

Curriculum vitae

Prof. Christopher Voll, PhD (cantab)

Personal Information

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Academic Positions

07/2011– Professor of Mathematics, in particular Algebra, Bielefeld University
(W2 before December 2016, W3 thereafter)
02/2011–06/2014 Reader in Pure Mathematics, Southampton University
09/2006–02/2011 Lecturer in Pure Mathematics, Southampton University
04/2006–08/2006 Research fellow, École Polytechnique Fédérale de Lausanne
10/2005–03/2006 Research fellow, Max-Planck-Institut für Mathematik (MPIfM), Bonn
10/2004–09/2005 Deutsche Forschungsgemeinschaft (DFG) Forschungsstipendiat, Heinrich-Heine-Universität Düsseldorf
10/2002–09/2004 Engineering and Physical Sciences Research Council (EPSRC) Postdoctoral Fellow in Mathematics, Oxford University

Publications

- [1] Hessian matrices, automorphisms of p -groups, and torsion points of elliptic curves, with M. Stanojkovski, to appear in *Math. Ann.*.
- [2] Ideal zeta functions associated to a family of class-2-nilpotent Lie rings, *Quarterly J. Math.* **71** (2020), 959–980.
- [3] Generalized Igusa functions and ideal growth in nilpotent Lie rings, with A. Carnevale and M. M. Schein, *Sém. Lothar. Combinat.* **84B** (2020), Art. 71.
- [4] Local functional equations for submodule zeta functions associated to nilpotent algebras of endomorphisms, *Int. Math. Res. Not. IMRN* (2019), 2137–2176.
- [5] Enumerating graded ideals in graded rings associated to free nilpotent Lie rings, with S. Lee, *Math. Z.* **290** (2018), 1249–1276.
- [6] Enumerating traceless matrices over compact discrete valuation rings, with A. Carnevale and S. Shechter, *Israel J. Math.* **227** (2018), 957–986.
- [7] Orbit Dirichlet series and multiset permutations, with A. Carnevale, *Monatsh. Math.* **186** (2017), 215–233.
- [8] Uniform analytic properties of representation zeta functions of finitely generated nilpotent groups, with Duong H. D., *Trans. Amer. Math. Soc.* **369** (2017), 6327–6349.
- [9] Representation zeta functions of some nilpotent groups associated to prehomogeneous vector spaces, with A. Stasinski, *Forum Math.* **29** (2017), 717–734.
- [10] Arithmetic groups, base change, and representation growth, with N. Avni, B. Klopsch and U. Onn, *Geom. Func. Anal. (GAFA)* **26** (2016), 67–135.
- [11] Similarity classes of integral p -adic matrices and representation zeta functions of groups of type A_2 , with N. Avni, B. Klopsch and U. Onn, *Proc. Lond. Math. Soc.* **112** (2016), 267–350.

- [12] Zeta functions of groups and rings – recent developments, in *Groups St Andrews 2013 in St Andrews* (editors C. M. Campbell, M. R. Quick, E. F. Robertson, C. M. Roney-Dougal), London Math. Soc. Lecture Note Ser. **422** (2015), 469–492.
- [13] Normal zeta functions of the Heisenberg groups over number rings I – the unramified case, with M. M. Schein, J. Lond. Math. Soc. (2) **91** (2015), 19–46.
- [14] Normal zeta functions of the Heisenberg groups over number rings II – the non-split case, with M. M. Schein, Israel J. Math. **211** (2016), 171–195.
- [15] Enumerating characters and classes of p -groups, with E. A. O’Brien, Trans. Amer. Math. Soc. **367** (2015), 7775–7796.
- [16] Representation zeta functions of nilpotent groups and generating functions for Weyl groups of type B , with A. Stasinski, Amer. J. Math. **136** (2014), 501–550.
- [17] A New Statistic on the Hyperoctahedral Groups, with A. Stasinski, Electron. J. Combin. **20**, issue 3 (2013), P50.
- [18] Representation zeta functions of compact p -adic analytic groups and arithmetic groups, with N. Avni, B. Klopsch and U. Onn, Duke Math. J. **162** (2013), 111–197.
- [19] Representation zeta functions of some compact p -adic analytic groups, with N. Avni, B. Klopsch and U. Onn, in *Zeta functions in algebra and geometry*, Contemp. Math. **566** (2012), 295–330.
- [20] A newcomer’s guide to zeta functions of groups and rings, in *Lectures on profinite topics in group theory*, with B. Klopsch, N. Nikolov (editor D. Segal), London Math. Soc. Student Texts **77** (2011), 99–144.
- [21] Functional equations for zeta functions of groups and rings, Ann. Math. **172** (2010), 1181–1218.
- [22] On representation zeta functions of groups and a conjecture of Larsen-Lubotzky, with N. Avni, B. Klopsch und U. Onn, C. R. Math. Acad. Sci. Paris, Ser. I, **348** (2010), 363–367.
- [23] Enumerating finite class-2-nilpotent groups on 2 generators, C. R. Math. Acad. Sci. Paris, Ser. I, **347** (2009), 1347–1350.
- [24] Zeta functions of three-dimensional p -adic Lie algebras, with B. Klopsch, Math. Z. **263** (2009), 195–210.
- [25] Igusa-type functions associated to finite formed spaces and their functional equations, with B. Klopsch, Trans. Amer. Math. Soc. **361** (2009), 4405–4436.
- [26] Counting subgroups in a family of nilpotent semidirect products, Bull. London Math. Soc. **38** (2006), 743–752.
- [27] Normal subgroup growth in free class-2-nilpotent groups, Math. Ann. **332** (2005), 67–79.
- [28] Functional equations for local normal zeta functions of nilpotent groups, with an appendix by A. Beauville, Geom. Func. Anal. (GAFA) **15** (2005), 274–295.
- [29] Zeta functions of groups - singular pfaffians, in *Essays in geometric group theory*, Ramanujan Math. Soc. Lect. Notes Ser. **9** (2009), 145–159.
- [30] Zeta functions of groups and enumeration in Bruhat-Tits buildings, Amer. J. Math. **126** (2004), 1005–1032.

