

CURRICULUM VITAE

Prof. Dr. Karin Baur
School of Mathematics
University of Leeds

Academic positions

- 10/2018 - Zone 2 Professor (*distinguished professor*), University of Leeds.
- 2011 - Full Professor, Chair of Algebra and Number Theory. University of Graz, Austria. On leave 10/2019-9/2023.
- 2007 - 2011 Assistant Professor at ETH Zurich (fellowship by SNSF, the Swiss National Science Foundation).
- 2005 – 2007 Research Associate, Department of Mathematics, University of Leicester, UK.
- 2003 - 2005 Postdoctoral Researcher, University of California, San Diego, USA.
- 2002 - 2003 Postdoctoral Assistant, ETH Zurich.

Education

- 2002 PhD, University of Basel.
- 1997 Masters in Mathematics, Philosophy and French Literature, University of Zurich.

Main research interests

Cluster algebras and cluster categories. Surface categories. Representation theory from combinatorial, geometric and algebraic points of view. Orbit structures in Lie algebras.

Prizes and Distinctions

- Royal Society Wolfson Fellowship, 2018-2023.
- SNSF Professorship, 2007-2011: Orbit Structures in Representation Spaces.
- Visiting Professor, 2016-18, School of Mathematics, University of Leeds, UK.

CONFERENCES, COLLOQUIA, SEMINARS

Selected invitations to programmes, meetings and research visits since 2007

2022/23	Representation Theory – Combinatorial Aspects and Application, Centre for Advanced Study, Norwegian Academy of Science and Letters, Oslo, NO.
2020	ARTA 2020, Kingston, Canada
2020	Representation theory of quivers and finite dimensional algebras, MFO, Germany.
2015/16/17	Leeds (research visits).
2015	Frieze patterns, Mathematisches Forschungsinstitut Oberwolfach (MFO), Germany.
2015	Representation Theory, Special Semester at Mittag-Leffler Institute, Sweden.
2014	Representation Theory of Quivers and Finite Dimensional Algebras, MFO.
2013	Cluster Algebras and Related Topics, MFO.
2012	Program on Cluster Algebras at MSRI, Berkeley, CA, USA.
2011	Leeds (research visit).
2011	Representation Theory of Quivers and Finite Dimensional Algebras, MFO.
2010	Uppsala (research visit).
2009	Research in pairs program at MFO.
2009	Combinatorial and Geometric Structures in Representation Theory, Durham, UK.
2009	UCSD, USA (research visit).
2009	Algebraic Lie Theory, Newton Institute, Cambridge, UK.
2009	Enveloping Algebras and Geometric Representation Theory, MFO.
2008	Bielefeld (SFB 701), Germany; LMS 2 Scheme, UK.

Selected invited conference presentations and conference invitations since 2007

2021	-MEGA 2021, Tromsø, NO. -Abel Symposium 2021, Ålesund, NO. -Meeting at the confluence of Analysis, Geometry and Mathematics, Villeurbanne, F. -LMS Women in Mathematics Day, Plymouth, UK.
2020	-FPSAC, Bar-Ilan University, Ramat-Gan, Israel. Deferred to 2021. -Cluster algebras and related topics, Morningside Center of Mathematics, China. Deferred to 2021. -McKay correspondence, mutation and related topics, Kavli IPMU, J, online . -Interactions of Symplectic Geometry and Representation Theory. Bochum, D. Deferred to 2021. -Conf. in Celebration of the 60th birthday of Bill Crawley-Boevey, Manchester, UK. Deferred to 2021. -Braids, Mutations and Twists in Geometry and Representation Theory, Uppsala, S. Deferred to 2021. -Dimers in Combinatorics and Cluster Algebras, University of Michigan, USA, online .
2019	-SIAM AG 19, session on cluster algebras and positivity, Berne, Switzerland. -Cluster Algebras 2019, RIMS, Kyoto, Japan. -Méthodes catégoriques et homotopiques en théorie des représentations, Amiens, France. -LMS Northern regional meeting and workshop on Higher Homological Algebra, Newcastle. UK. -Interaction between Representation Theory and Homological Mirror Symmetry, Leicester, UK. -CIMPA School “Advanced School on Representations of Algebras”, Isfahan, Iran.

