

Florian Eisele

Curriculum Vitae

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Education

- 2008–2012 **PhD in Mathematics**, *RWTH Aachen University*,
graduated “mit Auszeichnung” (with distinction).
Thesis title: “*Group Rings over the p -Adic Integers*”, defended in March 2012.
Supervisor: Professor Gabriele Nebe
Awarded “Borchers Badge” for an outstanding dissertation in mathematics.
- 2004–2008 **Diplom in Mathematics**, *RWTH Aachen University*,
graduated “mit Auszeichnung” (with distinction).

Employment

- 2021– **Lecturer in Pure Mathematics**, *University of Manchester*.
- 2020–2021 **Postdoctoral researcher**, *City, University of London*.
with Professor Radha Kessar
- 2019 **Lecturer in Mathematics**, *University of Glasgow*.
Fixed-term position (1 year)
- 2015–2018 **Postdoctoral researcher**, *City, University of London*.
with Professor Markus Linckelmann (3 years)
- 2012–2015 **Postdoctoral researcher**, *Vrije Universiteit Brussel*, Brussels, Belgium.
with Professor Eric Jespers (3.5 years)
- 2009–2012 **Research assistant**, *RWTH Aachen University*.
Funded by the German Research Foundation (DFG) in the framework of the priority program *Representation Theory*, 0.75 FTE
- 2010–2012 **Teaching assistant**, *RWTH Aachen University*.
In addition to the above, 0.25 FTE
- 2008–2009 **Teaching assistant**, *RWTH Aachen University*.
Invariant theory tutorials, 0.5 FTE
- 2007–2008 **Student teaching assistant**, *RWTH Aachen University*.
Linear algebra tutorials for two terms and Maple tutorials for one term

Awards and Distinctions

- 2020 **Reinhold Baer Prize**
awarded annually by AGTA - *Advances in Group Theory and Applications*.
- 2023 **£5000 HIMR Small Grant** to organise workshop, joint with M. Norris and J. Taylor

Publications

Published or accepted for publication

- [1] *Units in Blocks of Defect 1 and the Zassenhaus Conjecture*, with L. Margolis
Rev. Mat. Complut., to appear (2024)
- [2] *Arbitrarily large Morita Frobenius numbers*, with M. Livesey
Algebra & Number Theory, Vol. 16 (2022), No. 8, 1889—1904
- [3] *Bijections of silting complexes and derived Picard groups*
J. London Math. Soc., 106: 1008–1060 (2022)
- [4] *On the geometry of lattices and finiteness of Picard groups*
J. Reine Angew. Math. (Crelle's Journal), vol. 2022, no. 782 (2022), pp. 219–233.
- [5] *The Picard group of an order and Külshammer reduction*
Algebr. Represent. Th. 24, pages 505–518 (2021)
- [6] *On solvability of the first Hochschild cohomology of a finite-dimensional algebra*, with T. Raedschelders
Trans. Amer. Math. Soc. 373, 7607–7638 (2020)
- [7] *Donovan's conjecture, blocks with abelian defect groups and discrete valuation rings*, with C.W. Eaton, M. Livesey
Math. Z., Vol. 295 (2020)
- [8] *A Counterexample to the First Zassenhaus Conjecture*, with L. Margolis
Adv. Math., Vol. 339 (2018), pp 599–641
- [9] *A reduction theorem for τ -rigid modules*, with G. Janssens, T. Raedschelders
Math. Z., Vol. 290 (2018), Issue 3–4, pp 1377–1413
- [10] *On Tate duality and a projective scalar property for symmetric algebras*, with M. Geline, R. Kessar, M. Linckelmann
Pac. J. Math. Vol. 293 (2018), No. 2, pp 27–300
- [11] *Blocks with a generalized quaternion defect group and three simple modules over a 2-adic ring*
J. Algebra 456 (2016), pp 294–322
- [12] *Describing units of integral group rings up to commensurability*, with A. Kiefer, I. Van Gelder
J. Pure Appl. Algebra, Volume 219 (2015), Issue 7, pp 2901–291
- [13] *The p -adic group ring of $SL_2(p^f)$*
J. Algebra 410 (2014), pp 421–459
- [14] *Defect Two Blocks of $\mathbb{Z}_p \Sigma_n$*
Comm. Algebra 42 (2014), no. 7, pp 2890–290
- [15] *On the IYB-property in some solvable groups*
Arch. Math. (Basel), Volume 101 (2013), Issue 4, pp 309–318
- [16] *p -Adic lifting problems and derived equivalences*
J. Algebra 356 (2012), pp 90–114

