

Department of Mathematics
San Francisco State University
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EDUCATION

University of Michigan

Ph.D., Mathematics, May 2014
Advisor: Yongbin Ruan

Columbia University

B.A., Mathematics (with concentration in Philosophy), May 2009
Valedictorian

PROFESSIONAL POSITIONS AND RANKS HELD

San Francisco State University

Assistant Professor, Department of Mathematics, August 2016 – present

Mathematical Sciences Research Institute

Research Member, January 2018 – May 2018

ETH Zürich, Institute for Theoretical Studies

Junior Fellow, September 2014 – July 2016
Mentor: Rahul Pandharipande

AWARDS AND HONORS

- NSF DMS Grant 1810969, “RUI: Curve-Counting Theories and Their Correspondences,” \$189,002, September 2018 – August 2021
- Development of Research and Creativity Grant (with Dustin Ross), San Francisco State University, \$12,000, Spring 2018
- SwissMAP Innovator Prize (two recipients in Switzerland per year)
- Rackham Outstanding Graduate Student Instructor Award, University of Michigan (twenty recipients university-wide per year)
- Rackham Pre-Doctoral Fellowship, University of Michigan (seventy-two recipients university-wide per year)
- Pat Shure Excellence in Teaching Award, University of Michigan (one recipient in the Mathematics Department per year)

PUBLICATIONS

- [1] A. Buryak, E. Clader, and R. Tessler. Closed extended r -spin theory and the Gelfand–Dickey wave function.
Journal of Geometry and Physics **137** (2019), 132–153.
- [2] E. Clader and Y. Ruan, Mirror symmetry constructions.
In *B-Model Gromov–Witten Theory*. Ed. E. Clader and Y. Ruan. Basel, Switzerland: Birkhäuser (2018), 1–77.
- [3] E. Clader, N. Priddis, M. Shoemaker, Geometric quantization with applications to Gromov–Witten theory.
In *B-Model Gromov–Witten Theory*. Ed. E. Clader and Y. Ruan. Basel, Switzerland: Birkhäuser (2018), 399–462.
- [4] E. Clader, S. Grushevsky, F. Janda, and D. Zakharov, Powers of the theta divisor and vanishing in the tautological ring.
International Mathematics Research Notices, no. 24 (2018), 7725–7754.
- [5] E. Clader, Why Twelve Tones? The Mathematics of Musical Tuning.
The Mathematical Intelligencer **40**, no.3 (2018), 32–36.
- [6] E. Clader and F. Janda, Pixton’s double ramification cycle relations.
Geometry & Topology **22**, no.2 (2018), 1069–1109.
- [7] E. Clader and D. Ross, Sigma models and phase transitions for complete intersections.
International Mathematics Research Notices, no. 15 (2018), 4799–4851.
- [8] E. Clader, Landau–Ginzburg/Calabi–Yau correspondence for the complete intersections $X_{2,2,2,2}$ and $X_{3,3}$.
Advances in Mathematics **307**, no. 1 (2017), 1–52.
- [9] E. Clader, Relations on $\overline{\mathcal{M}}_{g,n}$ via orbifold stable maps.
Proceedings of the American Mathematical Society **145**, no. 1 (2017), 11–21.
- [10] E. Clader, Gromov–Witten Theory: From curve counts to string theory.
In *Proceedings of Symposia in Pure Mathematics: Volume 95. Surveys on Recent Developments in Algebraic Geometry*. Ed. I. Coskun, T. de Fernex, and A. Gibney. Providence, RI: American Mathematical Society (2017), 149–169.
- [11] E. Clader, What If? Mathematics, Creative Writing, and Play.
Journal of Humanistic Mathematics **6**, no. 1 (2016), 211–219.
- [12] E. Clader and D. Reck, Infinite recess.
In *STEM to Story: Enthralling and Effective Lesson Plans for Grades 5 – 8*. Ed. Jennifer Traig. San Francisco, CA: Wiley (2015), 189–210.
- [13] E. Clader, Did chaos cause mayhem in *Jurassic Park*?
Plus magazine, July 2014.

