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Janina C. Letz

Postdoctoral Researcher

Research

Area   *Commutative Algebra*, *Representation Theory* and *Homological Algebra*

Topics of interest   Triangulated Categories, Derived Categories, Stable Categories

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Employment

Sept 2024–current   **Postdoctoral Researcher**, *Bielefeld University*, Bielefeld, Germany

Sept 2023–Aug 2024   **Visiting Researcher**, *University of California, Los Angeles*, Los Angeles, California, USA, Feodor Lynen Research Fellowship (Humboldt foundation)

Jul 2020–Aug 2023   **Postdoctoral Researcher**, *Bielefeld University*, Bielefeld, Germany

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Research Stays

Sept 2022–Dec 2022   **Hausdorff Trimester Program**, *Hausdorff Center for Mathematics*, Bonn, Germany
Spectral Methods in Algebra, Geometry, and Topology

Education

Aug 2015–May 2020   **Ph.D. Mathematics**, *University of Utah*, Salt Lake City, Utah, USA
Advisor: Srikanth Iyengar
Title of thesis: Generation Time in Derived Categories

Apr 2012–Aug 2015   **B.Sc. Physics**, *Johannes Gutenberg-University*, Mainz, Germany
Advisor: Peter Virnau
Title of thesis: Computersimulationen zum Phasenverhalten von aktiven Dimeren (computer simulations about phase characteristics of active dimers)

Apr 2012–Sept 2014   **B.Sc. Mathematics**, *Johannes Gutenberg-University*, Mainz, Germany
Advisor: Manuel Blickle
Title of thesis: Bernstein-Gelfand-Gelfand Korrespondenz

Oct 2008– Mar 2012	**Pre-university course work**, *Johannes Gutenberg-University*, Mainz, Germany University courses during high school in mathematics (Frühstudium).

Peer-reviewed Articles

[9] Benjamin Briggs, James C. Cameron, <u>Janina C. Letz</u>, and Josh Pollitz. Koszul homomorphisms and universal resolutions in local algebra. **Forum Math. Sigma**, 13:e63, 2025.

[8] <u>Janina C. Letz</u> and Marc Stephan. Generation time for biexact functors and Koszul objects in triangulated categories. **Doc. Math.**, 30(2):379–415, 2025.

[7] Dalia Artenstein, <u>Janina C. Letz</u>, Amrei Oswald, and Andrea Solotar. The Hochschild cohomology ring of monomial algebras. **J. Algebra**, 654:108–131, 2024.

[6] Henning Krause and <u>Janina C. Letz</u>. The spectrum of a well-generated tensor-triangulated category. **Bull. Lond. Math. Soc.**, 55(2):680–705, 2023.

[5] <u>Janina C. Letz</u>. Brown representability for triangulated categories with a linear action by a graded ring. **Arch. Math. (Basel)**, 120(2):135–146, 2023.

[4] Srikanth B. Iyengar, <u>Janina C. Letz</u>, Jian Liu, and Josh Pollitz. Exceptional complete intersection maps of local rings. **Pacific J. Math.**, 318(2):275–293, 2022.

[3] Benjamin Briggs, Srikanth B. Iyengar, <u>Janina C. Letz</u>, and Josh Pollitz. Locally complete intersection maps and the proxy small property. **Int. Math. Res. Not. IMRN**, 2022(16):12625–12652, 2021.

[1] <u>Janina C. Letz</u>. Local to global principles for generation time over commutative noetherian rings. **Homology Homotopy Appl.**, 23(2):165–182, 2021.

Monographs

[2] Ragnar-Olaf Buchweitz. *Maximal Cohen–Macaulay Modules and Tate Cohomology*, volume 262 of **Math. Surveys Monogr.** American Mathematical Society, Providence, RI, 2021. with appendices by Luchezar L. Avramov, Benjamin Briggs, Srikanth B. Iyengar, and <u>Janina C. Letz</u>.

Preprints

[ ] Raphael Bennett-Tennenhaus, Isambard Goodbody, <u>Janina C. Letz</u>, and Amit Shah. Tensor extriangulated categories. arXiv e-prints, 2025. arXiv:2502.18257v1.

