Curriculum Vitae

Robert Laugwitz

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Research Interests

General: Algebra; applications to topology and mathematical physics.
Specific: Representation theory of Hopf algebras; Higher representation theory (monoidal categories, 2-categories); Categorification at prime roots of unity; Non-commutative algebra and geometry.

Employment

2016/09 — Present	**Rutgers University**, Department of Mathematics, *Triennial Assistant Professor*
2015/09 — 2016/08	**University of East Anglia** (School of Mathematics) *Senior Postdoctoral Research Associate*
2014/01 — 2015/09	**Oxford University** (Trinity College) *Stipendiary College Lecturer* (2014/10 — 2015/09), *Retaining Fee College Lecturer* (2014/01 — 2014/09)

Education

2011/10 — 2015/09	*D.Phil Pure Mathematics* **University of Oxford** (St Peter's College) *Supervisor:* Prof Yakov Kremnizer *Thesis:* "Braided Hopf Algebras, Double Constructions, and Applications" (Sep 15, 2015)
2010/10 — 2011/07	*MASt (Part III of the Mathematical tripos)* **University of Cambridge** (Churchill College) with distinction *Essay:* "Quantum Groups and their Representations", under supervision of Dr Stuart Martin
2009/10 — 2010/07	*Erasmus visiting student* **University of Bath**, *Project:* "Hopf Algebras and Quantum Groups", under supervision of Dr Yuri Bazlov
2007/10 — 2010/08	*B.Sc. Mathematics* (minor subject Economics, VWL) **University of Hamburg** *Thesis Advisor:* Prof Dr Christoph Schweigert *Thesis:* "Yetter-Drinfeld and Hopf modules" (September 2, 2010)

List of Publications and Preprints

Preprints

2018/04 Noncommutative Shifted Symmetric Functions (with **Vladimir Retakh**)
    Arxiv e-Preprint, `https://arxiv.org/abs/1807.09197`, submitted for publication

2018/04 A Categorification of Cyclotomic Rings (with **You Qi**)
    Arxiv e-Preprint, `https://arxiv.org/abs/1804.01478`, submitted for publication

2018/03 The Relative Monoidal Center and Tensor Products of Monoidal Categories
    Arxiv e-Preprint, `https://arxiv.org/abs/1803.04403`, submitted for publication

2017/06 Cell 2-Representations and Categorification at Prime Roots of Unity (with **Vanessa Miemietz**)
    Arxiv e-Preprint, `https://arxiv.org/abs/1706.07725`, submitted for publication

2014/10 Koszulness of enveloping algebras associated to generalized Yang–Baxter equations
    Arxiv e-Preprint, `https://arxiv.org/abs/1410.4528`

Papers

2018/08 Comodule Algebras and 2-Cocycles over the (Braided) Drinfeld Double, *Comm. Contemp. Math.*
    Online ready, available at `https://doi.org/10.1142/S0219199718500451`

2017/11 Algebras of Quasi-Plücker Coordinates are Koszul (with **Vladimir Retakh**), *J. Pure Appl. Algebra*, **222**, issue 9, 2810–2822

2016/11 On Fomin–Kirillov Algebras for Complex Reflection Groups, *Communications in Algebra* **45** (2017), issue 8, 3653–3666

2016/03 Pointed Hopf algebras with triangular decomposition — A characterization of multiparameter quantum groups *Algebras and Representation Theory* **19** (2016), issue 3, 547–578

2015/03 Braided Drinfeld and Heisenberg doubles, *J. Pure Appl. Algebra* **219** (2015), no. 10, 4541–4596

Funding and Awards

2017/07 — 2019/06 **AMS-Simons Travel grant**, for early career researchers ($4000 + $800 for the department)

2017/07 **London Mathematical Society "Research in Pairs" grant** (with Vanessa Miemietz, £1200) Used to fund visit to University of East Anglia

2015/09 — 2016/08 **EPSRC Doctoral Prize** Grant for one year of post-doctoral research at University of East Anglia (£31,342)

2011/10 — 2015/04 **EPSRC Project Studentship** (three and a half years of funding) as part of the research grant "Motivic Invariants and Categorification", principal investigator Prof Dominic Joyce, reference EP/I033343/1

2011/07 **Churchill College Prize Scholarship** for Part III performance

2009/10 — 2010/07 **Erasmus grant** for study at University of Bath

Conference Talks

2019/01/16 — 01/19 AMS Joint Mathematics Meeting, Baltimore
    Special Sections (invited)

2018/07/09 — 07/13 Categorification and Higher Representation Theory
    Institute Mittag-Leffler, Sweden
    Poster presentation: "Cell 2-representations and categorification at prime roots of unity"

2018/06/25 — 06/30 Retakhfest – Non-commutative structures, cluster algebras and applications
    A conference in honor of V. Retakh, University of Angers, France
    Talk: "Shifted Non-commutative symmetric functions"

2018/04/27 — 40/28 Mid-Atlantic Algebra, Geometry, and Combinatorics (MAAGC) Workshop, Philadelphia
    Poster: "Categorifying cyclotomic rings of integers"

2018/04/21 — 04/22 Spring Eastern Sectional Meeting, Boston, Massachusetts
    Special session: Hopf Algebras, Tensor Categories, and Homological Algebra
    Talk: "Categorification of cyclotomic rings at non-prime roots of unity"

