Konstantin Ardakov

Personal Details

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Date of birth:	10th November, 1979.
Nationality:	British

Positions	Professor of Mathematics, Mathematical Institute, University of Oxford
	Tutorial Fellow, Brasenose College

Awards and distinctions

03/2020	Adams Prize, University of Cambridge
09/2017	Recognition of distinction award, University of Oxford
08/2014	Invited Speaker, International Congress of Mathematicians, Seoul
09/2013 - 08/2018	EPSRC Early Career Fellowship

Education

10/2000 - 05/2004	University of Cambridge PhD in Mathematics. Smith-Knight Prize.
10/1996 - 06/2000	University of Oxford MMath degree, 1st Class. Junior Mathematical Prize.

Professional experience

09/2013 - 08/2017	Mathematical Institute, University of Oxford University Lecturer, then Associate Professor.
01/2012 - 08/2013	School of Mathematical Sciences, Queen Mary University of London Reader in Pure Mathematics.
10/2007 - 12/2011	School of Mathematical Sciences, University of Nottingham Leverhulme Early Career Fellow, then Lecturer.
10/2006 - 09/2007	Department of Pure Mathematics, University of Sheffield Research Associate.
10/2003 - 09/2006	Christ's College, University of Cambridge Sir Robert and Lady Clayton Junior Research Fellow.

Publications

Bounded functions on the character variety, with L.Berger.
To appear in the Münster Journal of Mathematics.

The Bernstein center in natural characteristic, with P.Schneider,
Proc. Steklov Inst. Math. 320 (2023) 1-22.

Induction equivalence for equivariant $\mathcal{D}$-modules on rigid analytic spaces,
Representation Theory 27 (2023) 177-244.

$\widehat{\mathcal{D}}$-modules on rigid analytic spaces III: weak holonomicity and operations,
with A. Bode and S. J. Wadsley.
Compositio Mathematica 157(12) (2021) 2553-2584.

Equivariant $\mathcal{D}$-modules on rigid analytic spaces,
Astérisque 423 (2021) 1-161.

Bounded linear endomorphisms of rigid analytic functions,
with Oren Ben-Bassat. Proc. Lond. Math. Soc 5(3) (2018), 881-900.

$\widehat{\mathcal{D}}$-modules on rigid analytic spaces II, with S.J.Wadsley,
Journal of Algebraic Geometry, 27 (2018), 647-701

$\widehat{\mathcal{D}}$-modules on rigid analytic spaces I, with S.J.Wadsley,
Journal für die Reine und Angewandte Mathematik, 747 (2019), 221-275.

A canonical dimension estimate for non-split semisimple p-adic Lie groups,
with C.Johansson. Representation Theory 20 (2016), 128-138.

$\widehat{\mathcal{D}}$-modules on rigid analytic spaces, Proceedings of the International Congress of Mathematicians, Seoul, Volume III (2014), 1-9.

Verma modules over Iwasawa algebras are faithful, with S. J. Wadsley.
Münster Journal of Mathematics 7 (2014), 5-26.

Krull dimension of affinoid enveloping algebras, with I. Grojnowski.
Glasgow Mathematical Journal 55A (2013), 7-26.

On irreducible representations of compact p-adic analytic groups,
with S. J. Wadsley. Annals of Mathematics 178 (2013), 453-557.

Prime ideals in nilpotent Iwasawa algebras.
Inventiones Mathematicae 190(2) (2012), 439-503.

The controller subgroup of one-sided ideals in completed group rings.
Contemporary Mathematics 562 (2012), 11-26.

Γ*–invariant ideals in Iwasawa algebras*, with S. J. Wadsley.
Journal of Pure and Applied Algebra 213 (2009), 1852-1864.

Centres of skewfields and completely faithful Iwasawa modules.
Journal of the Institute of Mathematics of Jussieu 7 (2008), 457-468.

On the Cartan map for crossed products and Hopf-Galois extensions,
with S. J. Wadsley. Algebras and Representation Theory (2008), 33-41.

K_0 and the dimension filtration for p-torsion Iwasawa modules,
with S. J. Wadsley. Proc. Lond. Math. Soc. 97(1) (2008), 31-59.