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- ISCRA, Conference on Representations of Algebras”, Isfahan, Iran.
 - 2018 -Workshop on Algebraic Combinatorics (B. Sturmfels’ Einstein visiting fellowship), Berlin, Germany.
 - Geometry, Derived Categories and Moduli Spaces, Plymouth, UK.
 - Cluster algebras 20 years on. CIRM, Luminy, France.
 - 2017 -Workshop on Modern Geometry and Physics, Loughborough, UK.
 - Public talks in Mathematics: Challenges and Rewards, Leeds, UK.
 - Matrix Factorizations, ICMS, Edinburgh, UK.
 - APLIMAT 2017, Bratislava, Slovakia.
 - 2016 -Lie Theory and Cluster Algebras, Notre Dame University’s global gateway, Rome, Italy.
 - Asian Mathematical Conference, Bali, Indonesia.
 - Workshop Mathematics under Construction, Potsdam, Germany.
 - Women in Noncommutative Algebra and Representation Theory, BIRS, Canada.
 - Nordic Congress of Mathematicians, Stockholm, Sweden.
 - GAMM & DVM joint annual meeting, Braunschweig, Germany.
 - 2015 -Leeds-York-Lie Theory, Leeds, UK.
 - Geometric Algebra, Conference, Toronto, CA
 - Workshop on Cluster Algebras and Finite Dimensional Algebras, Leicester, UK.
 - Introductory Representation Theory Workshop, Uppsala, Sweden.
 - Spring School in Cluster Algebras, lecture series, Münster, Germany.
 - 2014 -Cluster Algebras in Combinatorics and Topology, CMC, KIAS, Korea.
 - LMS Workshop on Cluster Algebras and Projective Algebras, Cardiff, UK.
 - Integrability and Cluster Algebras: Geometry and Combinatorics. ICERM, Brown University, Providence, RI, USA.
 - Conference in honour of Hanspeter Kraft, Universität Basel, Switzerland.
 - Auslander conference, Woods Hole, MA, USA.
 - 2013 -Cluster Algebras and Related Topics, Oberwolfach (MFO), Germany.
 - Mirror Symmetry and Cluster Algebras, Leeds, UK.
 - 16th General Meeting of EWM (European Women in Mathematics), Bonn, Germany.
 - Antalya Algebra Days, Mathematical Village, Sirince, Turkey.
 - Workshop on Triangulations and Mutations, Newcastle, UK.
 - 2012 -Cluster categories and cluster tilting, NTNU Trondheim, Norway.
 - Workshop on Geometry, Representation theory and Clusters, Leicester, UK.
 - MSRI: Connections for Women: Joint Workshop on Commutative Algebra and Cluster Algebras, Berkeley, CA, USA.
 - 2011 -Lie Theory and its applications. UCSD, San Diego, CA.
 - Representation Theory of Quivers and Finite Dimensional Algebras, MFO, Germany.
 - 2010 -Women in Representation Theory: Self-injective Algebras and Beyond. Universität Bielefeld, Germany.
 - Journées d’Algèbres à Dijon, Institut de Mathématiques de Bourgogne, France.
 - Representation theory and Quantization, D-MATH, ETHZ.

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- 2009 -OeMG/DMV-Tagung 2009, Graz, Austria.
-Non-negativity is a quantum phenomenon, Oberwolfach, Germany.
- 2008 -NWDR-Workshop, University of Bonn, Germany.
-Geometric Methods in Representation Theory, Grenoble, France.
-Liegrits Workshop, Mathematical Institute, Oxford, UK.
- 2007 -Courant-Colloquium Göttingen Trends in Mathematics, Göttingen, Germany.
-B-stable ideals and nilpotent orbits, Rome, Italy.
-BIRS, Workshop on algebraic Lie theory, Banff, Canada.
-BLOC, Bristol-Leicester-Oxford Colloquium, Leicester, UK.