Education and professional qualifications

- 11/2008 Habilitation in Mathematik and *venia legendi*, Düsseldorf
- 10/1999–09/2002 PhD in Pure Mathematics, University of Cambridge. Title: Zeta functions of groups and enumeration in Bruhat-Tits buildings. Supervisor: M. P. F. du Sautoy
- 10/1998–07/1999 Certificate of Advanced Study in Mathematics ('Part III of the Mathematical Tripos'), University of Cambridge
- 10/1996–09/1998 Reading Mathematics and Philosophy, Hamburg University, Germany. 'Vordiplom' in mathematics
- 10/1995–09/1996 Reading Mathematics and Philosophy, Leipzig University
- 07/1994 Abitur, Joh.-Seb.-Bach-Gymnasium Windsbach (Bayern)

Awards and Research Grants

- 2018–2021 DFG¹ grant for joint research project with B. Klopsch (Düsseldorf) and A. Fel'shtyn (Szczecin) on "Zeta functions of groups and dynamical systems" with in the Polish-German research initiative "Beethoven 2". Value: €197,000 (Bielefeld)
- 07/2017-06/2020 DFG grant for project "Order zeta functions and resolutions of singularities" (co-PI with A. Frühbis-Krüger, Hannover). Value: € 132,600
- 05/2016 Faculty of Mathematics Teaching Award "Goldener Wanderwischer" for best lecture course in the category "service teaching", Bielefeld.
- 01/2015–12/2017 German-Israeli Foundation for Scientific Research and Development Grant "Subgroup and subring growth under base extension" (G-1246-304.6/2014; co-PI with M. M. Schein, Bar-Ilan University). Value: € 180,000
- 07/2014–06/2017 Feodor-Lynen Research Stipend to visit E. A. O'Brien (Auckland), Alexander-von-Humboldt Foundation.
- 07/2013–06/2016 DFG Schwerpunktprogramm 1489 'Algorithmic and Experimental Methods in Algebra, Geometry, and Number Theory' project on 'Toroidal methods for computing zeta functions of groups and rings' (VO-1248/3-1). Value: €239,600
- 07/2013–06/2017 DFG Sonderforschungsbereich 701 projects C10 'Local cohomology and support in representation theory' (co-PI with H. Krause) and C12 'Representation growth of arithmetic groups' (sole PI). Value: €497.000 (C10) + €248.500 (C12)
- 06/2010 EPSRC² Small Grant (EP/H044779/1, with B. Klopsch, PI) to collaborate with U. Onn, Beersheva, Israel. Value: £13,238
- 01/2010 EPSRC Overseas Travel Grant (EP/H044779/1) to collaborate with E. A. O'Brien, Auckland, NZ. Value: £7,712
- 04/2009–12/2011 EPSRC First Grant (EP/F044194/1) for project 'Zeta functions of groups and rings and Igusa's local zeta function'. Value: £269,889
- 02/2009 London Mathematical Society (LMS) Scheme 2 grant (with M. P. F. du Sautoy and B. Klopsch) to fund visit by M. Berman. Value: £1,200

¹See <http://gepris.dfg.de/gepris/person/1834343> for grant portfolio at DFG.

