

Jonathan Wise

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Citizenship: USA

- EDUCATION
- ◇ **Brown University**, Providence, RI.
Ph.D. in Mathematics, May 2008
Advisor: Dan Abramovich
Thesis: *The genus zero Gromov–Witten invariants of $[\mathrm{Sym}^2\mathbf{P}^2]$*
 - ◇ **Stanford University**, Stanford, CA.
B.Sc. in Mathematics with departmental honors, June 2003
Advisor: Daniel Bump
Thesis: *Imaginary quadratic fields of class number one*

RESEARCH INTERESTS deformation theory, logarithmic geometry, sheaves, moduli of curves, stable maps, Gromov–Witten theory

- PROFESSIONAL HISTORY
- ◇ Assistant Professor, University of Colorado Boulder, August 2012 — present
 - ◇ Postdoctoral fellow, Stanford University, April 2011 — June 2012
Supervised by Ravi Vakil
 - ◇ Postdoctoral fellow, University of British Columbia, August 2009 — March 2011
Supervised by Jim Bryan
 - ◇ Postdoctoral fellow, Stanford University, September 2008 — August 2009
Supervised by Ravi Vakil

- HONORS AND AWARDS
- ◇ **National Security Agency** Young Investigator’s Grant, \$40,000, 2016 — 2018
 - ◇ **National Security Agency** Young Investigator’s Grant, \$40,000, 2014 — 2016
 - ◇ **National Science Foundation** Mathematical Sciences Postdoctoral Research Fellowship, \$108,000, 2008 — 2012
 - ◇ **Brown University** Research Fellowship, 2004 — 2007
 - ◇ **Firestone Award** for undergraduate thesis, June 2003

- PUBLISHED PAPERS
- “A hyperelliptic Hodge integral.” *Portugalia Mathematicae*, 73 (2016), no. 3, 207–218.
[arXiv:0807.3964](https://arxiv.org/abs/0807.3964)
- “Skeletons and fans of logarithmic schemes,” with Dan Abramovich, Qile Chen, Steffen Marcus, and Martin Ulirsch. In: Baker, M., and Payne, S. (eds) *Nonarchimedean and Tropical Geometry*. Simons Symposia. Springer.
[DOI:10.1007/978-3-319-30945-3_9](https://doi.org/10.1007/978-3-319-30945-3_9)
[arXiv:1503.04343](https://arxiv.org/abs/1503.04343)
- “Moduli of morphisms to logarithmic schemes.” *Algebra & Number Theory* 10 (2016), no. 4, 695–735.
[DOI:10.2140/ant.2016.10.695](https://doi.org/10.2140/ant.2016.10.695)
[arXiv:1408.0037](https://arxiv.org/abs/1408.0037)
- “The deformation theory of sheaves of commutative rings II.” *Ann. Sc. Norm. Super. Pisa Cl. Sci.* (5) 14 (2015), no. 2.
[DOI:10.2422/2036-2145.201111.008](https://doi.org/10.2422/2036-2145.201111.008)
[arXiv:1102.2924](https://arxiv.org/abs/1102.2924)

“Comparison theorems for Gromov–Witten invariants of smooth pairs and of degenerations,” with Dan Abramovich and Steffen Marcus. *Ann. Inst. Fourier (Grenoble)* 64 (2014), no. 4, 1611–1667.

[DOI:10.5802/aif.2892](https://doi.org/10.5802/aif.2892)

[arXiv:1207.2085](https://arxiv.org/abs/1207.2085)

“The moduli spaces of expanded degenerations and pairs,” with Dan Abramovich, Charles Cadman, and Barbara Fantechi. *Communications in Algebra* 41 (2013), no. 6, 2346–2386.

[DOI:10.1080/00927872.2012.658589](https://doi.org/10.1080/00927872.2012.658589)

[arXiv:1110.2976](https://arxiv.org/abs/1110.2976)

“Polynomial families of tautological classes on $\mathcal{M}_{g,n}^{\text{rt}}$,” with Renzo Cavalieri and Steffen Marcus. *J. Pure Appl. Algebra* 216 (2012), no. 4, 950981.