Preprints

- [17] *Block pro-fusion systems for profinite groups and blocks with infinite dihedral defect groups*, with R. J. Franquiz Flores, J. W. MacQuarrie
preprint (2025), arxiv.org/abs/2504.09286
- [18] *Units in group rings and blocks of Klein four or dihedral defect*, with L. Margolis
preprint (2024), arxiv.org/abs/2412.09525
- [19] *A counterexample to a conjecture on Cartan determinants of monoid algebras*,
note (2023), arxiv.org/abs/2306.14002

Teaching Experience

W = autumn/winter, S = spring/summer

- S 2024 **Lecture “Algebraic Topology”**
(unit lead, 18 students)
Tutorials “Groups & Geometry”
- W 2023 **Lecture “0N1”** (second half)
(co-lead, foundation year course, ~ 300 students, student evaluation “Dr. –’s teaching was excellent”: **4.0 / 5**)
- S 2022 **Lecture “Algebraic Topology”**
(unit lead, 22 students)
Tutorials “Algebraic Structures 2”
- W 2022 **Lecture “Real Analysis B”** (first half)
(co-lead, ~ 110 students, student evaluation “Dr. –’s teaching was excellent”: **4.2 / 5**)
Tutorials “Algebraic Structures 1”, Supervision “Mathematical Foundation & Analysis”
- S 2022 **Lecture “Sequences and Series”** (second half)
(unit lead, ~ 400 students, student evaluation “Dr. –’s teaching was excellent”: **4.5 / 5**)
Supervision “Linear Algebra B”
- W 2021 Supervision for “Foundations of Pure Mathematics A”.
Organised reading group on profinite groups.
- W 2020 **Lecture “Mathematics for Economists Post A-Level”**
(unit lead, ~ 175 students, taught remotely).
- 2020/21 Organised reading groups on deformation theory (in spring ’20), A_∞ -algebras (autumn ’20) and tilting theory (spring ’21).
- W 2019 **Lecture “Engineering Mathematics 1”**
(first block, two sections comprising ~ 200 students each).
Tutorials for “Algebra”.
Marking first year feedback assignments and participation in “Maths hub” (1st and 2nd year).
- S 2019 **Lecture “1S”**
(first year algebra & calculus module; I was lecturing the calculus section; ~ 100 students).
Tutorials for “1S”, “1Y” (similar to “1S”) and “Methods in Complex Analysis”.
- S 2018 **Lecture “Number Theory & Cryptography”**
(unit lead; ~ 60 students; student feedback results: **4.2 / 5** overall; 1st year course).
- W 2016 **Lecture “Number Theory & Cryptography”**
(unit lead; ~ 60 students; student feedback results: **4.1 / 5** overall; 1st year course).
- W 2014 Tutorials for “Algebra II” and “Affine and projective geometry”.
- W 2013 Tutorials for “Algebra II” (included drafting and invigilating the written exam).
- W 2010–W 2011 Maple lab classes (administered weekly oral exams for first year mathematics students).
- W 2008 Tutorials for “Invariant theory” (included setting homework exercise sheets).
- S 2008 Maple lab classes
(assisted students with their assignments; covered wide range of mathematical topics).
- W 2007 Tutorials for “Linear algebra II”.
- S 2007 Tutorials for “Linear algebra for computer scientists”.