- [14] E. Clader, Inverse limits of finite topological spaces.
Homology, Homotopy, and Applications **11**, no. 2 (2009), 223–227.
- [15] E. Clader, Y. Kemper, and M. Wage, Lacunarity of certain partition-theoretic generating functions.
Proceedings of the American Mathematical Society **137**, no. 9 (2009), 2959–2968.
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PUBLICATIONS (AS EDITOR)

- [16] *B-Model Gromov–Witten Theory*. Ed. E. Clader and Y. Ruan. Basel, Switzerland: Birkhäuser (2018)
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PREPRINTS

- [17] E. Clader, Introduction to the gauged linear sigma model.
Submitted as part of *Proceedings of the Conference on Crossing the Walls in Enumerative Geometry* (book in preparation), preprint on author website.
- [18] A. Buryak, E. Clader, and R. Tessler, Open r -spin theory and the Gelfand–Dickey wave function.
Preprint at [arXiv:1809.02536](https://arxiv.org/abs/1809.02536).
- [19] E. Clader and D. Ross, Wall-crossing in genus-zero hybrid theory.
Submitted, preprint at [arXiv:1806.08442](https://arxiv.org/abs/1806.08442).
- [20] E. Clader, F. Janda, and Y. Ruan, Higher-genus wall-crossing in the gauged linear sigma model.
Submitted, preprint at [arXiv:1706.05038](https://arxiv.org/abs/1706.05038).
- [21] E. Clader, F. Janda, X. Wang, and D. Zakharov, Topological recursion relations via Pixton’s formula.
Preprint at [arXiv:1704.02011](https://arxiv.org/abs/1704.02011).
- [22] E. Clader, F. Janda, and Y. Ruan, Higher-genus quasimap wall-crossing via localization.
Submitted, preprint at [arXiv:1702.03427](https://arxiv.org/abs/1702.03427).
- [23] E. Clader, From counting to quantum physics.
Submitted, preprint on author website.

MASTER'S THESES AND INDEPENDENT STUDIES ADVISED

- Caitlyn Waddle, Master's Thesis, *Incidence graph statistics for curves in projective space* (co-advised with Dusty Ross); San Francisco State University, Spring 2019 – present.
 - Rose Johnson-Leiva, Master's Thesis, *Realizing graphs as curve-incidence graphs* (co-advised with Dusty Ross); San Francisco State University, Fall 2018 – present.
 - Dante Luber, Master's Thesis, *Boundary divisors in moduli spaces of weighted point curves*; San Francisco State University, Fall 2018 – present.
 - Stephanie Magallanes, Capstone Master's Project, *The algebraic geometry of neural ideals*; San Francisco State University, Spring 2018 – present.
 - Dylan Youngers, independent study on algebraic topology; San Francisco State University, Spring 2019.
 - Anastasiya Timchenko, Master's Thesis, *Toric moduli spaces of weighted pointed curves*; San Francisco State University, Spring 2018 – Fall 2018.
 - Dante Luber, independent study on manifolds and Riemann surfaces; San Francisco State University, Spring 2018.
 - Kyla Quillin, Master's Thesis, *The dual complex of $\overline{\mathcal{M}}_{g,n}$ in higher genus*; San Francisco State University, Fall 2016 – Spring 2018.
 - Small-group independent study on algebraic topology; San Francisco State University, Fall 2017.
 - Isabel Perez, independent study on abstract algebra and geometric constructibility; San Francisco State University, Spring 2017.
 - Anastasiya Timchenko, independent study on algebraic geometry; San Francisco State University, Spring 2017.
 - Nikolas Kuhn, independent study on moduli of curves and Gromov–Witten theory; ETH Zürich, Spring 2015.
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TEACHING EXPERIENCE

- Primary instructor for the following courses at San Francisco State University:
 - Math 852 (Algebraic Topology), Spring 2019.
 - Math 226 (Calculus I), Spring 2019.
 - Math 450 (Topology), Fall 2018.
 - Math 850 (Algebra), Spring 2018.
 - Math 435/735 (Modern Algebra II), Fall 2017.
 - Math 335 (Modern Algebra I), Spring 2017, Fall 2018.
 - Math 227 (Calculus II), Fall 2016, Spring 2017, Fall 2017.