Selected seminar and colloquium talks since 2007

- 2020 OCAS seminar (online cluster algebra seminar), **online**.
Virtual Colloquium for Women in Combinatorics, **online**.
LAGOON (Leicester Algebra and Geometry Open Online Seminar), **online**.
FD Seminar (Online seminar on representation theory of finite-dimensional algebras), **online**.
Manchester Pure Mathematics Colloquium, Manchester, UK.
- 2019 Manchester Algebra Seminar, Manchester, UK.
Kent Algebra Seminar, Canterbury, UK.
Geometry seminar, D-MATH, ETH Zurich, Switzerland.
- 2018 Frauen in der Mathematik: Interactions between Algebra and Geometry, Konstanz, Germany.
MAXIMALS Algebra Seminar, University of Edinburgh, UK.
Pure Mathematics Colloquium, Lancaster University, UK.
- 2017 Pure Mathematics Seminar, Royal Holloway, London, UK.
Algebra Seminar, University of Oxford, UK.
Pure Mathematics Colloquium, Durham University, UK.
Pure Mathematics Seminar, Newcastle, UK.
ALA Seminar, Leeds, UK.
Colloquium in Mathematics, University of Stuttgart, Germany.
Leeds Algebra Seminar, Leeds, UK.
Emmy Noether Seminar, Erlangen-Nürnberg, Germany.
- 2016 Kolloquium über reine Mathematik, Hamburg, Germany.
Leeds Algebra Seminar, Leeds, UK.
Advanced Topics in Discrete Mathematics, TU/KFU Graz, Austria.
Seminar za algebra in funkcionalno analizo, Ljubljana, Slovenia.
Geometry seminar, EPFL, Lausanne, Switzerland.
Algebra seminar, Manchester, UK.
- 2015 Algebra and analysis seminar, Nottingham, UK.
- 2014 Kolloquium, Universität Wien, Austria.
Seminar talk, Università degli studi di Trento, Italy.
- 2013 Kolloquium, FU Berlin, Germany.
Eindhoven Seminar Combinatorial Theory, TU Eindhoven, Netherlands.

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- Research Seminar, Bogazic University, Istanbul, Turkey.
Advanced Topics in Discrete Mathematics, TU/KFU Graz, Austria.
- 2011 Zahlentheoretisches Kolloquium, TU Graz, Austria.
Seminar Algebra & Topology, ETHZ.
MALGA (Seminari Moduli ALGebre e Anelli), University of Verona, Italy.
Geometric Methods in Representation Theory Seminar, University of North Carolina at Chapel Hill, North Carolina, USA.
Oberseminar Algebra und Geometrie, Universität Münster, Germany.
- 2010 Algebra Seminar, NTNU, Trondheim, Norway.
Algebra and Geometry Seminar, Uppsala University, Sweden.
Séminaire d'algèbre, Institut Camille Jordan, Université de Lyon I, France.
Dublin Area Mathematics Colloquium, Dublin, Ireland.
- 2009 Seminar in Pure Mathematics, Leicester, UK.
Séminaire de Théorie de Groupes, EPFL, Lausanne, Switzerland.
Representation Theory Seminar, UCSD, USA.
- 2008 Algebra/Geometry Seminar, Bath, UK.
Representation Theory Seminar, Oxford, UK.
Algebra Seminar, Birmingham, UK.
Algebra Seminar, Leeds, UK.
Seminars in Pure Mathematics, Leicester, UK.
Séminaire d'Algèbre, IHP, Université de Paris 7, France.
Oberseminar Algebraische Geometrie, Universität Zürich, Switzerland.
Seminar Darstellungstheorie, Universität Bielefeld, Germany.
Emmy-Noether Seminar, Universität Erlangen, Germany.
Séminaire Mulhousien de Mathématiques, Laboratoire de Mathématiques, Informatique et Applications, Mulhouse, France.
- 2007 Mathematisches Kolloquium, Universität Bern, Switzerland.
Algebra Seminar, Department of Mathematics, Glasgow, UK.
Cluster Algebras Reading Group, School of Mathematics, Manchester, UK.
Séminaire sur les Algèbres Enveloppantes, Université de Paris 7, France.
Pure Mathematics Seminar, University of East Anglia, Norwich, UK.
Séminaire de Théorie de Groupes, EPFL, Lausanne, Switzerland.

