

# Felix Janda

## Curriculum Vitae

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Nationality: Germany (H-1B visa)

### Employment

- 2020– **University of Notre Dame**, *Assistant Professor*.
- 2019–2020 **Institute for Advanced Study**, *Member*.
- 2019–2020 **University of Michigan**, *Adjunct Assistant Professor*.
- Spring 2017 **Mathematical Sciences Research Institute**, *Member of program: “Enumerative geometry beyond numbers”*.
- 2016–2019 **University of Michigan**, *D.J. Lewis Research Assistant Professor*, Host: Yongbin Ruan.
- 2015–2016 **Institut de Mathématiques de Jussieu**, *FSMP postdoctoral position*, Host: Dimitri Zvonkine.

### Education

- 2011–2015 **ETH Zürich**, *Ph.D.*, Thesis: “Relations in the tautological ring”, Advisor: Rahul Pandharipande.
- 2007–2011 **Ludwigs-Maximilians-Universität München**, *Diploma: “Sehr gut”*, Thesis: “The geometry and arithmetic of a singular cubic surface”, Advisor: Ulrich Derenthal.

### Honors/Grants

- 2019–2022 **NSF individual grant DMS-1901748**.
- 2017–2019 **AMS-Simons Travel Grant**.
- 2016 **ETH medal for outstanding doctoral thesis**.
- 2014 **Oberwolfach Leibniz Graduate Student**.
- 2009–2011 **Scholarship of the “Studienstiftung des deutschen Volkes” (German Academic Scholarship Foundation)**.

### Publications/Preprints

1. “A comparison of group testing architectures for COVID-19 testing” (with Joshua Batson, Yaim Cooper, Nathaniel Bottman) **submitted**, arXiv:2005.03051

2. “*Virtual cycles of stable (quasi-)maps with fields*” (with Qile Chen and Rachel Webb) **submitted**, arXiv:1911.09825
3. “*The logarithmic gauged linear sigma model*” (with Qile Chen and Yongbin Ruan) **submitted**, arXiv:1906.04345
4. “*Structure of Higher Genus Gromov-Witten invariants of Quintic 3-folds*” (with Shuai Guo and Yongbin Ruan) , arXiv:1812.11908
5. “*Double ramification cycles with target varieties*” (with Rahul Pandharipande, Aaron Pixton and Dimitri Zvonkine) in “**Topology**” **Volume 13 Issue 4, December 2020, Pages 1725–1766**, arXiv:1812.10136
6. “*Towards a Theory of Logarithmic GLSM Moduli Spaces*” (with Qile Chen, Yongbin Ruan and Adrien Sauvaget) **submitted**, arXiv:1805.02304
7. “*A mirror theorem for genus two Gromov-Witten invariants of quintic threefolds*” (with Shuai Guo and Yongbin Ruan) **submitted**, arXiv:1709.07392
8. “*Higher-genus wall-crossing in the gauged linear sigma model*” (with Emily Clader and Yongbin Ruan) **accepted at Duke Mathematical Journal**, arXiv:1706.05038
9. “*Topological recursion relations from Pixton’s formula*” (with Emily Clader, Xin Wang and Dmitry Zakharov) **submitted**, arXiv:1704.02011
10. “*Higher-genus quasimap wall-crossing via localization*” (with Emily Clader and Yongbin Ruan) **submitted**, arXiv:1702.03427
11. “*Appendix on the class of the locus of holomorphic differentials*” (with Rahul Pandharipande, Aaron Pixton and Dimitri Zvonkine) in “**Tautological relations via r-spin structures**” by Rahul Pandharipande, Aaron Pixton and Dimitri Zvonkine in “**Journal of Algebraic Geometry**” **28 (2019), 439–496**, arXiv:1607.00978
12. “*Powers of the theta divisor and relations in the tautological ring*” (with Emily Clader, Samuel Grushevsky and Dmitry Zakharov) in “**International Mathematics Research Notices**” **Volume 2018 Issue 24, 12 December 2018, Pages 7725–7754**, arXiv:1605.05425
13. “*Double ramification cycles on the moduli space of curves*” (with Rahul Pandharipande, Aaron Pixton and Dimitri Zvonkine) in “**Publications de l’IHES**” **125 (2017), 221–266**, arXiv:1602.04705
14. “*Pixton’s double ramification cycle relations*” (with Emily Clader) in “**Geometry and Topology**” **22-2 (2018), 1069–1108**, arXiv:1601.02871
15. “*Relations on  $\overline{M}_{g,n}$  via equivariant Gromov-Witten theory of  $\mathbb{P}^1$* ” in “**Algebraic Geometry**” (Foundation Compositio Mathematica) **Volume 4, Issue 3 (May 2017), 311–336**, arXiv:1509.08421
16. “*Appendix: The weighted fundamental class of  $\tilde{\mathcal{H}}_g(\mu)$* ” (with Rahul Pandharipande, Aaron Pixton and Dimitir Zvonkine) in “**The moduli space of twisted canonical divisors**” by Gavril Farkas and Rahul Pandharipande in “**Journal of the Institute of Mathematics of Jussieu**” **Volume 17, Issue 3 (June 2019), 615–672**, arXiv:1508.07940
17. “*Frobenius Manifolds near the Discriminant and Relations in the Tautological Ring*” part of thesis, in “**Letters in Mathematical Physics**”