[ ] <u>Janina C. Letz</u> and Julia Sauter. Realization functors in algebraic triangulated categories. arXiv e-prints, 2024. arXiv:2412.07455v1.

[ ] <u>Janina C. Letz</u>. Transfer of A-infinity structures to projective resolutions. arXiv e-prints, 2023. arXiv:2312.13696v1.

Awards and third-party funding

2023 **Humboldt Foundation**, *Feodor Lynen Research Fellowship*
Research stay of 12 month at the University of California, Los Angeles, USA

2023 **European Mathematical Society**, *EMS Summer School*
Funding for the BIREP Summer School on persistence modules—The Interplay of Representation Theory and Topological Data Analysis

Conference Talks

2025 **Generation time for tensor products and Koszul objects in triangulated**, *Women in Commutative Algebra*, The Fields Institute, Toronto, Canada

2024 **Koszul homomorphisms and universal resolutions in local algebra**, *Betti numbers in commutative algebra and equivariant homotopy theory*, Bielefeld University, Germany

2023 **Generation time in triangulated categories under biexact functors and for Koszul objects**, *Workshop: Tensor-Triangular Geometry and Interactions*, Mathematisches Forschungsinstitut Oberwolfach, Germany

2023 **Transferring resolutions along a Koszul homomorphism**, *Workshop: Resolutions in Local Algebra and Singularity Theory*, Mathematisches Forschungsinstitut Oberwolfach, Germany

2023 **Brown representability for triangulated categories with a linear action**, *Algebras and Representation Theory Network Meeting*, Cologne, Germany
Flashtalk

2022 **Homotopical characterization of exceptional complete intersection maps**, *Workshop: Spectra, triangles, and higher structures*, Hausdorff Research Institute for Mathematics, Bonn, Germany
Invited Speaker

2022 **Homotopical characterization of exceptional complete intersection maps**, *Geometric and combinatorial methods in homological algebra*, Aarhus, Denmark
Invited Speaker

2022 **The spectrum of a well-generated tensor triangulated category**, *Abel symposium 2022: Triangulated categories in representation theory and beyond*, Ålesund, Norway
Invited Speaker

2021 **Homotopical characterization of exceptional complete intersection maps**, *Workshop on Homotopy Theory and Group Theory (IRP Higher Homotopical Structures)*, virtually
Invited Speaker

2021 **Computations for thick subcategories in Macaulay2**, *AMS Spring Southeastern Sectional Meeting*, virtually
Invited Speaker

2020 **Smallness properties and locally complete intersections**, *Joint Mathematics Meeting*, Denver, Colorado, USA
Poster at the AWM Poster Session, Funded

2020 **Local to global principles for generation time over commutative rings**, *Joint Mathematics Meeting*, Denver, Colorado, USA
Invited speaker

2019 **Smallness properties and locally complete intersections**, *KUMUNU*, Lincoln, Nebraska, USA
Poster

2019 **Smallness properties and locally complete intersections**, *AMS Fall Central Sectional Meeting*, Wisconsin, Madison, USA
Invited speaker

2019 **Smallness properties and locally complete intersections**, *Equivariant Topology and Derived Algebra*, Trondheim, Norway
Gong show talk (10 minutes)

2019 **Smallness properties and locally complete intersections**, *RRAGE: Ragnar's Ramifications in Algebra and Geometry Emerging Workshop*, Toronto, Canada
5-minute talk

2019 **Local to global principles for generation time over commutative rings**, *KUMUNUjr*, Lincoln, Nebraska, USA
Invited speaker

Seminar Talks

2024 **Generation time for biexact functors and Koszul objects in triangulated categories**, *Algebra Seminar*, Syracuse University, Syracuse, New York, USA

2024 **Koszul homomorphisms and universal resolutions in local algebra**, *Algebra and Algebraic Geometry seminar*, University of Washington, Seattle, Washington, USA

2023 **Koszul homomorphisms and universal resolutions in local algebra**, *Algebra seminar*, UCLA, Los Angeles, California, USA

2023 **Koszul homomorphisms and universal resolutions in local algebra**, *Commutative algebra seminar*, University of Utah, Salt Lake City, Utah, USA