Organisation of Conferences, Workshops, Programmes

- 2021 Main organiser of the special programme CAR - Cluster Algebras and Representation Theory at the Isaac Newton Institute for Mathematical Sciences, Cambridge, UK. Co-organisers: B.R. Marsh, R. Schiffler, S. Schroll.
- 2020 Conference in Celebration of the 60th birthday of Bill Crawley-Boevey, Manchester, UK. Co-organisers: E. Faber, H. Krause, M. Prest, J. Trlifaj, M. Wemyss, D. Zacharia,
<https://personalpages.manchester.ac.uk/staff/mike.prest/WCB60.html>. 1 day workshop in 2020.
Conference **deferred** to 2021

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- Bridges between representation theory and algebraic geometry: Singularities, friezes and cluster categories, Leeds, UK. Co-organisers: E. Faber, M. Pressland,
<https://sites.google.com/view/singular-clusters>. Conference **deferred** to 2021.
- 2019 WiNART2, Women in Noncommutative Algebra and Representation Theory, Leeds, UK. Co-organisers: G. Benkart, E. Faber, H. Kirkman, C. Walton,
<http://women-in-ncalg-repthy.org/conferences/winart2-workshop-may-2019/>
- 2018 Cluster algebras: 20 years on, CIRM, Luminy, France (member of scientific committee)
18th General Meeting of EWM, Graz, Austria. Co-organisers: C.-B. Schönlieb, K. Hess, E. Resmerita,
<https://sites.google.com/site/ewm18/>
- 2017 New Trends in Representation Theory, LMS/CMI research school, Leicester, UK, Co-organiser: S. Schroll, <https://sites.google.com/site/clustertheoryinreptheory/>
Geometry and Representation Theory, ESI Vienna, Austria. Co-organisers T. Arakawa, V. Kac, A. Moreau, <https://imsc.uni-graz.at/baur/ESI2017/>
- 2016 Cluster Algebras and Geometry, University of Münster, Germany. Co-organiser: L. Hille,
<http://wwwmath.uni-muenster.de/reine/u/lutz.hille/GRUPPE/cluster2016/>
- 2014 Cluster Algebras and Combinatorics, University of Münster, Germany. Co-organiser: L. Hille,
<http://wwwmath.uni-muenster.de/reine/u/lutz.hille/GRUPPE/cluster2014/>
- 2012 Representation Theory and Integrable Systems, Special semester at FIM, ETHZ, Switzerland. Co-organisers: D. Calaque, G. Felder, A. Veselov.
- 2012 Cluster Algebras and Combinatorics, University of Graz, Austria. Co-organiser: L. Hille,
<http://www.uni-graz.at/~baurk/Cluster-Algebras/>
- 2009 Algebraic Groups and Invariant Theory, at Centro Stefano Franscini, Ascona, Switzerland. Co-organisers: D. Testerman, A. Premet, <http://www.uni-graz.at/~baurk/AGIT>
- 2008 Representation Theory Days in Zurich, FIM, ETHZ, Switzerland. Co-organiser A. Moreau,
<http://www.uni-graz.at/~baurk/rep08.html>
- 2007 40⁺ BLOC meeting (“Bristol-Leicester-Oxford-Colloquium”), with A.E. Parker, Leicester, UK.
- 2005 Cherednik Algebras, ICMS, Edinburgh, UK. Co-organisers P. Etingof, V. Ginzburg, I. Gordon, A.E. Parker and C. Stroppel.

Research supervisions

Postdoctoral fellows:

- 2019 – 2021 Dr. Jianrong Li (Lise Meitner fellow, FWF)
- 2018 – 2020 Dr. Ana García Elsener (FWF project). Now at Universidad nacional de Mar del Plata, ARG (permanent position).
- 2017 – 2020 Dr. Charlie Beil (FWF project)
- 2017 – 2018 Dr. Ana García Elsener
- 2017 – 2019 Dr. Dusko Bogdanic (FWF project), associate professor, Banja Luka, BIH (permanent position).
- 2015 – 2018 Dr. Loretta Cristea (FWF project)
- 2014 – 2018 Dr. Tamara Friebe (project *Unkonventionelle Forschung*)
- 2013 – 2016 Dr. Dusko Bogdanic (FWF project)
- 2012 – 2016 Dr. Mark Parsons (FWF project)
- 2011 – 2013 Dr. Dusko Bogdanic (Marie Curie Fellowship)
- 2009 Dr. Lesya Bodnarchuk (EPDI fellow)
- 2008 – 2010 Dr. Soumaïa Ghandour, now assistant professor, Université Libanaise, Lebanon.
- 2007 – 2009 Dr. Anne Moreau, now professor, Université de Paris Saclay, France.