- 108 (2018), no 7, 1649–1675**, arXiv:1505.03419
18. “*The hypergeometric functions of the Faber-Zagier and Pixton relations*” (with Alexandr Buryak and Rahul Pandharipande) in **Pure and Applied Mathematics Quarterly Volume 11 (2015), Number 4 (Special volume dedicated to Prof. Eduard Looijenga)**, 591–631, arXiv:1502.05150
  19. “*Comparing tautological relations from the equivariant Gromov-Witten theory of projective spaces and spin structures*” **part of thesis, not submitted**, arXiv:1407.4778
  20. “*Gromov-Witten theory of target curves and the tautological ring*” in **Michigan Mathematical Journal, Volume 66, Issue 4 (2017), (683–698)**, arXiv:1308.6182
  21. “*Tautological relations in moduli spaces of weighted pointed curves*” **part of thesis, not submitted**, arXiv:1306.6580
  22. “*Socle pairings on tautological rings*” (with Aaron Pixton) in **Epjournal de Géométrie Algébrique, Volume 3 (2019), Article no. 4**, arXiv:1304.0026
  23. “*Gaussian rational points on a singular cubic surface*” (with Ulrich Derenthal) in “**Torsors, étale homotopy and applications to rational points**”, **LMS Lecture Notes 405, Cambridge University Press, Cambridge, 2013, pp. 210-231**, arXiv:1105.2807

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### Teaching experience and training

- Spring 2021 **MATH 10560: Calculus II**, Instructor.
- Fall 2020 **MATH 60710: Introduction to Algebraic Geometry**, Instructor.
- 2019 – **Co-advising PhD student Nawaz Sultani.**
- Winter 2019 **Minicourse on “Tautological rings and the double ramification cycle”.**
- Summer 2018 **Advising REU student Felipe Castella.**
- Fall 2018 **MATH 115: Calculus I**, Instructor.
- Fall 2017 **MATH 217: Linear Algebra**, Instructor.
- August 2017 **IBL training at Michigan.**
- Winter 2017 **MATH 590: Introduction to Topology**, Instructor.
- Fall 2016 **MATH 417: Matrix Algebra**, Instructor.
- August 2016 **Professional program at Michigan.**
- Spring 2015 **Algebraic Topology II**, Pandharipande, Organization.
- Fall 2014 **Funktionentheorie**, Knörrer, Grading/Exercise Class.
- Spring 2014 **Topologie**, Werner, Grading.

- Spring 2014 **Mathematisches Denken**, *Leupp*, Grading.
- Fall 2013 **Lecture Series on “Pixton’s relations via stable quotients”**.
- Fall 2013 **Funktionentheorie**, *Teichmann*, Grading/Exercise Class.
- Spring 2013 **Algebraic Geometry**, *Pandharipande*, Grading/Exercise Class.
- Fall 2012 **Functional Analysis**, *Soner*, Grading/Exercise Class.
- Spring 2012 **Lineare Algebra II**, *Knörrer*, Grading/Exercise Class.
- 2011-05–2011-07 **Lineare Algebra II**, *Derenthal*, Grading.

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## Talks

### Colloquium

- 2020-02 **“Understanding maps between Riemann surfaces”**, *Colloquium*, University of Minnesota.
- 2020-02 **“Enumerative Geometry: Old and New”**, *Colloquium*, Louisiana State University.
- 2020-01 **“Enumerative Geometry: Old and New”**, *Colloquium*, University of Notre Dame.
- 2020-01 **“Enumerative Geometry: Old and New”**, *Colloquium*, Michigan State University.
- 2019-02 **“Enumerative Geometry: Old and New”**, *Colloquium*, University of Utah.
- 2018-12 **“Enumerative Geometry: Old and New”**, *Colloquium*, Texas A&M University.
- 2018-12 **“Enumerative Geometry: Old and New”**, *Colloquium*, Stony Brook University.
- 2018-04 **“Counting curves on quintic threefolds”**, *Smith Colloquium*, Kansas University.