2023 **The spectrum of a well-generated tensor triangulated category**, *Seminario de Àlgebra del IMERL*, Universidad de la República, Montevideo, Uruguay, virtually

2023   **Homotopical characterization of exceptional complete intersection maps**, *Algebra and Representation Theory Seminar*, Universität zu Köln, Köln, Germany

2023   **Koszul homomorphisms**, *Oberseminar Algebra*, Osnabrück, Germany

2022   **Homotopical characterization of exceptional complete intersection maps**, *Kolloquium Geometrie und Arithmetik*, Johannes Gutenberg-University Mainz, Mainz, Germany

2022   **The spectrum of a well-generated tensor triangulated category**, *SFB Lecture*, University of Regensburg, Regensburg, Germany

2022   **The spectrum of a well-generated tensor triangulated category**, *FD Seminar*, virtually

2021   **A homotopical characterization of locally complete intersection maps**, *Algebra Seminar*, University of Leeds, virtually

2021   **Generation in derived categories and applications to commutative algebra**, *New directions in group theory and triangulated categories*, virtually

2020   **A homotopical characterization of locally complete intersection maps**, *Algebra and Discrete Mathematics Seminar*, Clemson University, virtually

2020   **Local to global principles for generation time over commutative rings**, *Algebra Seminar*, Syracuse University, Syracuse, New York, USA

2020   **Local to global principles for generation time over commutative rings**, *Algebra and Algebraic Geometry Seminar*, University of Wisconsin, Madison, Wisconsin, USA

2019   **Local to global principles for generation time over commutative rings**, *Oberseminar Algebra*, Osnabrück, Germany

2019   **Local to global principles for generation time over Noether algebras**, *BIREP seminar*, Bielefeld, Germany

2019   **Local to global principles for generation time over commutative rings**, *Commutative algebra seminar*, University of Nebraska, Lincoln, Nebraska, USA

2019   **Local to global principles for generation time over commutative rings**, *Commutative algebra seminar*, University of Utah, Salt Lake City, Utah, USA

Conferences Organized

2024	**Commutative and Noncommutative Algebra, Together at Last**, San Francisco, California, USA Special Session at the Spring 2024 Western Sectional Meeting
2023	**BIREP Summer School on persistence modules—The Interplay of Representation Theory and Topological Data Analysis**, Bad Driburg, Germany Funding obtained from the EMS
2022	**Representation Theory and Triangulated Categories—a conference in honor of Henning Krause**, Paderborn, Germany
2021	**BRIDGES**, Salt Lake City, Utah, USA, hybrid Aimed towards early graduate students and advanced undergraduate students interested in representation theory, number theory, and commutative algebra
2020	**Zoom Special Session on DG Methods in Commutative Algebra and Representation Theory**, virtually Originally planned as a special session of the AMS Spring Western Sectional Meeting

Service

Referee for various mathematics journals (9 Reports)

Reviewer for MathSciNet (4 Reviews)

Reviewer for zbMATH Open (10 Reviews)

2021–current	**FDLIST**, *Network for research in representation theory of finite-dimensional algebras and related topics* Setup and maintenance of the forum
2020–2023	**Faculty of Mathematics**, *Bielefeld University*, Bielefeld, Germany • 2022–2023: Member of the commission for research and young academics • 2020–2022: Member of the examination committee Bachelor of Science in Mathematics • 2020–2022: Member of the examination committee Master of Science in Mathematics
2020–2021	**Seminar Representation Theory**, *Bielefeld University*, Bielefeld, Germany Co-Organizer
2017–2020	**Student Chapter of the Association for Women in Mathemathics**, *University of Utah*, Salt Lake City, Utah, USA • 2019–2020: Chair of the conference committee Organizing a conference aimed towards early graduate students and advanced undergraduate to support students from underrepresented groups. • 2019–2020: Webmaster

2018–2020 **Graduate Student Advisory Committee**, *University of Utah*, Salt Lake City, Utah, USA

- 2019–2020: Co-chair of the Professional development committee
  Organizing a job material editing group and some workshops and panels.
- 2019–2020: Co-chair of the peer mentoring program
  Pairing incoming graduate students with advanced graduate students.
- 2018–2019: Graduate student colloquium chair

2018–2019 **Student Seminar in Commutative Algebra (BIKES)**, *University of Utah*, Salt Lake City, Utah, USA
Organizer

Outreach

2023 **'Symmetrische Polynome—Wie sehen sie aus und wie viele gibt es?' (Symmtric polynomials—How do they look and how many are there?)**, Gütersloh, Bielefeld
Talk at the award ceremony of the regional round of the national Mathematical Olympiad in the district Gütersloh.