PhD students:

- 2008 - 2014 Jernej Pribosek
 - 2009 - 2013 Lisa Lamberti
 - 2012 - 2016 Manuela Tschabold
 - 2013 - 2016 Hannah Vogel
 - 2015 - 2019 Lukas Andritsch, Jordan McMahon
 - 2017/18 Yudi Mahatma (visiting PhD student from ITB Bandung, Indonesia, 3 months visit).
 - 2019 - Joel Costa (University of Leeds)
 - 2020 - Maria Ross (at the University of Graz, DK program)
- 30+ Masters students (Pure Mathematics) and diploma students (Mathematics teacher degree) at ETH and at University of Graz.

Advisory boards, editorial activities, and refereeing

Scientific committees

Member of the scientific committee for **CIRM**, Centre International de Rencontres Mathématiques, France (2019-2024). Representative for the LMS on the Scientific Committee of the **BMS**, the British Mathematical Committee BMC (2020-).

Member of a referee panel for the Research Council of Norway, 2018, 2019, 2020 and for FWO (Flanders, Belgium) 2019, 2020.

Editorial

Editorial advisor for the LMS journals, advisory board for the Springer LNM.

Refereeing for journals

Advances in Mathematics, Algebras and Representation Theory, Annales de l'Institut Fourier, Arkiv för

matematik, Compositio Mathematica, European Journal of Combinatorics, Forum Mathematicum, International Mathematics Research Notices, Journal of Algebra, Journal of Algebra and its Applications, Journal of Algebra Combinatorics Discrete Structures, Journal of Algebraic Combinatorics, Journal of Experimental Mathematics, Journal of the London Mathematical Society, Journal für die Reine und Angewandte Mathematik (Crelles), Pacific Journal of Mathematics, Mathematics of Computations, SIGMA, Transformation Groups.

International Referee for promotions to professor/associate professor, for faculty candidates (USA, UK, Austria).

Referee for research proposals (including for the NSA, SNSF, DFG, etc.).

Reviews for MathSciNet, Zentralblatt.

Phd examiner: Uppsala (Sweden), EPFL Lausanne, NTNU Trondheim (Norway), University of Hannover (Germany), Université de Poitiers, France, Université de Picardie, France.

Committee member for professor and lecturer positions in Austria and in France, for habilitation theses.

Further activities

Member of the **standing committee** of EWM (2016-2022)

Host for **JESH fellows** (Joint excellence in Science and Humanities) by the OeAW (Austrian Academy of Sciences).

Member of LMS, EWM, OeMG, SMS.

Mentor and assessor for Schweizerische Studienstiftung, 2009-2011.

Elected member of **Maturitätskommission**, Kanton Luzern, 2009-2012.

Enrichment activities (e.g. Berkeley Math Circle and junior school level in the UK).

Administration (since 2007)

Senate of the University of Graz, elected 2013-16 and 2016-19

Committee designing a new joint master's program in Mathematics (TU Graz and University of Graz).

Regional teaching centre for Mathematics and Geometry (RFDZ), Styria, Austria.

Hiring committees/interview panels (ETH, University of Graz, TU Graz, University of Leeds)

Open days for prospective students (ETH)

Research grants awarded:

