

Jens Niklas Eberhardt

Curriculum Vitæ

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Areas of Interest

Geometric representation theory and motivic homotopy theory, in particular representations of reductive groups and motivic sheaves.

Employment

Academic

- Jul 2019 - Sep 2019 **Postdoctoral fellow**, *Max Planck Institute for Mathematics*, Bonn, Germany.
Research and organizing student seminars.
- Aug 2017 - Jun 2019 **Assistant Adjunct Professor**, *UCLA*, Los Angeles, California.
Research and instructing five courses per year.
- Aug 2014 - Aug 2017 **Doctoral Student**, *GK1821 Graduate School “Cohomological Methods in Geometry” of the German Research Foundation (DFG)*, Freiburg, Germany.
Research and organizing student seminars.
- Oct 2011 - Apr 2014 **Teaching assistant**, *Lehrstuhl B für Mathematik, RWTH Aachen*, Aachen, Germany.
Instructing students in a computer algebra course.

Industry

- Sep 2018 - May 2019 **Consultant Quantum Architect**, *PsiQ (company developing a general purpose silicon photonic quantum computer)*, Palo Alto, California.
Mathematical Consultanship.

Honours, Awards and Grants

- May 2019 **Distinguished Teaching Award 2019**, *UCLA Department of Mathematics*, Los Angeles, USA.
- 2015 **Springorum Denkmünze**, *RWTH Aachen*, Aachen, Germany.
Award for best graduates.

Education

- Aug 2014 – May 2017 **PhD (Dr. rer. nat.)**, *Albert-Ludwigs-Universität*, Freiburg, Germany.
Mathematics, grade “*summa cum laude*”
Thesis: “*Graded and Geometric Parabolic Induction*”
Advisor: *Prof. Dr. Wolfgang Soergel*
- Apr 2013 – Apr 2014 **Master of Science with honors**, *RWTH Aachen*, Germany.
Mathematics with minor computer science, grade “*sehr gut mit Auszeichnung*” (equivalent to “A+”)
Thesis: “*From the cyclic flats to the Tutte polynomial of a matroid*”
Advisor: *Prof. Dr. Wilhelm Plesken*
- Apr 2010 – Apr 2013 **Bachelor of Science**, *RWTH Aachen*, Germany.
Mathematics with minor computer science, grade “*sehr gut*” (equivalent to “A”)
Thesis: “*Linearization of matroid automorphisms*”
Advisor: *Prof. Dr. Wilhelm Plesken*

Publications

Peer-reviewed articles

- July 2020 **Challenges and issues of SARS-CoV-2 pool testing**, Jens Niklas Eberhardt, Nikolas Peter Breuckmann, Christiane Sigrid Eberhardt, *The Lancet Infectious Diseases*.

- July 2020 *Multi-Stage Group Testing Improves Efficiency of Large-Scale COVID-19 Screening*, Jens Niklas Eberhardt, Nikolas Peter Breuckmann, Christiane Sigrud Eberhardt, *Journal of Clinical Virology*, Volume 128.
- April 2019 *Mixed Motives and Geometric Representation Theory in Equal Characteristic*, Jens Niklas Eberhardt, Shane Kelly, *Selecta Mathematica New Series*. (2019) 25: 30.
- Sep 2014 *Computing the Tutte Polynomial of a Matroid from its Lattice of Cyclic Flats*, Jens Niklas Eberhardt, *Electronic Journal Of Combinatorics Volume 21, Issue 3*, (arXiv:1407.6666).
- Submitted articles
- May 2020 *Real Springer fibers and odd arc algebras* , Jens Niklas Eberhardt, Grégoire Naisse, Arik Wilbert, (arXiv:2003.07297).
- Sep 2019 *K-Motives and Koszul Duality* , Jens Niklas Eberhardt, (arXiv:1909.11151).
- Dec 2018 *Springer Motives*, Jens Niklas Eberhardt, (arXiv:1812.04796).
- Sep 2018 *Graded parabolic induction for Category \mathcal{O}* , Jens Niklas Eberhardt, (arXiv:1603.00327).