[DOI:10.1016/j.jpaa.2011.10.037](https://doi.org/10.1016/j.jpaa.2011.10.037)

[arXiv:1107.0857](https://arxiv.org/abs/1107.0857)

“The deformation theory of sheaves of commutative rings I.” *J. Algebra* 352 (2012), 180191.

[DOI:10.1016/j.jalgebra.2011.11.025](https://doi.org/10.1016/j.jalgebra.2011.11.025)

[arXiv:1101.4069](https://arxiv.org/abs/1101.4069)

“The genus zero Gromov–Witten invariants of the symmetric square of the plane.” *Communications in Anal. Geom.* 19 (2011), no. 5, 923–974.

[DOI:CAG.2011.v19.n5.a5](https://doi.org/10.1016/j.cag.2011.v19.n5.a5)

[arXiv:math/0702219](https://arxiv.org/abs/math/0702219)

ACCEPTED
PAPERS, TO
APPEAR

“Relative and orbifold Gromov–Witten invariants,” with Dan Abramovich and Charles Cadman. To appear in *Algebraic Geometry*.

[arXiv:1004.0981](https://arxiv.org/abs/1004.0981)

“Boundedness of the space of stable logarithmic maps,” with Dan Abramovich, Qile Chen, and Steffen Marcus. To appear in *Journal of the European Mathematical Society*.

[arXiv:1408.0869](https://arxiv.org/abs/1408.0869)

SUBMITTED
PAPERS

“An introduction to moduli stacks, with a view towards Higgs bundles on algebraic curves,” with Sebastian Casalaina-Martin.

“Birational invariance in logarithmic Gromov–Witten theory,” with Dan Abramovich.

[arXiv:1306.1222](https://arxiv.org/abs/1306.1222)

“Uniqueness of minimal morphisms to logarithmic schemes.”

[arXiv:1601.02968](https://arxiv.org/abs/1601.02968)

PREPRINTS

“Stable maps to rational curves and the relative Jacobian,” with Steffen Marcus.

[arXiv:1310.5981](https://arxiv.org/abs/1310.5981)

“Obstruction theories and virtual fundamental classes.”

[arXiv:1111.4200](https://arxiv.org/abs/1111.4200)

IN PROGRESS,
WITH
STUDENTS
AND
SUPERVISEES

“A modular interpretation of the Vakil–Zinger moduli space of genus 1 stable maps,” with Keli Santos–Parker.

“The deformation theory of sheaves of modules,” with Leo Herr.

“The Bhatt–Scholze fundamental group,” with Christian Klevdal.

“The logarithmic Picard group,” with Sam Molcho.

“Moduli of broken toric varieties,” with Sam Molcho.