2019	listen to intuition, Kulturjahr Stadt Graz 2020	5 400 €
2019-2022	Faculty member of DK Discrete Mathematics in Graz and Leoben (currently on leave)	2 045 000 €
2018	Royal Society Wolfson Fellowship	234 818 £
2018	OeAD grant for cooperation with Slovenia	4 300 €
2018	JESH fellowship, research visit of Dr. A. Nasr	20 000 €
2017-2020	Dimer algebras on surfaces, FWF project, 2 postdoctoral researchers.	390 000 €
2017	ASEA-Uninet cooperation with Indonesia	3 000 €
2014-2017	Unkonventionelle Forschung, University of Graz, PI with Prof. Dr. K. Fellner.	180 000 €
2015/16	JESH fellowship, research visit of Dr. A. Nasr	10 000 €
2014-2018	Co-PI/faculty member of Doktoratskolleg Discrete Mathematics (TU Graz, KFU Graz, Uni Leoben), FWF	2 000 000 €
2013-2016	Symmetric groups and geometric representation theory, FWF project, one post-doctoral researcher	200 000 €
2012-2015	Surface algebras. FWF project, one post-doctoral researcher, one PhD student	300 000 €
2012-2013	Cluster categories and triangulations, Extension of a prodoc module, SNSF	51 099 CHF
2011-2013	Award of a Marie Curie Intra-European Fellowship with Dr. D. Bogdanic as researcher	170 901 €
2009-2012	Cluster categories and triangulations, Research module prodoc SNSF: Funding a graduate student over 3 years	152 414 CHF
2007-2011	SNSF Professorship: Covered my salary, two post-doctoral researchers (18 months each), one PhD student for 4 years	1 185 468 CHF
2004	Scholarship by the Freie Akademische Stiftung	20 000 CHF
2003-2004	Fellowship for prospective researchers, SNSF: Funds for my post-doctoral work at UCSD, USA.	75 936 CHF
1999-2002	Marie Heim-Vögtlin subsidies: This is a graduate studies fellowship	65 848 CHF

Funding obtained for organising conferences:

2018	EWM general meeting	25'000 €
2017	LMS/CMI research school	31'000 £
2017	Geometry and Representation Theory, ESI Vienna	32'000 €
2012	Workshop on Cluster Algebras and Combinatorics.	5 000 €
2009	Algebraic Groups and Invariant Theory, Ascona, Switzerland.	80 000 CHF
2005	Workshop Cherednik Algebras, ICSM, Edinburgh, UK.	28 250 £

