

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 **Student of mathematics**, *RWTH Aachen University*,
graduated “mit Auszeichnung” (with distinction).
Thesis title: “*Algorithmische Behandlung p-adischer ganzzahliger Gruppenringe*” (“*Algorithmic treatment of p-adic integral group rings*”)
Supervisor: Professor Gabriele Nebe

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*.

Publications

Preprints

- [1] *Arbitrarily large Morita Frobenius numbers*, with M. Livesey
preprint, [arXiv:2006.13837](#) (2020)

Published or accepted for publication

- [2] *Bijections of silting complexes and derived Picard groups*
to appear in **J. Lond. Math. Soc.**, [arXiv:2101.06258](#) (2021)
- [3] *On the geometry of lattices and finiteness of Picard groups*
to appear in **J. Reine Angew. Math. (Crelle)**, [arXiv:1908.00129](#) (2019)
- [4] *The Picard group of an order and Külshammer reduction*
Algebr. Represent. Th. 24, pages 505–518 (2021)
- [5] *On solvability of the first Hochschild cohomology of a finite-dimensional algebra*, with T. Raedschelders
Trans. Amer. Math. Soc. 373, 7607–7638 (2020)
- [6] *Donovan’s conjecture, blocks with abelian defect groups and discrete valuation rings*, with C.W. Eaton, M. Livesey
Math. Z., Vol. 295 (2020)
- [7] *A Counterexample to the First Zassenhaus Conjecture*, with L. Margolis
Adv. Math., Vol. 339 (2018), pp 599–641
- [8] *A reduction theorem for τ -rigid modules*, with G. Janssens, T. Raedschelders
Math. Z., Vol. 290 (2018), Issue 3–4, pp 1377–1413
- [9] *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
- [10] *Blocks with a generalized quaternion defect group and three simple modules over a 2-adic ring*
J. Algebra 456 (2016), pp 294–322
- [11] *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
- [12] *The p -adic group ring of $SL_2(p^f)$*
J. Algebra 410 (2014), pp 421–459
- [13] *Defect Two Blocks of $\mathbb{Z}_p \Sigma_n$*
Comm. Algebra 42 (2014), no. 7, pp 2890–290
- [14] *On the IYB-property in some solvable groups*
Arch. Math. (Basel), Volume 101 (2013), Issue 4, pp 309–318
- [15] *p -Adic lifting problems and derived equivalences*
J. Algebra 356 (2012), pp 90–114

Teaching Experience

W = autumn/winter, S = spring/summer

- W 2021 Supervision for “Foundations of Pure Mathematics A”.
Organised reading group on profinite groups.
- W 2020 **Lecture “Mathematics for Economists Post A-Level”**
(*module leader, ~ 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”**
(*sole responsible; > 60 students; student feedback results: 4.2/5 overall; 1st year course*).
- W 2016 **Lecture “Number Theory & Cryptography”**
(*sole responsible; > 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*).
- S 2013 Supervised BSc thesis project. Title “Discrete valuation rings” (*“Discrete valuation rings”*).
- 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”.

Invited Talks

- 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

- 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 Leo Margolis (work on Zassenhaus conjecture)
- 18–24 Sep 2016 As part of the semester program “Local representation theory and simple groups”, EPFL, Lausanne
- 10–16 Sep 2017 University of Murcia, hosted by Leo Margolis (work on Zassenhaus conjecture)
- Apr–Oct 2010 Research stay with Karin Erdmann, University of Oxford

Attended Conferences & Contributed Talks

- 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*

Other Responsibilities

- 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.* and *Archiv der Mathematik*.
- 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.

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)