²See <https://gow.epsrc.ukri.org/NGBOViewPerson.aspx?PersonId=-161402> for grant portfolio at EPSRC.

01/2009	EPSRC Small Grant (EP/G055408/1, with B. Klopsch, CI) to fund workshop ‘Representations and Asymptotic Group Theory’, April 2009, Southampton, and visit by N. Avni. Value: £14,740
11/2008, 03/2007	Two-week ‘Research-in-Pairs’ (RiP)-stays at Mathematisches Forschungsinstitut Oberwolfach (MFO) to collaborate with B. Klopsch
07/2008	Royal Society Outgoing Short Visits Grant to visit E. A. O’Brien and B. Martin, both NZ. Value: £2,680
2007–2013	LMS Scheme 3 grant (with B. Klopsch, N. Nikolov) for research group South England Profinite Groups Meetings. Value: ~£1.000 per year
09/2006–04/2008	Nuffield Foundation, Newly Appointed Lecturer’s grant. Value: £4,800
06/2006–08/2006	Fond National Suisse, Bref Séjour Individuel. Value: CHF 10,870
10/2005–03/2006	Max-Planck-Gesellschaft, Weiterbildungsstipendium. Value: €8,808
10/2004–09/2005	DFG Forschungsstipendium (postdoctoral stipend). Value: €17,616
10/2003–09/2004	Linacre College, Oxford, Junior Research Fellowship (non-stipendiary)
10/2002–09/2004	EPSRC Postdoctoral Fellowship in Mathematics (GR/R93827/01), Oxford University. Value: £67,177
04/2001	Knight-Rayleigh-Prize, University of Cambridge
10/1999–09/2002	Studienstiftung des deutschen Volkes, Promotionsstipendium (PhD grant)
10/1999–09/2002	Cambridge European Trust, European Student Bursary
10/1998–06/1999	Deutscher Akademischer Austauschdienst (DAAD), Jahresstipendium
1996–2002	Studienstiftung des deutschen Volkes, membership

Selected talks and presentations

12/2020	Colloquium Institute for Algebra and Geometry, Otto-von-Guericke Universität Magdeburg
02/2020	Combinatorial Coworkspace, Haus Bergkranz, Kleinwalsertal
03/2019	Algebra and Combinatorics Seminar, University of Auckland
02/2019	Algebra and Topology Seminar, Australian National University, Canberra
09/2018	Workshop ‘Zeta functions of groups and dynamical systems’, Düsseldorf
09/2018	Conference ‘Groups, Geometries, and Representations 2018’, Oxford
09/2017	Algebra Seminar, Leiden
07/2017	Mathematical Colloquium, Karlsruhe
07/2017	Mathematical Colloquium, Paderborn
12/2016	Seminaire Geometrie et Theorie des Modeles, ENS Paris
08/2016	Workshop on Computational Group Theory, MFO
05/2016	Algebra Seminar, Kaiserslautern
05/2016	Dresdner Mathematisches Seminar
07/2015	Mathematisches Kolloquium, Hannover
03/2015	Algebra and Combinatorics Seminar, University of Auckland
12/2014	Mathematisches Kolloquium, Düsseldorf

09/2014 Third International Workshop on Zeta Functions in Algebra and Geometry, Guanajuato, Mexico

05/2014 Amitsur Algebra Seminar, Hebrew University, Jerusalem

05/2014 Algebra Seminar, Bar-Ilan University

03/2014 Workshop 'Experimental Methods in Computational Algebra', Hannover

10/2013 Conference 'Geometry, Groups and Topology 2013', Karlsruhe

08/2013 Groups St Andrews 2013 in St Andrews (one hour speaker)

04/2013 Workshop 'Arithmetic Groups', Banff International Research Station

11/2012 Darstellungstheoretage Magdeburg (contributed talk)

06/2012 Norddeutsches Gruppentheorie-Kolloquium 2012, Braunschweig

09/2011 DMV Jahrestagung, Minisymposium Geometric Group Theory, Köln

03/2011 North British Geometric Group Theory seminar, Durham

03/2011 Algebra and Geometry seminar, Bristol

05/2010 Second international workshop on zeta functions in algebra and geometry, Palma de Mallorca

