

# Johannes Schmitt

## Personal Information

**Born:** 09.06.1991  
**Citizenship:** German  
**Professional Address:** Mathematisches Institut  
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## Employment

**Sept. 2019 - present.** SNSF Early Postdoc.Mobility grant, University of Bonn.  
Advisor: Daniel Huybrechts

## Education

**Sept. 2014 - Aug. 2019.** Ph.D. student in Mathematics, ETH Zurich.  
Advisor: Rahul Pandharipande

**Sept. 2012 - Sept. 2014.** M.Sc. in Mathematics, ETH Zurich.  
Thesis advisor: Brent Doran  
Grade: 6.0 (best grade), Willi Studer Price of the ETH Zurich

**Oct. 2009 - Sept. 2012.** B.Sc. in Mathematics, Saarland University, Saarbrücken.  
Thesis advisor: Jörg Eschmeier  
Grade: 1.0 (best grade)

## Research Interests

Algebraic geometry, Moduli spaces of curves, Geometric Invariant Theory, Algebraic stacks, Tautological cycles, Hurwitz spaces, Chow groups

## List of Publications

1. `admcycles` – a Sage package for calculations in the tautological ring of the moduli space of stable curves  
V. Delecroix, J. van Zelm, preprint (2020)
2. Infinitesimal structure of the pluricanonical double ramification locus  
joint with D. Holmes, preprint (2019)
3. Zero cycles on moduli spaces of curves  
joint with R. Pandharipande, preprint (2019)
4. Counting Induced Subgraphs: An Algebraic Approach to  $\#W[1]$ -hardness  
joint with J. Dörfler, M. Roth, P. Wellnitz, **MFCS conference** (2019)
5. Intersections of loci of admissible covers with tautological classes  
joint with J. van Zelm, preprint (2018)
6. Counting Induced Subgraphs: A Topological Approach to  $\#W[1]$ -hardness  
joint with M. Roth, **IPEC conference** (2018), **Algorithmica** (to appear)
7. Multiplicativity of the double ramification cycle  
joint with D. Holmes, A. Pixton, **Docum. Mathem.** **24** (2019)
8. A correspondence of good  $G$ -sets under partial geometric quotients  
**Beitr. Algebra Geom.** **59.2** (2018)
9. Dimension theory of the moduli space of twisted  $k$ -differentials  
**Docum. Mathem.** **23** (2018)
10. A compactification of the moduli space of self-maps of  $\mathbb{C}P^1$  using stable maps  
**Conform. Geom. Dyn.** **21** (2017)

11. Cowen-Douglas Operators and Dominating Sets  
joint with J. Eschmeier, **J. Operator Theory** **1** (2014)

**Software**

[admcycles](#) (joint with Vincent Delecroix, Jason van Zelm)  
Sage package for calculations in the tautological ring of  $\overline{M}_{g,n}$

**Awards and Fellowships**

- 11/2018. Early.Postdoc Mobility grant of Swiss National Science Foundation
- 08/2018. Best Paper Award and Best Student Paper Award at IPEC conference 2018 for the paper *Counting Induced Subgraphs: A Topological Approach to #W[1]-hardness*
- 04/2015. Willi Studer Price of the ETH Zurich
- 01/2010 - 06/2014. Scholarship from Studienstiftung des Deutschen Volkes (German National Academic Foundation)

**Conference talks**

- 01/2020. Moduli of Higgs bundles and holomorphic symplectic geometry, ETH Zurich
- 11/2019. Conference Algebraic Geometry and Complex Geometry, CIRM Luminy (short contributed talk)
- 10/2019. AIM workshop on Double ramification cycles and integrable systems, American Institute of Mathematics (San Jose)
- 07/2019. Sage days 100, University of Bonn
- 07/2019. GQT Colloquium, Den Dolder
- 02/2019. FRG Workshop on strata of abelian differentials and related topics, University of Michigan
- 06/2018. GAeL XXVI, University of Strasbourg
- 02/2018. Hurwitz cycles on the moduli of curves, HU Berlin
- 10/2017. Open Gromov-Witten theory, integrable hierarchies and mirror symmetry, ETH Zurich
- 10/2017. Moduli of curves in Gothenburg, Chalmers University of Technology Gothenburg
- 02/2017. Conference on Moduli of curves, sheaves, and K3 surfaces, HU Berlin
- 08/2016. Workshop on Moduli Spaces, Mirror Symmetry and Enumerative Geometry, ICTP Trieste (short contributed talk)

**Seminar talks**

- 12/2019. Seminar for Algebraic Geometry, Mathematics Institute of Jussieu - Paris Rive Gauche
- 12/2019. Seminar for Algebraic Geometry, University of Versailles
- 11/2019. Seminar for Algebra and Geometry, University of Grenoble
- 11/2019. Algebraic Geometry Seminar, University of Cambridge
- 11/2019. Seminar on Algebra, Geometry and Physics, Max-Planck Institute Bonn
- 09/2019. Algebraic geometry and moduli seminar, ETH Zurich
- 07/2019. Seminar for Algebra, Number Theory and Algebraic Geometry, University of Freiburg
- 05/2019. Seminar in Algebraic Geometry, University of Padova
- 02/2019. FRAGMENT seminar, University of Colorado

- 12/2018. Seminar for Algebraic Geometry, University of Bonn
- 02/2018. Algebraic geometry and moduli seminar, ETH Zurich
- 11/2017. Algebraic geometry and moduli seminar, ETH Zurich
- 10/2016. Algebraic geometry and moduli seminar, ETH Zurich
- 04/2016. Graduate student seminar, University of Basel
- 03/2015. Algebraic geometry and moduli seminar, ETH Zurich
- 01/2013. Functional analysis seminar, University of the Saarland

## Teaching

### Organizer

Complex Analysis (Fall 2015, Fall 2017), Algebraic Geometry (Spring 2016), Algebraic Curves (Spring 2017), Analysis II (Spring 2018), Algebra I (Fall 2018)

### Teaching assistantships

Differential geometry I, II (Fall 2013, Spring 2014), Linear Algebra (Fall 2014), Topology (Spring 2015), Complex Analysis (Fall 2016)

## Supervision of students

- Ujjwol Paudel (Semester project, Fall 2016)
- Olga Trapeznikova (Master's thesis, 2018)

## Services

- Organizer of Hausdorff School "Perverse Sheaves in Enumerative Geometry" (Bonn, February 2020)
- Organizer of the Zurich Graduate Colloquium in Mathematics (Fall 2015 - Fall 2019)
- Main organizer of the reading seminars "Algebraic stacks" (Fall 2015) and "Logarithmic geometry and moduli" (Spring 2018) at ETH Zurich
- Training supervisor at preparatory courses for the German Mathematical Olympiad (Fall 2013 - Fall 2016)

## References

- Prof. Dr. Rahul Pandharipande (ETH Zurich)
- Prof. Dr. Gavril Farkas (Humboldt-University Berlin)