- Primary instructor for the following courses at University of Michigan:
 - Math 115 (Calculus I), Fall 2009, Winter 2010, Fall 2010, Fall 2012.
 - Math 116 (Calculus II), Winter 2011.
 - Course co-coordinator, Math 115; University of Michigan, Winter 2012.
Wrote exams, assisted with logistics, and worked with new or struggling instructors for a course of approximately 750 students taught in twenty-four sections.
 - Instructor, Michigan Math and Science Scholars; Summers 2011, 2012, and 2014.
Co-taught two-week courses for high school students, on the mathematics of art (2014) and introductory number theory (2011 and 2012).
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OUTREACH AND SERVICE

- Referee, *Transactions of the American Mathematical Society*, *Mathematical Research Letters*, *Journal of Geometry and Physics*, *Proceedings of Symposia in Pure Mathematics*, *Mathematische Zeitschrift*, *Nagoya Mathematical Journal*, *Journal of Humanistic Mathematics*.
- Reviewer, *Mathematical Reviews*.
- Faculty Advisor, *Mathematistas*; San Francisco State University, Fall 2017 – present.
- Mentor, Math Alliance; Spring 2017 – present.
- Member, Calculus I Committee; San Francisco State University, Spring 2019.
- Volunteer, San Quentin Math Circle; Fall 2018.
Taught a guest session on Euler characteristic, graphs, and Platonic solids.
- Mentor, New Faculty Mentor Program; San Francisco State University, Fall 2017.
- Judge, CoSE Student Project Showcase; San Francisco State University, Spring 2017, Spring 2018.
- Member, Calculus Textbook Committee; San Francisco State University, Spring 2017.
- Volunteer, 826Michigan; Summers 2012 and 2014.
Co-taught workshops for middle school students, both at the 826 facility in downtown Ann Arbor and at Ypsilanti Middle School, exploring the interaction between mathematics and creative writing.
- Invited Facilitator, Center for Research on Learning and Teaching (CRLT) “Practice Teaching” workshops; University of Michigan, Summer 2013.
- Member, Mathematics Department Website Re-design Committee; University of Michigan, Spring 2012 – Summer 2013.

CONFERENCE AND SEMINAR ORGANIZATION

- Geometry and Topology Seminar; San Francisco State University, Fall 2016 – present.
 - AIM Workshop, Double ramification cycles and integrable systems; AIM, Fall 2019.
 - AMS Sectional Meeting, Special Session on Algebraic Geometry; San Francisco State University, Fall 2018.
 - Western Algebraic Geometry Seminar; San Francisco State University, Spring 2018.
 - RTG/FRG Mirror Symmetry Conference for Young Mathematicians; University of Michigan, Summer 2017.
 - Workshop on Global Mirror Symmetry; Chern Institute of Mathematics (Tianjin, China), Summer 2016.
 - RTG Workshop on Mirror Symmetry; University of Michigan, Spring 2012.
 - RTG Workshop on Givental Formalism; University of Michigan, Fall 2011.
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INVITED RESEARCH TALKS

- Algebraic Geometry Seminar; UC Davis, Fall 2018.
- Bay Area Discrete Math Day; Sonoma State University, Fall 2018.
- AMS Sectional Meeting, Special Session on Moduli Spaces; Portland State University, Spring 2018.
- Texas Algebraic Geometry Symposium (TAGS); Texas A&M University, Spring 2018.
- Structures in Enumerative Geometry; MSRI, Spring 2018.
- Connections for Women: Enumerative Geometry Beyond Numbers; MSRI, Winter 2018.
- Mirror Symmetry and Related Subjects; Kyoto University, Fall 2017.
- AMS Sectional Meeting (Special Session on Algebraic Geometry); UC Riverside, Fall 2017.
- Colloquium; Santa Clara University, Fall 2017.
- Algebraic Geometry Northeastern Series (AGNES); Northeastern University, Fall 2017.
- Mathematical Congress of the Americas (Special Session on Stringy Geometry), Summer 2017.
- Colloquium; San José State University, Spring 2017.
- Colloquium; Sonoma State University, Spring 2017.
- Algebraic Geometry Seminar; Stanford University, Spring 2017.
- Algebraic Geometry Seminar; UC Berkeley, Spring 2017.
- Crossing the Walls in Enumerative Geometry; Columbia University, Spring 2017.