2022–2023 **CampusTalk**, *Bielefeld University*, Bielefeld, Germany
Discussion with high school students on studies in mathematics.

2022 **Girl's day: Forschen und Knobeln—als Beruf (Exploring and puzzle-solving—for a profession)**, *Bielefeld University*, Bielefeld, Germany
Facilitator for a day with girls of the ages 11–15 to provide insight in the profession of a mathematician.

2022 **Workshop on the game SET**, *Bielefeld University*, Bielefeld, Germany
Co-organizer of a workshop for grades 7–9 at the state-round of the national Mathematical Olympiad in North Rhine-Westphalia.

2019–2020 **Mentoring program for undergraduate students**, *University of Utah*, Salt Lake City, Utah, USA
Mentor for an undergraduate student in mathematics.

2019–2020 **Peer mentoring program for graduate students**, *University of Utah*, Salt Lake City, Utah, USA
Mentor for two first year graduate students in mathematics.

2018 **'What is math day?'**, *University of Utah*, Salt Lake City, Utah, USA
Facilitator for an activity with middle school kids.

2012–2015 **Training camp for the federal round of the national Mathematical Olympiad**, Rhineland-Palatine, Germany
Facilitator of workshops for various grades.

2011 **Training camp for the federal round of the national Mathematical Olympiad**, Mainz, Germany
Organizer and Participant of a 2-day workshop.

Teaching

2023–2025   **Instructor**, *Bielefeld University*, Bielefeld, Germany
Teaching a lecture with exercises with full responsibility for content and grades.

- Discrete Mathematics (Diskrete Mathematik)
  Winter 2024/25

- Commutative Algebra (Kommutative Algebra)
  Summer 2023

2024   **Instructor**, *University of California, Los Angeles*, Los Angeles, California, USA
Teaching undergraduate courses with full responsibility for lectures and grades.

- Linear Algebra
  Winter 2024, Spring 2024

2020–2022   **Instructor and Organizer for Tutorials**, *Bielefeld University*, Bielefeld, Germany
Writing problem sheets, organizing tutorial sessions and leading a tutorial session.

- Linear Algebra 2 (Lineare Algebra 2)
  Summer 2022

- Linear Algebra 1 (Lineare Algebra 1)
  Winter 2021/22

- Complex Analysis (Funktionentheorie)
  Winter 2020/21

2016–2019   **Instructor**, *University of Utah*, Salt Lake City, Utah, USA
Teaching undergraduate courses with full responsibility for lectures and grades.

- Accelerated Engineering Calculus II
  Fall 2019

- Engineering Calculus II
  Spring 2019, Fall 2018, Spring 2018

- Bridge to Engineering Calculus II (one-week intensive course)
  Spring 2019, Fall 2018

- Engineering Calculus I
  Fall 2017

- Calculus II
  Fall 2016

2019   **Directed Reading Program: Mentor**, *University of Utah*, Salt Lake City, Utah, USA
Mentoring an undergraduate student for an independent reading project.
Mentee: Corbin Baldwin, Project: Category Theory

2015–2017   **Lab instructor**, *University of Utah*, Salt Lake City, Utah, USA
Leading group discussions and grading problem sheets.

- Engineering Calculus II
  Spring 2017

- Calculus I
  Spring 2016

- Engineering Calculus I
  Fall 2015

2012–2015   **Lab instructor (Übungsleiter)**, *Johannes Gutenberg-University*, Mainz, Germany
Leading group discussions and grading problem sheets.

- Theoretical Physics IV (Theoretische Physik IV)
  Summer 2015

- Basics of numerics (Grundlagen der Numerik)
  Summer 2014

- Linear algebra 1 (Lineare Algebra 1)
  Winter 2013/14, Summer 2013, Winter 2012/13