Other Activities Related to Teaching & Learning

- 2023 Attended “Induction Course for New Lecturers in the Mathematical Science”, Cambridge
- 2023– Contributing to the development of a new third year algebra unit

Supervision

BSc

2013 BSc project: Doryan T.

MSc

2022 MSc project + dissertation: Junyue S., Luke W.

2023 MSc project + dissertation: Bhakti J.

2025 MSc project + dissertation: Melissa W.

PhD

2022- Joel B. (main supervisor)

2022- Junaid S. (main supervisor)

Invited Talks

- Jun 2024 **Plenary lecture** at conference “Group representations: algebraic, geometric, and combinatorial aspects”: *Blocks of group algebras over local rings*
- Nov 2023 Algebra Seminar, University of Cambridge: *On Donovan’s conjecture and Picard groups*
- Mar 2023 iCoMET, Sukkur IBA University: *On Donovan’s conjecture and Picard groups* (virtual)
- Dec 2022 Pure Colloquium, University of Manchester: *Modular representations of finite groups*
- Jun 2022 ARTIN New Arrivals meeting, Edinburgh: *What we know about Donovan’s conjecture*
- Apr 2022 Group Theory Seminar, ICMAT Madrid: *What we know about Donovan’s conjecture*
- Jan 2022 Greek Algebra & Number Theory Seminar: *Bijections of silting complexes and derived Picard groups* (virtual)
- Oct 2021 Algebra Seminar, University of Manchester: *Blocks of group algebras and silting theory*
- Jul 2021 Oberseminar Algebra, University of Stuttgart: *Bijections of silting complexes and derived Picard groups* (virtual)
- Jun 2021 Reinhold Baer Prize 2020 - Awards Ceremony: *Units of group algebras and automorphism groups* (virtual)
- Oct 2019 Number Theory Seminar, University of Exeter: *Picard groups of group algebras*
- Jun 2019 **Keynote address** at conference “Groups, Rings and Associated Structures 2019”, Spa: *On the first Zassenhaus conjecture*
- Mar 2019 Oberwolfach workshop “Representations of Finite Groups”: *Self-equivalences of blocks*
- Feb 2019 17th Triangle meeting, University of Birmingham: *Picard groups of blocks and Donovan’s conjecture*
- Feb 2019 Algebra and Number Theory Seminar, University of Glasgow: *A counterexample to the first Zassenhaus conjecture*
- Oct 2018 Algebra Seminar, University of Cambridge: *A counterexample to the first Zassenhaus conjecture*
- Jun 2018 79th BLOC meeting, University of Oxford: *A counterexample to the first Zassenhaus conjecture*
- Feb 2018 Algebra Seminar, University of Manchester: *Blocks as orders over a p -adic ring*
- Jan 2018 Seminar on Groups and Representations, University of Kaiserslautern: *A counterexample to the first Zassenhaus conjecture*
- Dec 2017 London Algebra Colloquium: *A counterexample to the first Zassenhaus conjecture*
- Oct 2017 Algebra Seminar, University of Aberdeen: *On the Zassenhaus Conjecture*
- Nov 2016 London Algebra Colloquium: *Tame blocks*
- Oct 2016 Algebra Seminar, University of York: *Tame blocks*
- Sep 2016 Algebra Seminar, University of Murcia: *Tame blocks*
- Feb 2016 Workshop “Computational Methods for Representations and Group Rings”, Stuttgart: *Virtually irreducible lattices for symmetric orders*

- Jan 2015 Oberseminar Algebra/Zahlentheorie, University of Jena: *Basic algebras of blocks over a p -adic ring*
- Nov 2014 Algebra Seminar, University of Antwerp: *Representation theory of finite groups over a p -adic ring*
- Dec 2013 Colloquium of the “Graduiertenkolleg”, RWTH Aachen University: *Einheitengruppen von ganzzahligen Gruppenringen endlicher Gruppen*
- June 2010 Representation Theory Seminar, University of Oxford: *Defect two blocks of symmetric groups over the p -adic integers*
- July 2009 Oberseminar Algebra, University of Stuttgart: *p -adische Gruppenringe mit Zerlegungszahlen 0 und 1*