### Conference

- 2020-08 **“Logarithmic GLSM: Applications”**, *GLSMs 2020*, Virginia Tech, Zoom.
- 2020-01 **“All genus Landau–Ginzburg/Calabi–Yau correspondence”**, *Special session: “Cohomological Field Theories and Wall Crossing”*, JMM Denver.
- 2019-11 **“The logarithmic gauged linear sigma model”**, *Moduli and Invariants*, Casa Matemática Oaxaca.

- 2019-06 “**Gromov-Witten invariants of quintic threefolds via log GLSM**”, *Summer School: “New Perspectives in Gromov-Witten Theory*”, Paris.
- 2018-10 “**Double ramification cycles and strata of differentials**”, *AMS Fall Central Sectional Meeting, Special Section on From Hyperelliptic to Superelliptic Curves*, University of Michigan.
- 2018-10 “**Logarithmic GLSM moduli spaces**”, *Moduli Spaces: Birational Geometry and Wall Crossings*, BIRS.
- 2018-08 “**Logarithmic GLSM**”, *Workshop on Higher Genus Gromov-Witten invariants*, Institute of Advanced Study in Mathematics, Zhejiang University.
- 2018-06 “**On higher genus Gromov-Witten invariants of quintic threefolds**”, *AMS/CMS Joint International Meeting, Special Session on Symplectic Geometry*, Fudan University, Shanghai.
- 2018-05 “**Compactifying the space of maps with a p-field**”, *Crossing the Walls in Enumerative Geometry*, Snowbird, Utah.
- 2018-03 “**Log compactifications of GLSM moduli spaces**”, *Structures in Enumerative Geometry*, MSRI.
- 2018-01 “**Yamaguchi-Yau’s conjecture and finite generation**”, *Higher genus workshop*, ETH Zürich.
- 2018-01 “**Moduli spaces and virtual classes related to the quintic**”, *Higher genus workshop*, ETH Zürich.
- 2017-05 “**Wall-crossing in Higher-Genus Quasimap Theory**”, *RTG/FRG Mirror Symmetry Conference for Young Researchers*, University of Michigan.
- 2017-05 “**A conjectural formula for Witten’s r-spin class**”, *Geometry of Moduli Spaces*, UC San Diego.
- 2017-03 “**Faber’s tautological relations**”, *Workshop on Enumerative Geometry*, IHP.
- 2017-01 “**Higher genus epsilon wall-crossing via localization**”, *FRG Workshop: Crossing the Walls in Enumerative Geometry*, Columbia University.
- 2017-01 “**Conjectural formula for Witten’s r-spin class**”, *RTG Conference on Witten’s r-spin class and related topics*, University of Michigan.
- 2016-07 “**Frobenius manifolds near the discriminant and relations in the tautological ring**”, *AMS von Neumann Symposium*, Hilton Charlotte University Place.

- 2016-06 “**Wall-crossing in higher genus FJRW-theory of the quintic**”, *Chengdu International Conference on Gromov-Witten Theory*, Sichuan University.
- 2016-05 “**Around Pixton’s formula for the double ramification cycles**”, *Workshop on Symplectic Geometry and Mathematical Physics*, Beijing International Center for Mathematical Research.
- 2016-02 “**Pixton’s formulas: a proof for functions and a sketch for differentials**”, *Moduli spaces of holomorphic differentials*, Berlin.
- 2015-08 “**A formula for the double ramification cycle**”, *George Boole Mathematical Sciences Conference*, Cork, Ireland.
- 2015-06 “**Pixton’s formula for the double ramification cycle**”, *AMS-EMS-SPM International Meeting*, Porto, Portugal.
- 2015-06 “**Frobenius manifolds near the discriminant and relations in the tautological ring**”, *Geometric Invariants and Spectral Curves*, Lorentz Center, Leiden.
- 2014-10 “**Relations in the tautological ring**”, *Current Developments in Moduli Theory*, Northeastern University.
- 2014-10 “**r-spin relations on the moduli space of curves: new connections**”, *Workshop on Pixton’s conjectures*, ETH Zürich.
- 2014-09 “**Tautological relations from equivariant  $P^1$** ”, *Summer School: “Modern trends in Gromov-Witten theory”*, Leibniz Universität Hannover.
- 2013-10 “**Relations in the tautological ring from stable quotients**”, *FIM Conference: “Cohomology of the moduli space of curves”*, ETH Zürich.
- 2012-09 “**Diophantine equations, heights and the Manin conjecture**”, *Studienkonferenz DMV*, Saarbrücken.
- Mini-course
- 2019-02 “**Variants of the DR cycle**”, *Winter School on Enumerative Geometry and Modular Forms*, Frankfurt.
- Seminar
- 2020-05 “**The locus of curves with holomorphic differentials and Witten’s r-spin class II**”, *Algebraic Geometry and Moduli Zoominar*, ETHZ, Zoom.
- 2019-11 “**Counting curves on quintic threefolds**”, *Algebraic Geometry Seminar*, Princeton University.

