2024-2024 Member, ad-hoc subcommittee on tenure-track DB voting on appointments, The Ohio State University.
- 2023-pres. Mentor of Assistant Professor Beibei Liu, The Ohio State University.
- 2023-24 Member, Advisory Committee, The Ohio State University.
— Member, Tenure-track faculty Hiring Committee (Open Area), The Ohio State University.
- 2023-23 Faculty mentor, OHIO 5-OSU Summer Undergraduate Research Experience, The Ohio State University.
- 2022-23 Chair, Postdoctoral Hiring Committee, The Ohio State University.
- 2021-pres. MRI contact person for the Algebraic Geometry seminar, The Ohio State University.
- 2021-2022 Chair, Sub-committee for reviewing Pre-candidacy requirements of PhD students (Theoretical Track), The Ohio State University.
— Member, Zassenhaus Lectures Selection Committee, The Ohio State University.
- 2020-pres. Member, Undergraduate Honors Committee, The Ohio State University.
- 2019-pres. Member, PhD advising committee, The Ohio State University.
- 2017-pres. Member, Algebra Qualifying exams committee, The Ohio State University.
- 2018-2019 Member, Diversity and Departmental Climate Committee, The Ohio State University.
- 2017-2018 Member, Mathematics Department Chair Selection Committee, The Ohio State University.
- 2017-2019 Member, Mathematics Research Institute Board, The Ohio State University.
- 2016-2017 Member, Diversity Hiring Committee, The Ohio State University.
— Member, Colloquium Committee, The Ohio State University.
- 2015-2016 Member, Zassenhaus Lectures Selection Committee, The Ohio State University.
— Member, Postdoctoral Hiring Committee, The Ohio State University.

Other professional services:

- 2021-pres. Member, WAGS Council (this is the body that oversees the organization of each installment of the “Western Algebraic Geometry Symposium”)
- 2022 Ad-hoc reviewer, National Science Foundation DMS Grant Panel.
- 2021 Member, National Science Foundation DMS Grant Panel.
- 2017 Member, National Science Foundation DMS Grant Panel.

Refereeing Activity:

Advances in Mathematics, Algebraic Combinatorics, Annals of Combinatorics, Arnold's Journal, Electronic Journal of Combinatorics, Journal of Algebra, Journal of Combinatorial Theory Series A (JCTA), Journal of Symbolic Computation, Journal of the London Mathematical Society, Illinois Mathematics Journal, International Mathematics Research Notices (IMRN), Involve, Revista Matemática Computense, Selecta Math. N.S., SIAM Journal on Discrete Mathematics (SIDMA), The Royal Society of Edinburgh: Proceedings A.

Conference MEGA, International Conference on Symbolic and Algebraic Computation (ISSAC), International Workshop on Symbolic-Numeric Computation,

Frequent ad-hoc reviewer and panel member of grant proposals reviews for the National Science Foundation - DMS.

Reader of Kevin O'Neill's Senior Thesis (Hurvey Mudd College).

Training:

2018 Oct. Participant, Research Mentor Training Workshop with Dr. Stephanie Robert. College of Arts and Sciences, The Ohio State University, Columbus, OH, US (7 hours).

Mentoring activities:

Undergraduate advisees:

2023-2023 Braeden Singleton (REU Project: Tropical interpolation). OHIO 5-OSU Summer Undergraduate Research Experience 2023, The Ohio State University.

Masters advisees:

2020-2021 Aziz Burak Guelen, The Ohio State University.
2018-2019 Charles Koenig, The Ohio State University.

Graduate students temporarily advised at OSU:

2023-pres. Abhay Chaudhary
2023-pres. Sivan Tretiak
2022-2023 Hugh Dennin
2021-2022 Austin Allen
2021-2021 Leonard Megliola
2020-2022 William Newman
2020-2021 Min Shi
2019-2021 James Marshall Reber
2019-2021 Amogh Parab
2017-2018 Henry Tsang
2017-2018 Jimin Kim

Postdocs mentored:

2022-pres. Alexander Sutherland, RAP Assistant Professor at OSU.
2021-pres. Max Kutler, ZAP Assistant Professor at OSU.
2016-2019 Rachel Karpman, ZAP Assistant Professor at OSU. *Current position:* Data Analyst (non-academic).

Teaching:

Lectures at The Ohio State University:

- 2023 Au. Math 7141: Basics in Algebraic Geometry I (6 students enrolled).
 — Au. Math 1181H - Honors Calculus I (Section 110; 24 students enrolled).
 — Su Math 6193 - 0130 Individual Studies in Mathematics (4 students enrolled).
 — Sp. Math 8140: Topics in Algebraic Geometry: Riemann Surfaces and Algebraic Curves (6 students enrolled).
 2022 Au. Math 2567 (Sections 18412 and 18415: 59 and 60 students enrolled, respectively).
 — Sp. Math 6193 - 0145 Individual Studies in Mathematics (3 students enrolled).
 2021 Au. Math 6111 - Graduate Algebra I (17 students enrolled).
 — Au. Math 1181H - Honors Calculus I (Section 110; 24 students enrolled).
 2020 Au. Math 6111 - Graduate Algebra I (15 students enrolled).
 — Au. Math 2568 - Linear Algebra (Sections 30 and 70; 24 and 56 students enrolled; hybrid and online format, respectively).
 — Sp. Math 6193 - 0145 Individual Studies in Mathematics (4 students enrolled).
 — Sp. Math 2568 - Linear Algebra (Section 30; 18 students enrolled).
 2019 Au. Math 6501 - Combinatorics and Graph Theory I (10 students enrolled).
 — Sp. Math 6193 - 0145 Individual Studies in Mathematics (Section 27415; 3 students enrolled).
 2018 Au. Math 1181H - Honors Calculus I (Section 110; 12 students enrolled).
 2017 Au. Math 1181H - Honors Calculus I (Section 110; 20 students enrolled).
 — Sp. Math 2568 - Linear Algebra (Section 75; 47 students enrolled).
 — Sp. Graduate Topics in Algebraic Geometry - Tropical Geometry (6 students enrolled).
 2016 Sp. Math 2153 - Calculus III (Section 10 and recitations 11, 12 and 13; 76 students enrolled).

Lectures at Columbia University:

- 2013 Fall Calculus III (Section 8; 85 students enrolled).
 2011 Fall Calculus I (Sections 7 and 8; 100 students enrolled on each section).

Recitations led at UC Berkeley (as graduate student instructor):

- 2010 Spring Discrete Mathematics (Math 55)

Recitations led at University of Buenos Aires:

- 2007 Spring Functions of one complex variable (Complex Analysis)
 — Winter Linear Algebra for Biology Majors
 2006 Fall Groups, Rings and Modules (Algebra II)
 — Spring Linear Algebra for Biology Majors
 2005 Fall Linear Algebra for Biology Majors
 — Spring Groups, Rings and Modules (Algebra II)
 2004 Fall Advanced Calculus
 — Spring Projective Geometry
 2003 Fall Calculus of one variable for Biology Majors
 — Spring Linear Algebra for Biology Majors

Special tutorials

- 2008 Nov. Homework Session leader, Tulane Math Clifford Lectures (New Orleans, LA).

Languages:

Fluent English and Spanish, basic writing and speaking knowledge of French (level 2), basic notions of German (A1 Level).