Research Stays and Activities

- 30 Nov–5 Dec 2024 UAM/ICMAT Madrid, hosted by L. Margolis (work on unit groups)
- 20–26 Jul 2024 Heilbronn Focused Research (invited): On Turull’s Conjecture and a Possible Reduction Theorem, Manchester
- 29 Oct–4 Nov 2023 ICMAT Madrid, hosted by L. Margolis (work on unit groups)
- 18–23 Apr 2022 ICMAT Madrid, hosted by L. Margolis (work on unit groups)
- 5–9 Mar 2018 University of Glasgow, collaboration with T. Raedschelders and G. Janssens (work on τ -tilting theory)
- 6–8 Feb 2018 University of Manchester, hosted by C. Eaton und M. Livesey (work on Donovan’s conjecture for abelian defect groups)
- 15–21 Oct 2017 University of Murcia, hosted by L. Margolis (work on Zassenhaus conjecture)
- 10–16 Sep 2017 University of Murcia, hosted by L. Margolis (work on Zassenhaus conjecture)
- 18–24 Sep 2016 As part of the semester program “Local representation theory and simple groups”, EPFL, Lausanne
- 9–13 Feb 2015 HIM Bonn, hosted by T. Raedschelders (work on τ -tilting theory)
- Apr–Oct 2010 Research stay with K. Erdmann, University of Oxford

Attended Conferences & Contributed Talks

- Jan 2025 Conference “Characters and Blocks of Finite Groups”, Valencia
- Jul 2024 Conference “Group Actions, Geometry and Cohomology”, Manchester
- Jun 2024 Conference “Group representations: algebraic, geometric, and combinatorial aspects”, Levico Terme
Talk: *Blocks of group algebras over local rings*
- Aug 2023 Workshop “LMS Bath symposium on Geometric and Categorical Representation theory”, Bath
- Apr 2023 Workshop “Representations of Finite Groups”, Oberwolfach
- Aug 2022 Conference “Structure of Group Algebras over Local Rings”
Expository lectures (2× 1 hour): *Rigidity and Lifting to Local Rings*
- Jul 2022 Conference “Groups St Andrews”, Newcastle
Talk: *On Donovan’s conjecture and Picard groups*
- Sep 2019 Conference “Groups and Representation Theory, a Conference in Memory of Kay Magaard”, Warwick
- Jun 2019 Conference “Groups, Rings and Associated Structures 2019”, Spa
Talk: *On the first Zassenhaus conjecture*
- Mar 2019 Workshop “Representations of Finite Groups”, Oberwolfach
Talk: *Self-equivalences of blocks*
- Aug 2018 ICRA, Prague
Talk: *Picard groups of orders and Külshammer reduction*