- Algebraic Geometry Seminar; UC San Diego, Winter 2017.
- Algebraic Geometry Seminar; University of British Columbia, Winter 2017.
- Combinatorial Moduli Spaces Workshop; Fields Institute, Fall 2016.
- Applied Algebra Seminar; UC Berkeley, Fall 2016.
- Western Algebraic Geometry Symposium (WAGS); Colorado State University, Fall 2016.
- Geometry and Topology Seminar/Distinguished Women in Mathematics Lecture Series; San Francisco State University, Fall 2016.
- Workshop on Global Mirror Symmetry; Chern Institute, Summer 2016.
- Topological and Quantitative Aspects of Symplectic Geometry; Columbia University, Spring 2016.
- Algebraic Geometry Seminar; University of Cambridge, Winter 2016.
- Special Algebraic Geometry Seminar; Columbia University, Winter 2016.
- FRAGMENT Seminar; Colorado State University, Winter 2016.
- Colloquium; San Francisco State University, Winter 2016.
- Colloquium; University of Vermont, Winter 2016.
- Complex Algebraic Geometry Conference; UC San Diego, Winter 2016.
- Symplectic Geometry and Mathematical Physics Seminar; Beijing International Center for Mathematical Research, Spring 2015.
- Topology and Geometry Seminar; Hebrew University, Spring 2015.
- Association for Women in Mathematics Research Symposium, Spring 2015.
- Algebraic Geometry and Moduli Seminar; ETH Zürich, Spring 2015
- Special Algebraic Geometry Seminar; Columbia University, Fall 2014
- Geometry and Physics Seminar; University of Michigan, Fall 2014
- Geometry and Physics of the Gauged Linear Sigma Model and Its Related Topics; Korea Institute for Advanced Study, Summer 2014
- Equivariant Gromov-Witten Theory and Applications; Simons Center for Geometry and Physics, Spring 2014
- Geometry, Symmetry, & Physics Seminar; Rutgers University, Winter 2014
- Algebraic Geometry Seminar; University of Utah, Winter 2014
- Representation Theory, Geometry, and Combinatorics Seminar; UC Berkeley, Fall 2013.
- Cohomology of the Moduli Space of Curves; ETH Zürich, Fall 2013.

- RTG Workshop on the Geometry and Physics of the Gauged Linear Sigma Model; University of Michigan, Winter 2013.
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LECTURE SERIES

- Winter School on Enumerative Geometry; Goethe University Frankfurt, Spring 2019.
Four-lecture mini-course on Gromov–Witten Theory.
 - Crossing the Walls in Enumerative Geometry; Snowbird, Spring 2018.
Five-lecture mini-course on the Gauged Linear Sigma Model.
 - Wednesday Lecture Series; ETH Zürich, Fall 2014.
Three-lecture series on orbifolds and the Landau–Ginzburg model.
 - IAS Program on Gromov-Witten Theory and Quantization; Hong Kong University of Science and Technology, Summer 2013.
Two-week mini-course, with N. Priddis, Y. Shen, and M. Shoemaker.
 - Mini-Course on Moduli Spaces; University of Michigan, Summer 2011.
Four-lecture series of expository talks for graduate students.
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REFERENCES

- William Fulton, University of Michigan, wfulton@umich.edu.
- Tyler Jarvis, Brigham Young University, jarvis@math.byu.edu.
- Paul Kessenich, University of Michigan (teaching), paulkess@umich.edu.
- Rahul Pandharipande, ETH Zürich, rahul@math.ethz.ch.
- Yongbin Ruan, University of Michigan, ruan@umich.edu.