2018/04/14 — 04/15 Spring Western Sectional Meeting Portland State University, Portland, Oregon

	Special session: Noncommutative Algebraic Geometry and Related Topics
	Talk: "The Koszul property for algebras of quasi-Plücker coordinates"
2018/03/17 — 03/19	Recent developments in noncommutative algebra and related areas
	University of Washington, Seattle
	Talk: "A smaller monoidal center for quantum group representations"
2017/10/28 — 10/30	Fall Western Sectional Meeting, Riverside, California
	Special session: Non-Commutative Birational Geometry, Cluster Structures
	and Canonical Bases
	Talk: "2-Representation Theory for Categorified Quantum Groups at Prime Roots of Unity"
2016/10/28 — 10/30	AMS Fall Central Sectional Meeting, Minneapolis, Minnesota
	Special session: Quantum Field Theories and Geometric Representation Theory
	Talk: "2-Representation Theory of p-DG 2-Categories"
2015/09/21 — 09/25	Jahrestagung der Deutschen Mathematikervereinigung
	University of Hamburg
	Talk: "A categorical action for rational Cherednik algebras"
2014/06/17 — 26	Summer School "Quiver Hecke Algebras" and conference "Geometric Representation Theory"
	European Network in Representation Theory, Institut d'Etudes Scientifiques de Cargese
	Talk: "Lusztig's Geometric Construction of the Canonical Basis"
2013/11/18	Gradfest, St Peter's College Oxford
	Talk: "Knots in Mathematics" (general audience)
2013/06/17 — 20	Young Researchers in Mathematics 2013
	University of Edinburgh
	Talk: "Braided Reconstruction and Quantum Group Constructions"
2013/04/16 — 19	"Deformation Week"
	University of Oxford
	Talk: "q-Deformation and Braided Monoidal Categories"

Invited Seminar Talks

2018/09/28	"Noncommutative Shifted Symmetric functions"
	Lie Groups/Quantum Maths Seminar, **Rutgers University**
2018/05/10	"A Categorification of Cyclotomic Integers at Non-Prime Orders"
	Categorification Seminar, **University of Southern California**
2018/04/27	"A Categorification of Cyclotomic Integers at Non-Prime Orders"
	Lie Groups/Quantum Maths Seminar, **Rutgers University**
2018/04/17	"A Categorification of Cyclotomic Integers at Non-Prime Orders"
	Algebra Seminar, **University of Oregon**
2017/07/11	"Categorical Modules over the Relative Monoidal Center"
	Quantum Algebra Seminar, **Queen Mary University London**
2017/02/03	"The Relative Hopf and Drinfeld center of a Monoidal Category"
	Lie Groups/Quantum Math Seminar, **Rutgers University**
2016/12/06	"Cell 2-Representations for p-DG 2-categories"
	Geometry, Symmetry and Physics, **Yale University**
2016/10/26	"2-Representations of p-DG 2-categories"
	Algebra Seminar, **Rutgers University**
2016/02/18	"Braided Hopf Algebras and Construction of Quantum Groups as Braided Doubles"
	University of Oxford
2015/11/16	"Categorical Modules over the Drinfeld Centre"
	Pure Maths Seminar, **University of East Anglia**
2015/04/10	"Braided Drinfeld and Heisenberg doubles and their interaction",
	Seminaire Caen Cergy Clermont Paris - Theorie des Representations
	Universite Paris Diderot - Paris 7
2015/02/06	"What is a topological quantum field theory?",

	Graduate Seminar, **St Peter's College, Oxford** (general audience)
2015/01/20	"Braided Drinfeld and Heisenberg Doubles and TQFTs with Defects"
	Algebra Seminar, **University of Edinburgh**
2015/01/16	"Drinfeld and Hopf Centers and Applications"
	University of Copenhagen
2015/01/06	"Drinfeld Doubles associated to Rational Cherednik Algebras"
	Algebra and Mathematical Physics Seminar, **Universität Hamburg**
2013/12/05	"Pointed Hopf Algebras with triangular decomposition"
	Representation Theory Seminar, **University of Oxford**

Longer Academic Visits

2018/07/25 — 2018/08/01	Prof Chelsea Walton, **University of Illinois, Urbana-Champaign**
2018/05/08 — 2018/05/15	Dr You Qi, **California Institute of Technology**
2017/07/04 — 2017/07/21	Dr Vanessa Miemietz, **University of East Anglia**
2016/02/16 — 2016/02/26	Prof Kobi Kremnizer, **University of Oxford**
2015/08/08 — 2015/08/15	Prof Istvan Heckenberger, **University of Marburg**

Other

Reviewer (articles and one book review) for the AMS MathSciNet database
Paper Referee for Bulletin of the LMS, IMRN, Selecta Mathematica, SIGMA, Comm. Cont. Math.
Helped in the organization of the 'Rutgers Math Colloquium' during Prof Retakh's sabbatical (Spring 2017)
Helped supervising Dr Miemietz's summer research student Matt Gladders, UEA, working on p-dg algebras (Summer 2016)

2013 — 2015	Oxford Millenium Orchestra, member (Cello)
2013 — 2014	President of St Peter's College Boat Club
2012 — 2013	Treasurer of St Peter's Middle Common Room