PUBLICATIONS

All publications are available at my webpage and on arXiv

1. Friezes satisfying higher $SL(k)$ -determinants (with E. Faber, S. Gratz, K. Serhiyhenko, G. Todorov), accepted for publication, *Algebra and Number Theory*.
2. Examples of geodesic Ghor Algebras on Hyperbolic Surfaces (with C. Beil), *Contemporary Mathematics*, AMS, to appear, 2021
3. The module category of a gentle algebra (with R. Coelho Simoes), *IMRN*, doi:10.1093/imrn/rnz150.
4. Growth behaviour of periodic tame friezes (with K. Fellner, M. Parsons, M. Tschabold), *Rev. Mat. Iberoam.* 35 (2019), no.2, 575-606, doi:10.4171/rmi/1063.
5. Cluster categories from Grassmannians and root combinatorics (with D. Bogdanic, A. Garcia Elsener), *Nagoya Mathematical Journal*.
6. A generalised Euler-Poincaré formula for associahedra (with P. Martin), *Bull. Lond. Math. Soc.* 51 (2019), no. 1, 181-192, doi 10.1112/blms.12221.
7. A geometric interpretation of categories of type $\tilde{A}$ and of morphisms in the infinite radical, with H. Torkildsen. *Algebras and Representation Theory*, doi 10.1007/s10468-019-09863-x.
8. Perfect k -colored matchings and $k+2$ -gonal tilings (with O. Aichholzer, L. Andritsch, B. Vogtenhuber), *Graphs and Combinatorics* (2018), doi 10.1007/s00373-018-1967-8.
9. The fibres of the Scott on polygon tilings are the flip equivalence classes (with P. Martin, appendix by M. Glick), *Monatshefte für Mathematik*, vol. 3, 2018, 385-424, doi:10.1007/s00605-018-1209-4.
10. Transfinite mutations in the completed infinity-gon (with S. Gratz), *Journal of Combinatorial Series A*, Vol 155, 2018, 321-359, doi:10.1016/j.jcta.2017.11.011.
11. Mutation of friezes (with E. Faber, S. Gratz, G. Todorov, K. Serhiyenko), *Bulletin des Sciences Mathématiques*, vol. 142, 2018, 1-48, doi.org/10.1016/j.bulsci.2017.09.004.
12. Strongness of companion bases for cluster-tilted algebras of finite type (with A. Nasr-Isfahani), *Proc. of the AMS*, doi:10.1090/proc/13977.
13. Extensions between CM modules for Grassmannian cluster categories (w. D. Bogdanic). *Journal of Algebraic Combinatorics*, 45(4), 965-100, doi: 10.1007/s10801-016-0731-5
14. Dimer models and cluster categories of Grassmannians (with A.D. King, R.J. Marsh), *Proc. London Math. Soc.* (2016) 113 (2): 213-260, doi:10.1112/plms/pdw029
15. Infinite friezes (with M. Parsons, M. Tschabold). *European Journal of Combinatorics* 54 (2016), 220-237, doi: 10.1016/j.ejc.2015.12.015
16. Compactifying exchange graphs: annuli and tubes (with G. Dupont). *Annals of Combinatorics*, **18** (3), 2014, 383-396, doi.org/10.1007/s00026-014-0229-6
17. Rigid objects and torsion pairs in tubes (with A.B. Buan, R. Marsh). *Algebras and Representation Theory*, Volume **17** (2), 2014, 565-591
18. Combinatorial analogues of ad-nilpotent ideals for untwisted affine Lie algebras (with V. Mazorchuk). *Journal of Algebra* **372**, 2012, 85-107
19. A geometric model of tube categories (with R. Marsh), *Journal of Algebra*, **362**, 2012, 178-191
20. Categorification of a frieze pattern determinant (with R. Marsh), *J. Comb Ser A* **119** (2012), 1110-1122
21. On the complement of the dense orbit for a quiver of type A (with L. Hille). *Communications in Algebra*, **42**, (7), 2014, 2871-2889
22. On the complement of the Richardson orbit (with L. Hille). *Math. Z.*, doi:10.1007/200209-011-0920-9
23. Quasi-reductive (bi)parabolic subalgebras of reductive Lie algebras (with A. Moreau). *Annales de l'Institut Fourier*, **61**, (2), 2011, 417-451
24. Delta-filtered modules and nilpotent orbits of a parabolic subgroup in O_q (with K. Erdmann, A. Parker). *J. Pure Appl. Algebra*, **215** (5), 2011, 885-901
25. Secant dimensions of low-dimensional homogeneous varieties (with J. Draisma). *Adv. Geom.* **10** (2010), no. 1, 1-29
26. Frieze patterns for punctured discs (with R. Marsh, Appendix by H. Thomas), *Journal of Algebraic Combinatorics*, **30** (3), 2009, 349-379
27. A geometric construction of m -cluster categories (with R. Marsh), *Trans. AMS*, **360** (11), 2008, 5789-5803
28. Richardson elements for parabolic subgroups of classical groups in positive characteristic (with S. Goodwin), *Algebr. Represent. Theory* **11** (3), 2008, 275-297
29. A geometric description of the m -cluster categories of type D (with R. Marsh), *Int. Math. Res. Not. IMRN* 2007, no. 4, Art. ID rnm011, 19 pp.
30. A class of gradings of simple Lie algebras (with N. Wallach), *Cont. Math.* **442**, 2007, 3-15.
31. Secant Dimensions of Minimal Orbits: Computations and Conjectures (with J. Draisma and W. de Graaf), *Experiment. Math.* **16** (2), 2007, 239-250

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32. Richardson elements for the classical Lie algebras, *Journal of Algebra*, **297/1**, 2006, 168-185.
 33. Periodicity and growth in a lattice gas with dynamical geometry (with J. Rabin, D. Meyer), *Physical Review E*, **73**, 026129 (2006).
 34. A normal form for admissible characters in the sense of Lynch, *Represent. Theory*, 2005, 30-45.
 35. Nice Parabolic Subalgebras of Reductive Lie Algebras (with N. Wallach), *Represent. Theory* **9**, 2005, 1-29.
 36. Higher secant varieties of the minimal adjoint orbit (with J. Draisma), *Journal of Algebra*, **280/2**, 2004, 743-76.
 37. Cartan components and decomposable tensors, *Transformation Groups*, **8**, no. 4, 2003, 309-319.