- Apr 2018 Workshop “Representations of Finite and Algebraic Groups”, Berkeley
- Aug 2017 Conference “Groups St Andrews”, Birmingham
Talk: *Tame blocks*
- June 2017 Conference “Groups, Rings and the Yang-Baxter equation”, Spa
Talk: *Computing with lattices over group rings of finite groups*
- Jan 2017 Conference “Darstellungstheoretage”, Wuppertal
- Aug 2016 “17th Workshop and International Conference on Representations of Algebras”, Syracuse
Talk: *Knoerr lattices for symmetric orders*
- Jul 2016 Workshop “Advanced lectures on local representation theory”, Lausanne
- Feb 2016 Workshop “Computational Methods for Representations and Group Rings”, Stuttgart
- Feb 2016 Conference “Representation Theory of Symmetric Groups and Related Topics”, Kaiserslautern
- Nov 2015 Darstellungstheoretage, Stuttgart
- July 2015 Conference “Blocks of Finite Groups and Beyond”, Jena
- Sep 2014 Conference “DMV-PTM Joint Meeting”, Poznań
Talk: *Involutive Yang-Baxter groups*
- Aug 2014 “XVI International Conference on Representations of Algebras”, Sanya
Talk: *Lifting group rings and tame blocks*
- July 2014 Conference “Brock International Conference on Groups, Rings and Group Rings”, St. Catharines
Talk: *Units of integral group rings of finite groups up to commensurability*
- Dec 2013 Darstellungstheoretage and Nikolaus Conference, Aachen
- Aug 2013 Conference “Groups St Andrews”, St Andrews
- July 2013 LMS/EPSRC Short Instructional Course “Computational Group Theory”, St Andrews
- July 2013 Conference “Classical Aspects of Ring Theory and Module Theory”, Bedlewo
Talk: *On the Involutive Yang-Baxter Property in Finite Groups*
- June 2013 Conference “Advances in Group Theory and Applications”, Porto Cesareo
- June 2013 Conference “Recent Trends in Rings and Algebras”, Murcia
Talk: *On the Involutive Yang-Baxter Property in Finite Groups*
- Nov 2012 Darstellungstheoretage, Magdeburg
- Oct 2012 Symposium in honor of F. Van Oystaeyen, Antwerp
- Jun 2012 Workshop “Group Rings and related topics”, Stuttgart
- Sep 2011 DMV Jahrestagung, Köln
Talk: *Lifting Algebras to Orders*
- Aug 2011 Summer School on Computational Group Theory, Kirchberg/Hunsrück
- Aug 2011 Summer School on Polynomial Representations of the General Linear Group, Bad Driburg
Talk: *Definition of $V_{\lambda, K}$ and its Properties as a Weyl Module*
- July 2011 Groups, Rings, and Group-Rings, Edmonton
Talk: *Lifting Algebras to Orders*
- Mar 2011 Darstellungstheorie Schwerpunkttagung, Münster
- May 2010 Conference on Arithmetic of Group Rings and Related Objects, Aachen
Talk: *Defect two blocks of symmetric groups over the p -adic integers*
- Apr 2010 Darstellungstheorie Schwerpunkttagung, Bad Honnef
- May 2009 CMS session on Groups & Hopf algebras, St. John’s
Talk: *Algorithms for p -Adic Group Rings*
- Sep 2007 Summer School on Algorithmic D-Module Theory, Kleinwalsertal
Talk: *Very basic intersection theory and Serre’s formula*

Leadership and administrative roles

- 2023- Year 3 tutor
- 2022-23 UG admissions tutor

Service

- I have refereed articles for: *Journal of Algebra*, *Proceedings of the LMS*, *Bulletin of the LMS*, *Quarterly Journal of Mathematics*, *Osaka Journal of Mathematics*, *Journal of Pure and Applied Algebra*, *Proceedings of the AMS*, *Transactions of the AMS*, *Math. Proc. Camb. Philos. Soc.*, *Annals of Combinatorics*, *Pacific Journal of Mathematics*, *Archiv der Mathematik*, *Quaestiones Mathematicae*, *Glasgow Math. J.*, *Proceedings of the Edinburgh Mathematical Society*
- **Co-organiser** of the workshop “Algebra and Number Theory In Conversation” in Manchester, 2023.
- **Co-organiser** of the workshop “Structure of Group Algebras over Local Rings” in Ambleside, 2022.
- **Local organiser** for the conference “Arithmetic of Group Rings and Related Objects” in Aachen, 2010.
- **Member of PhD thesis committee**, D. García-Lucas, 2024, University of Murcia
- **Galois Lecture**, MathSoc Manchester, Feb 2024
- **Outreach talk** at Rochdale College, May 2024

Computer Algebra

- I have experience with the following computer algebra systems: GAP, MAPLE, MAGMA.
- I wrote a GAP-package that deals with orders over the p -adic integers, and lattices over such orders. The package can be downloaded here: <https://github.com/feisele/orders/>

Languages

- German (native)
- English (fully proficient)
- Dutch (fully proficient; CNaVT certificate C1)
- French (fluent)