- 2019-10 “**On Gromov-Witten invariants of quintic threefolds**”, *Algebra-Number Theory Seminar*, University of Maryland.
- 2019-03 “**On Gromov-Witten invariants of quintic threefolds**”, *Algebraic Geometry Seminar*, University of Michigan.
- 2019-03 “**Holomorphic Anomaly Equations for quintic threefolds**”, *Algebraic Geometry Seminar*, Harvard/MIT.
- 2019-02 “**Logarithmic GLSM moduli spaces**”, *Algebraic Geometry Seminar*, University of Utah.
- 2019-01 “**Enumerative Geometry: Old and New**”, *Algebra/Topology Seminar*, University of Copenhagen.
- 2018-12 “**Enumerative Geometry: Old and New**”, *Differential Geometry and Symplectic Topology Seminar*, University of Minnesota.
- 2018-11 “**From holomorphic differentials to Witten’s r-spin class**”, *Topology Seminar*, University of Michigan.
- 2018-10 “**Logarithmic GLSM moduli spaces**”, *Geometry and Physics Seminar*, University of Michigan.
- 2018-06 “**On higher genus Gromov-Witten invariants of quintic threefolds II**”, *Helvetic Algebraic Geometry Seminar*, Schloss Hünigen, Switzerland.
- 2018-06 “**On higher genus Gromov-Witten invariants of quintic threefolds I**”, *Helvetic Algebraic Geometry Seminar*, Schloss Hünigen, Switzerland.
- 2018-05 “**On Gromov-Witten invariants of hypersurfaces**”, *EGN Moduli and Representation Theory seminar*, MSRI.
- 2018-04 “**On Gromov-Witten invariants of quintic threefolds**”, *Algebraic Geometry Seminar*, University of Arizona.
- 2018-04 “**On Gromov-Witten invariants of quintic threefolds**”, *Algebra Seminar*, University of Oregon.
- 2018-01 “**Moduli of meromorphic functions on algebraic curves**”, *Analysis and Geometry Seminar*, Central Michigan University.
- 2017-12 “**Structures for Gromov-Witten invariants of quintic threefolds**”, *Algebraic Geometry Seminar*, Harvard/MIT.
- 2017-10 “**Genus two curves on quintic threefolds**”, *Algebraic Geometry Seminar*, Stanford.
- 2017-08 “**Four ways of computing the locus of holomorphic differentials**”, *Algebraic Geometry and Moduli Seminar*, ETH Zürich.

- 2017-04 **“Four ways to compute strata of holomorphic differentials”**, *Algebraic Geometry Seminar*, University of Minnesota.
- 2017-04 **“Wall-Crossing via Localization”**, *Geometry and Physics Seminar*, University of Michigan.
- 2016-10 **“Topological Recursion Relations from Pixton’s relations”**, *Algebraic Geometry Seminar*, Ohio State University.
- 2016-09 **“Topological Recursion Relations”**, *Geometry and Physics Seminar*, University of Michigan.
- 2016-02 **“Double ramification cycles”**, *Informal Mathematical Physics Seminar*, Columbia University, New York.
- 2015-11 **“A formula for the double ramification cycle”**, *Mathematics - String Theory Seminar*, IPMU.
- 2015-09 **“Wall-crossing in higher genus FJRW theory”**, *Symplectic Geometry and Mathematical Physics*, Beijing International Center for Mathematical Research.
- 2015-05 **“Pixton’s formula for the double ramification cycle”**, *Symplectic Geometry and Mathematical Physics*, Beijing International Center for Mathematical Research.
- 2015-03 **“The moduli space of curves and the Airy function”**, *Séminaire de géométrie algébrique*, Paris.
- 2015-02 **“Pixton’s double ramification cycle relations”**, *Algebraic Geometry and Moduli Seminar*, ETH Zürich.
- 2015-02 **“Pixton’s formula for double ramification cycles II”**, *Forschungsseminar “Algebraische Geometrie”*, HU Berlin.
- 2014-10 **“The tautological ring and cohomological field theories”**, *Geometry and Physics Seminar*, University of Michigan.
- 2014-01 **“Tautological relations and chomological field theories”**, *Algebraic Geometry Seminar*, University of Utah.
- 2013-07 **“Relations in the tautological ring from stable quotients”**, *Algebraic Geometry and Moduli Seminar*, ETH Zürich.
- 2012-03 **“The housing theorem”**, *Algebraic Geometry Seminar*, ETH Zürich.
- Others
- 2019-11 **“The logarithmic gauged linear sigma model”**, *Future Science Prize Forum*, Beijing, China.