03/2010 Algebra seminar, University of Auckland

02/2010 Algebra seminar, Oxford

11/2009 Number theory seminar, Oxford

07/2009 Mathematische Gesellschaft, Göttingen

06/2009 International conference Activités Additives et Analytiques, Lille

05/2009 Algebra seminar, Oxford

03/2009 London Algebra Colloquium

11/2008 Habilitationskolloquium, Düsseldorf

10/2008 Algebra seminar, Nottingham

07/2008 Algebra seminar, University of Auckland, NZ

06/2008 Workshop on Profinite and Asymptotic Group Theory, MFO

09/2007 Conference 'Profinite and Asymptotic Group Theory' (to celebrate Professor D. Segal's 60th birthday), Trento, Italy

06/2007 (First) International Workshop on Zeta Functions in Algebra and Geometry, Segovia

02/2007 Number Theory and Algebraic Geometry Joint Seminar K.U. Leuven - U. Gent.

01/2007 Pure Mathematics Colloquium, Durham

11/2006 Algebra seminar, Birmingham

10/2006 Algebra seminar, Oxford

05/2006 Workshop on Pro- p Extensions of Global Fields and pro- p Groups, MFO

04/2006 Seminaire Methodes Algebriques Discrettes, EPF, Lausanne

03/2006 Number Theory Lunch Seminar, MPIfM, Bonn

05/2005	Conference on Asymptotic and Probabilistic Methods in Geometric Group Theory, Geneva (non-plenary talk)
03/2005	Number Theory Lunch Seminar, <i>Max-Planck-Institut für Mathematik</i> , Bonn.
06/2004	Mathematisches Kolloquium, Düsseldorf
06/2004	Rencontres Arithmétiques, Caen
01/2004	Algebra seminar, Oxford
12/2003	AMS Regional Meeting, Bangalore (non-plenary talk)
11/2003	‘Counting on buildings’ (interdisciplinary talk) Linacre College, Oxford
05/2003	Workshop Profinite groups and discrete subgroups of Lie groups, MFO
06/2002	Algebra seminar, Cambridge

Organisation of conferences, workshops etc.

09/2021	week-long CIRM-conference ‘New Trends Around Profinite Groups’, Trento (member of Organizing Committee)
05/2021	week-long ‘Fifth International Workshop on Zeta Functions in Algebra and Geometry’, Nice (member of scientific committee)
03/2021	First Joint Meeting of the Israel Mathematical Union and the German Mathematical Society, Jerusalem (member of Program Committee) – meeting cancelled due to covid-19 pandemic
05/2017	week-long ‘Fourth International Workshop on Zeta Functions in Algebra and Geometry’, Bielefeld University (member of organizing committee, partly supported by DFG and Foundation Compositio Mathematica)
09/2013	four-day workshop ‘Zeta functions of groups and related algebraic structures’, University of Padova (with E. Detomi, B. Klopsch and A. Lucchini, partly supported by LMS)
03/2012	two-day workshop ‘Asymptotic Group Theory and Model Theory’, Royal Holloway University of London (with B. Klopsch, supported by EPSRC)
06/2009	week-long workshop ‘Representation Growth’ (Batsheva-Seminar), Midrasha Sde-Boker, Israel (with N. Avni and U. Onn)
04/2009	two-day workshop ‘Representations and Asymptotic Group Theory’, Southampton (with B. Klopsch, supported by EPSRC)
2007–2013	research group ‘South England Profinite Groups Meetings’ (jointly with B. Klopsch, N. Nikolov, three meetings per year, supported by LMS)

Other professional services and memberships

	Referee for <i>Acta Arithm.</i> , <i>Alg. Combinat.</i> , <i>Amer. J. Math.</i> , <i>Ann. Comb.</i> , <i>Arch. Math.</i> (3), <i>Comm. Algebra</i> , <i>Contemp. Math.</i> , <i>Electron. J. Combin.</i> , <i>Groups Geom. Dyn.</i> , <i>Int. J. Alg. Comp.</i> , <i>Israel J. Math.</i> (3), <i>J. Algebra</i> (5), <i>J. Group Theory</i> (5), <i>J. Lond. Math. Soc.</i> (4), <i>J. Number Theory</i> , <i>Monatsh. Math.</i> , <i>Math. Proc. Cambridge Phil. Soc.</i> , <i>Nagoya Math. J.</i> , <i>Proc. Lond. Math. Soc.</i> (4), <i>Quart. J. Math.</i> , <i>Revista Colombiana de Matemáticas</i> , <i>Rev. Un. Mat. Argentina</i> , <i>Trans. Amer. Math. Soc.</i> (2)
	Twelve contributions to the <i>Mathematical Reviews</i> (AMS)
since 2002	Member of the London Mathematical Society