In Preparation

Algebraic K-Theory and Grothendieck–Witt Theory of Monoid Schemes, Jens Niklas Eberhardt, Oliver Lorscheid, Matthew B. Young.

Equivariant K-motives, Monodromic Sheaves and Soergel Bimodules, Jens Niklas Eberhardt.

Hypertoric q -Schur algebra, Jens Niklas Eberhardt, Carl Mautner.

Equivariant mixed motives in equal characteristic, Jens Niklas Eberhardt, Shane Kelly.

Talks

Conferences

- Jun 2020 *K-motives and Koszul duality*, Twinned conference "Geometric Representation Theory", Max Planck Institute in Bonn, Germany and Perimeter Institute in Waterloo, Canada.
- Sep 2019 *Motives in (Modular) Representation Theory*, Clay workshop on "Modular representation theory", Oxford.
- Oct 2016 *Six Operations Formalisms in Geometric Representation Theory*, Workshop Kac-Moody Groups and L-Functions, University of Nottingham.
- Jun 2014 *A New Algorithm for the Tutte Polynomial*, Recent Methods in Sphere Packing and Optimization, Oberwolfach.

Seminars

- May 2020 *Motives in Geometric Representation Theory*, University of Münster.
- Dec 2019 *Motives in Geometric Representation Theory*, RWTH Aachen University.
- Oct 2019 *Motives in Geometric Representation Theory*, University of Kaiserslautern.
- Oct 2019 *Motives in Geometric Representation Theory*, University of Bochum.
- Oct 2018 *Category \mathcal{O} and Mixed Geometry*, University of Toronto.
- Feb 2018 *Category \mathcal{O} and Mixed Geometry*, University of Southern California.
- Feb 2018 *Category \mathcal{O} and Mixed Geometry*, UC Riverside.
- Jun 2017 *Six Operations Formalisms in Geometric Representation Theory*, Univ. Clermont-Ferrand.
- Aug 2016 *Graded Category \mathcal{O} and Motivic Six Operations*, Max-Planck-Institut für Mathematik, Bonn.
- Oct 2016 *Category \mathcal{O} and Mixed Geometry*, GK-Kolloquium, Univ. of Regensburg.
- May 2014 *The Tutte Polynomial of Highly Symmetrical Matroids*, Colloquium, RWTH Aachen.
- Jul 2013 *Linearization of Matroid Automorphisms*, Summer School in Algorithmic Mathematics, Univ. of Hamburg.

Teaching Experience

- Oct 2019 – Feb 2020 **Seminar on Hall Algebras**, *Bonn University*, Organizer.
- Apr 2019 – Jun 2019 **Real Analysis**, *UCLA*, Instructor.
- Jan 2019 – Mar 2019 **Differential and Integral Calculus**, *UCLA*, Instructor.
- Jan 2019 – Mar 2019 **Linear Algebra Honors (115AH)**, *UCLA*, Instructor.
- Jan 2019 – Mar 2019 **Differential and Integral Calculus**, *UCLA*, Instructor.
- Sep 2018 – Dec 2018 **Linear Algebra Honors (115AH)**, *UCLA*, Instructor.
- Sep 2018 – Dec 2018 **Differential and Integral Calculus (31A)**, *UCLA*, Instructor.
- Apr 2018 – Jun 2018 **Linear Algebra (115A)**, *UCLA*, Instructor.
- Apr 2018 – Jun 2018 **Differential and Integral Calculus (31A)**, *UCLA*, Instructor.
- Jan 2018 – Mar 2018 **Introduction to Discrete Structures (61)**, *UCLA*, Instructor.
- Sep 2017 – Dec 2017 **Differential and Integral Calculus (31A)**, *UCLA*, Instructor.
- Sep 2017 – Dec 2017 **Linear Algebra (115A)**, *UCLA*, Instructor.
- Oct 2016 – Feb 2017 **Seminar on SL_2** , *University Freiburg*, Organizer.
- Apr 2015 – Jul 2015 **Seminar on Sheaf cohomology**, *University Freiburg*, Organizer.
- Oct 2011 - Apr 2014 **Teaching assistant**, *Lehrstuhl B für Mathematik, RWTH Aachen*, Aachen, Germany.