- ADVISING
- Postdoc Samouil Molcho (2014–2015)
 - Ph. D. student Keli Santos-Parker (degree expected 2017)
 - Ph. D. student Paul Lessard (degree expected 2018)
 - Ph. D. student John Willis (degree expected 2020)
 - Ph. D. student Leo Herr (degree expected 2019)
 - Ph. D. student Sebastian Bozlee (degree expected 2020)
 - Undergraduate thesis Dimitrios Economou (graduated Spring 2014)
“On Galois theories”
 - Undergraduate thesis Christian Klevdal (graduated Spring 2015)
“A Galois correspondence with generalized covering spaces”
 - Undergraduate Harrison Smith (degree expected 2020)
- SERVICE TO THE PROFESSION
- ◇ **Organizer**, Western Algebraic Geometry Symposium, University of Colorado Boulder, Spring 2014. Co-organized with Sebastian Casalaina-Martin.
 - ◇ **Organizer**, Special Session on Algebraic Geometry at the AMS Western Section Meeting, University of Colorado Boulder, April 13–14, 2013. Co-organized with Sebastian Casalaina–Martin, Renzo Cavalieri, and Brendan Hassett.
 - ◇ **Organizer**, Front Range Algebraic Geometry and Number Theory seminar (FRAGMENT). Fall 2012 to present. Co-organized with Jeff Achter, Sebastian Casalaina–Martin, Renzo Cavalieri, and Rachel Priess.
 - ◇ **Organizer**, Special Session on Algebraic Geometry at the AMS Western Section Meeting, University of Hawai’i, March 3–4, 2012. Co-organized with Jim Bryan.
 - ◇ **Organizer**, Western Algebraic Geometry Symposium, Spring 2009. Co-organized with Aravind Asok and Martin Olsson.
 - ◇ **Organizer**, UBC Algebraic Geometry Seminar, Fall 2009 through Fall 2010. Co-organized with Zheng Hua.
 - ◇ **Referee**, Advances in Mathematics, Algebra and Number Theory, Journal für die reine und angewandte Mathematik, Journal of Algebraic Geometry, Journal of the London Mathematical Society, Manuscripta Mathematica, Proceedings of the London Mathematical Society, Journal of Pure and Applied Algebra, International Math Research Notices.
 - ◇ **Reviewer**, NSA Mathematical Sciences Grant Program.
- SERVICE TO THE UNIVERSITY OF COLORADO
- ◇ **Committee work** (Univeristy of Colorado Boulder), mathematics undergraduate committee (Fall 2013—Spring 2015)
 - ◇ **Math club** Faculty liason (Spring 2014—Fall 2015)
 - ◇ **Internal wiki** for the Math Department (Fall 2015—present)
- INVITED CONFERENCE TALKS
- Summer Workshop on Algebraic Geometry, University of Georgia, Athens, GA, August 27–28, 2016
“Logarithmic structures and compactifications of moduli spaces”
 - Equivariant geometry and algebraic stacks, ANU Kioloa Campus, Australia, March 14–18, 2016
“Criteria for representability by monoids”
 - Moduli spaces of holomorphic differentials, Humboldt–Universität zu Berlin / Eistein Stiftung, February 9–11, 2016
“Logarithmic rubber”

Summer School in Gromov–Witten Theory,
Pingree Park, Colorado, June 23 – July 4, 2014.
Minicourse on “The virtual fundamental class”

Workshop on Algebraic Stacks: Progress and Prospects,
Banff International Research Station, March 26, 2012.
“Deformation theory and Grothendieck topologies”

Western Algebraic Geometry Symposium,
Colorado State University, October 1–2, 2011.
“Relative Gromov–Witten theories”

Clay Institute workshop on Logarithmic Geometry and Moduli,
August 29 – September 1, 2011.
“Comparison of log. GW invariants”

MSRI semester on Algebraic Geometry,
May 14, 2009.
“Deformation theory (without the cotangent complex)”

Clay Institute EGA workshop, August 14, 2008.
“Chapter IV, Section 8: local finite presentation”

INVITED
SEMINAR
TALKS

Massachusetts Institute of Technology, April 19, 2016.
“Compactifying the Abel map with logarithmic geometry”

University of British Columbia, November 9, 2015.
“Olsson fans”

University of Colorado, October 18, 2012.
“What is a commutative ring?”

Emory University, October 10, 2012.
“Infinitesimal deformation theory and Grothendieck topologies”

University of Colorado, January 27, 2012.
“Counting curves virtually”

Boston University, January 17, 2012.
“Comparing virtual curve counts”

University of Utah, December 6, 2011.
“Deformation theory and Grothendieck topologies”

University of Michigan, October 3, 2011.
“Relative Gromov–Witten theories”

California Institute of Technology, September 26, 2011.
“Relative Gromov–Witten theories”

Stanford University, March 4, 2011.
“The refined moduli space of stable maps”

University of British Columbia, January 24, 2011.
“Deformation theory”

University of Washington, October 26, 2010.
“A wacky stacky observation”

University of Toronto, March 26, 2010.
“The hidden smoothness of the space of stable maps”