since 2001 Member of the Cambridge Philosophical Society

Postgraduate teaching and supervision of PhD students and postdocs

10/2020–present	Postdoc Dr. Viola Siconolfi
09/2019–present	Postdoc Dr. Seungjai Lee
09/2018–present	Postdoc Dr. Josh Maglione
09/2017–present	Postdoc Dr. Mima Stanojkovski (currently on leave at MPI MIS Leipzig (Sturmfels group))
01/2016–08/2019	Postdoc Dr. Alastair Litterick (now Lecturer in Pure Mathematics, University of Sussex)
05/2015–09/2018	Postdoc Dr. Angela Carnevale (now Lecturer at NUI Galway)
04/2016–09/2017	Postdoc Dr. Ann Kiefer (now postdoc at Frije Universiteit Brussel)
10/2015–06/2017	Postdoc Dr. Thomas Cauwbergs
03/2014–02/2016	Postdoc Dr. Matthew Levy
10/2011–08/2016	Postdoc Dr. Tobias Rossmann (now Lecturer at NUI Galway)
09/2013–09/2015	Postdoc Dr. Duong H. Dung (now Lecturer at the University of Wollongong)
04/2009–12/2011	Postdoc Dr. Alexander Stasinski (now Senior Lecturer at Durham University)
10/2019–present	PhD student Marlies Vantomme
08/2018–present	PhD student Elena Tielker
06/2015–11/2018	PhD student Paula Lins (PhD awarded 01/2019)
10/2010–09/2015	PhD student Michele Zordan (PhD awarded 04/2016)
10/2008–10/2012	PhD student Rob Snocken (PhD awarded 12/2013)
06/2009	Lecturer at and co-organizer of week-long Batsheva-Seminar on ‘Representation Growth’, Midrasha Sde-Boker, Israel
09/2007	Tutor and lecturer at week-long LMS/EPSRC Short Course: Asymptotic methods in infinite group theory, organised by D. Segal, Oxford

Undergraduate Teaching

2011–present Lecture courses taught at Bielefeld include:

- Mathematics for Chemistry (Bachelor-level, 2017, 2020)
- Mathematics for Computer Scientists (Bachelor-level, 2019)
- Lie Algebras and Lie Groups (Master-level, 2017)
- Commutative Algebra and Algebraic Geometry (Master-level, 2017, 2020)
- Algebraic Number Theory (Master-level, 2016, 2020)
- Linear Algebra for Physicists (one-semester course, 2015/16)
- Algebra (two-semester course, Bachelor-level, 2014/15)
- Lie Algebras (Master-level, 2014)

- Profinite Groups (Master-level, 2013)
 - Commutative Algebra (Master-level, 2011/12)
 - Linear Algebra (2012/13, 2013/14 2017/18)
 - Groups and Symmetries (Bachelor-level, 2012)
- 2006–11 Lecture courses taught at Southampton include:
- Galois Theory (2010/11)
 - Groups and Symmetries (2009/11)
 - Group Theory and its Applications (2008/09)
 - Elementary Number Theory (2006-09)
- 08/2009 Nuffield Foundation, Undergraduate Research Bursary for six-week project ‘Poles of zeta functions of groups and rings’ at Southampton
- 2006–11 Semester projects supervised at Southampton:
- Elliptic curves and cryptography
 - The arithmetic of elliptic curves
 - There are infinitely many Carmichael numbers
- 2008–11 (Co-)organisation of ‘Consolidation classes’, Southampton
- 2000–04 Numerous supervisions and tutorials at Cambridge and Oxford
- 1996–98 ‘Übungshelfer’ (=teaching assistant) for various mathematics and service courses, Hamburg

Administration

- 2021–present Member of the Senate, Bielefeld
- 2011–present Member of several professorial search committees
- 2014–present BAFöG-Advisor Mathematics, Bielefeld
- 2012–2021 Member of ‘Fakultätskonferenz Mathematik’, Bielefeld
- 2011–2020 Coordinator of ‘Mathematisches Kolloquium’, Bielefeld
- 2009–11 Senate representative for Mathematics, Southampton
- 2007–11 ERASMUS Coordinator for Mathematics, Southampton
- 2007–11 Degree programme coordinator ‘Mathematics and a modern language’, Southampton

Bielefeld, April 2021