- 2019-09 “**Counting curves on quintic threefolds**”, *Short talks by postdoctoral members*, IAS Princeton.
- 2015-03 “**What is ... a tautological class**”, *Graduate Colloquium*, ETH Zürich.

## Service

- Main organizer for RTG conference on Witten’s class and related topics (2017)
- Organizer for FRG/RTG mirror symmetry conference for young researchers (2017)
- Organizer for Workshop on Higher Genus Gromov-Witten theory invariants (2018)
- Local organizer for Workshop on Modular structures in Gromov-Witten theory and related topics (2018)
- Main organizer for FRG workshop on strata of abelian differentials and related topics (2019)
- Reviewer for *Advances*, *Algebraic Geometry* (Compositio Foundation), *Algebra & Number Theory*, *Annals of Combinatorics*, *Compositio*, *Duke*, *Inventiones*, *G&T*, *IMRN*, *JAMS*, *JEMS*, *JIMJ*, *Selecta* and *SIGMA*
- Reviewer for *AMS Mathematical Reviews*
- Dissertation committee member for Rongxiao Mi and Rachel Webb

## Conference Participation

- 2019-09 **AGNES**, *Boston College*.
- 2019-03 **AGNES**, *UMass Amherst*.
- 2018-09 **AGNES**, *Brown University*.
- 2018-05 **Through the Looking-Glass: Mirror Symmetry and Quantum Cohomology**, *UC Berkeley*.
- 2018-03 **Mirror Symmetry and Enumerative Geometry**, *UC Berkeley*.
- 2018-03 **WAGS**, *UC Berkeley*.
- 2017-07 **Conference on Enumerative Geometry, Mirror Symmetry and Physics**, *University of Illinois at Urbana-Champaign*.
- 2016-06 **String Math**, *College de France*.
- 2016-06 **Workshop - Curves on surfaces and 3-folds**, *CIB-EPFL*.
- 2016-06 **Workshop on Global Mirror Symmetry**, *Chern Institute of Mathematics*.
- 2015-07 **Summer Research Institute on Algebraic Geometry**, *University of Utah*.

- 2015-01 **SwissMAP Geometry and Topology conference**, *Engelberg, Switzerland.*
- 2014-09 **British Algebraic Geometry Meeting**, *University of Warwick.*
- 2014-06 **Classical Algebraic Geometry**, *Oberwolfach, Germany.*
- 2014-04 **Mirror symmetry and spin curves**, *Cortona, Italy.*
- 2013-10 **Cohomology of the moduli space of curves**, *ETH Zürich.*
- 2013-08 **Summer School on Moduli spaces in algebraic geometry and physics**, *Hamburg.*
- 2013-07 **Conference on Algebraic Geometry**, *University of Amsterdam.*
- 2013-05 **Advanced Course: “Compactifying moduli spaces”**, *CRM.*
- 2013-01 **Geometry of sheaves in low dimensions**, *Centro Stefano Franscini, Ascona.*
- 2012-10 **Geometry and topology of moduli**, *Humboldt Universität Berlin.*
- 2012-06 **GAeL**, *Grenoble.*
- 2012-04 **The moduli space of curves and its intersection theory**, *KTH, Stockholm.*
- 2011-07 **3rd Summer Workshop on Algebraic Geometry**, *Tübingen.*
- 2011-03 **Winter School “Heights and Algebraic Numbers”**, *Eberhard-Karls-Universität Tübingen.*