- Brown University, February 26, 2010.
“The hidden smoothness of the space of stable maps”
- University of British Columbia, January 18, 2010.
“A smooth space of stable maps”
- University of British Columbia, September 21, 2009.
“Deformation theory (without the cotangent complex)”
- Ohio State University, March 3, 2009.
“Orbifold and relative Gromov–Witten invariants”
- Stanford University, September 26, 2008.
“Orbifold and relative Gromov–Witten invariants”
- University of British Columbia, January 28, 2008.
“Enumerative geometry of hyperelliptic curves in \mathbf{CP}^2 ”
- University of Michigan, January 9, 2008.
“Enumerative geometry of hyperelliptic curves in \mathbf{CP}^2 ”
- Institut für Mathematik, Universität Zürich, December 14, 2007.
“Enumerative geometry of hyperelliptic curves in \mathbf{CP}^2 ”
- Brown University, October 29, 2007.
“Enumerative geometry of hyperelliptic curves in \mathbf{CP}^2 ”
- Boston University, October 16, 2007.
“Enumerative geometry of hyperelliptic curves in \mathbf{CP}^2 ”
- Princeton University, April 18, 2007.
“The crepant resolution conjecture for $[\mathrm{Sym}^2 \mathbf{P}^2]$ ”

TALKS FOR
UNDERGRAD-
UATES

- Boise State University REU, July 26, 2013.
“What is a moduli space?”
- Stanford University Mathematics Organization, May 18, 2011.
“What is a moduli space?”
- Stanford University Mathematics Organization, October 29, 2008.
“Finding the roots of polynomials”

TEACHING

- University of Colorado, Boulder. Math 2001. Fall 2016. Discrete mathematics.
- University of Colorado, Boulder. Math 6150. Fall 2016. Commutative algebra.
- University of Colorado, Boulder. Math 2001. Spring 2016. Discrete mathematics.
- University of Colorado, Boulder. Math 3110. Spring 2016. Number theory.
- University of Colorado, Boulder. Independent study on abelian varieties (6 graduate students and 1 undergraduate)
- University of Colorado, Boulder. Math 6130. Fall 2015. Algebra 1.
- University of Colorado, Boulder. Research projects for students. Summer 2015.
- University of Colorado, Boulder. Math 6170. Spring 2015. Algebraic geometry.
- University of Colorado, Boulder. Math 2001. Fall 2014. Discrete mathematics.
- University of Colorado, Boulder. Math 2001. Spring 2014. Discrete mathematics.
- Independent study and honors thesis (Christian Klevdal). Summer 2014 — Spring 2015.

University of Colorado, Boulder. Research projects for students. Summer 2014.

Independent study on category theory (4 graduate students). Spring 2014.

Independent study and honors thesis (Dimitrios Economou). Spring 2013—Spring 2014.

University of Colorado, Boulder. Math 8174. Spring 2014.
Topics in Algebra: Etale cohomology (graduate).

University of Colorado, Boulder. Math 2001. Spring 2014.
Discrete Mathematics (undergraduate).

University of Colorado, Boulder. Independent study on algebraic curves (Rachel Benefiel).
Summer 2013.

University of Colorado, Boulder. Math 6170. Spring 2013.
Algebraic geometry (graduate).

University of Colorado, Boulder. Math 6210. Fall 2012.
Algebraic topology I (graduate).

University of Colorado, Boulder. Math 3140. Fall 2012.
Abstract algebra I (undergraduate).

Stanford University, Math 52. Spring 2012.
Integral calculus of several variables (undergraduate).

University of British Columbia. Math 221. Winter 2010–2011, Term 1.
Matrix algebra (undergraduate).

University of British Columbia. Math 200. Winter 2009–2010, Term 2.
Calculus III (undergraduate).

Stanford University. Math 51. Fall 2008.
Linear algebra and vector calculus (undergraduate).

Brown University. Math 52. Fall 2007.
Linear algebra (undergraduate).

Brown University. Math 17. Fall 2006.
Advanced placement calculus (undergraduate).

Brown University. Math 17. Fall 2005.
Advanced placement calculus.

Brown University. Math 9. Fall 2004.
Teaching assistant, first-semester calculus.

Brown University. MRC Tutor. Academic year, 2003–2004.

REFERENCES

Dan Abramovich Brown University abrmovic@math.brown.edu	Martin Olsson UC Berkeley molsson@math.berkeley.edu
Ravi Vakil Stanford University vakil@math.stanford.edu	Kai Behrend University of British Columbia behrend@math.ubc.ca
Jim Bryan University of British Columbia jbryan@math.ubc.ca	Steven J. Miller (teaching) Williams College steven.j.miller@williams.edu