Conference proceedings, reports and other work

1. Grassmannians and cluster structures, lecture notes for CIMPA school in Isfahan, April 2019, <http://www1.maths.leeds.ac.uk/~pmtkb/lecture-notes.pdf>
2. Conway-Coxeter friezes and mutation: a survey (w. E. Faber, S. Gratz, K. Serhyenko, G. Todorov). Proceedings of the 2017 AWM Research Symposium, Springer, Adv. in the Mathematical Sciences.
3. Perfect k-coloured matchings and (k+2)-gonal tilings (w. O. Aichholzer, L. Andritsch, B. Vogtenhuber). Abstract accepted by EuroCG17.
4. U-projective resolutions of modules over path algebra of type $A_{\#}$ and $\tilde{A}_{\#}$ (with Y. Mahatma, I. Muchtadi Alamasyah), *Commun. of the Korean Mathematical Society*.
5. Dimer models and Grassmannian cluster categories, *PAMM*, **16** (1) 1, October 2016, 895-896.
6. Mathematics and Arts: Towards a balance between artistic intuition and mathematical complexity (with K. Fellner). *IMN* 231, 2016.
7. Dimer models with boundary and Grassmannian cluster categories, *Oberwolfach report* 58, 2013.
8. On the nilradical of a parabolic subgroup. In: *Symmetry in Representation Theory and Its applications*. Vol. in honour of Nolan Wallach, *Progr. In Mathematics*, Birkhäuser
9. Geometric realizations of orbit categories, *Oberwolfach reports*, 2011.
10. Polygone, Clusteralgebren und Clusterkategorien. In *Facettenreiche Mathematik – Einblicke in die moderne mathematische Forschung*, K. Wendland, A. Werner (Eds.), Vieweg + Teubner Verlag, 2011, 43-67.
11. Cluster categories, m-cluster categories and diagonals in polygons. In *Geometric Methods in Representation Theory II*, Sémin. et Congrès, SMF, **25**, 2010, 259-271.
12. Geometric Construction of Cluster Algebras and Cluster Categories. In *Trends in Mathematics*, Courant-Colloquium Göttingen 2007 (2008), 13-30.
13. Richardson elements and birationality questions, in *Enveloping algebras and geometric representation theory*, *Oberwolfach Rep.* **2** (1), 2005, 723-777.

Preprints

Cluster algebras generated by projective cluster variables (with A. Nasr-Isfahani).

Orbifold diagrams (with A. Pasquali, D. Velasco).

Infinite friezes and triangulations of annuli (with I. Canakci, K. Jacobsen, M. Kulkarni, G. Todorov).

Classification of cosilting modules in type $\tilde{A}$ (with R. Laking).

Higher extensions for gentle algebras (with S. Schroll).

Transformed flips in triangulations and matchings (with O. Aichholzer, L. Andritsch, B. Vogtenhuber).

TEACHING A

More information on <http://www1.maths.leeds.ac.uk/~pmtkb/teaching.html>

Courses taught since 2011

Rings and Polynomials, lecture course, 2019
Algebraic combinatorics, lecture courses, 2019
Auslander-Reiten Theorie, lecture course, 2017
Graphentheorie, student seminar, 2017
Geschichte der Mathematik, lecture course, 2016
Discrete and algebraic structures, lecture course 2015, 2016, 2018
Quivers, algebras and representation theory, lecture course, 2015
“The book of numbers” and “50 Schlüsselideen der Mathematik”, student seminar, 2014
Algebra I, lecture course 2013, 2014, 2015
Spiegelungsgruppen und Wurzelsysteme, student seminar, 2013
Proseminar “Ein Schaubild der Mathematik”, student seminar, 2013
Geometrie und ihre Didaktik, lecture course, 2013
Introduction to Lie algebras, lecture course, 2012
Projektive Geometrie, student seminar, 2009, 2013
Darstellungstheorie von Köchern, student seminar
Einführung in die Algebra, lecture course 2012, 2014, 2018
Einführung in die Darstellungstheorie von Algebren, lecture course, 2012, 2018
Seminar über Graphentheorie, student seminar, 2011
Linear Algebra II, lecture course 2011
Geometrie, lecture course, 2010
Symmetrische Funktionen, lecture course, 2009
Kohomologie der Gruppen, lecture course, 2009
Homologische Algebra und modulare Darstellungstheorie, lecture course, 2008, 2014
Nilpotente Bahnen, lecture course, 2008
Darstellungstheorie von Lie Algebren, lecture course, 2007