Non-existence of reflexive ideals in Iwasawa algebras of Chevalley type, with F. Wei and J. J. Zhang. Journal of Algebra 320(1) (2008), 259-275.

Reflexive ideals in Iwasawa algebras, with F. Wei and J. J. Zhang. Advances in Mathematics 218 (2008), 865-901.

Primeness, semiprimeness and localisation in Iwasawa algebras, with K. A. Brown. Trans. Amer. Math. Soc. 359 (2007), 1499-1515.

Ring-theoretic properties of Iwasawa algebras: a survey, with K. A. Brown. Documenta Mathematica Extra Volume Coates (2006), 7-33.

Localisation at augmentation ideals in Iwasawa algebras, Glasgow Mathematical Journal 48(2) (2006), 251-267.

Characteristic elements for p-torsion Iwasawa modules, with S. J. Wadsley. Journal of Algebraic Geometry 15 (2006), 339-377.

Prime ideals in noncommutative Iwasawa algebras. Math. Proc. Camb. Phil. Soc. 141(2) (2006), 197-203.

The centre of completed group algebras of pro-p groups. Documenta Mathematica 9 (2004), 599-606.

Krull dimension of Iwasawa algebras. Journal of Algebra 280 (2004), 190-206.

Krull dimension of Iwasawa algebras and some related topics. PhD Thesis, University of Cambridge (2004).

Preprints

Global sections of equivariant line bundles on the p-adic upper half plane, with S.J.Wadsley, 140 pages.

Equivariant line bundles with connection on the p-adic upper half plane, with S.J.Wadsley, 56 pages.

Stability in the category of smooth mod-p representations of $SL_2(\mathbb{Q}_p)$, with P.Schneider, 58 pages.

The central sheaf of a Grothendieck category, with P.Schneider, 26 pages.

Talks given at Conferences and Workshops

08/2023	The Automorphic Side of the p-adic Langlands Program Wuppertal, Germany
02/2023	Number Theory meets p-adic representations Münster, Germany
07/2022	Smooth representations of $GL(n, \mathbb{Q}_p)$ in natural characteristic Oxford, UK
11/2019	p-adic cohomology and Arithmetic Geometry Sendai, Japan
06/2019	Serre conjectures and the p-adic Local Langlands program Padova, Italy

06/2019	Representation Theory and $\mathcal{D}$-modules Rennes, France
03/2019	Non-Archimedean Geometry and Applications Oberwolfach, Germany
06/2018	Algebraic Number Theory Oberwolfach, Germany
03/2017	p-adic Analytic Geometry and Differential Equations CIRM, Luminy, France
09/2016	Geometric Representation Theory and Beyond Clay Research Conference, Oxford, UK
09/2015	$\mathcal{D}$-modules and singularities Padova, Italy
05/2015	Enveloping Algebras and Geometric Representation Theory Oberwolfach, Germany
11/2014	Categorical Structures in Harmonic Analysis MSRI, Berkeley, USA
09/2014	Algebraic Lie Theory and Representation Theory ICMS, Edinburgh
08/2014	International Congress of Mathematicians Seoul, South Korea
03/2014	Workshop on modular Iwahori-Hecke algebras Humboldt University, Berlin, Germany
04/2013	Interactions between Noncommutative Algebra, Representation Theory, and Algebraic Geometry, MSRI, Berkeley, USA
04/2013	Iwasawa Theory and Galois Representations University of Warwick
03/2013	Morning Speaker at the British Mathematical Colloquium University of Sheffield
03/2013	Applications of Iwasawa Algebras Banff Research Station, Canada
01/2013	Iwasawa Theory, Representations and the p-adic Langlands program University of Münster, Germany
11/2012	New Trends in Noncommutative Algebra and Algebraic Geometry Banff Research Station, Canada
04/2012	Workshop on the p-adic Langlands program Fields Institute, Canada
09/2011	Noncommutative Algebraic Geometry Shanghai Workshop Fudan University, Shanghai, China

08/2011	ELGA Workshop on Arithmetical Algebraic Geometry Universidad Nacional de Córdoba, Argentina
06/2011	New developments in noncommutative algebra and its applications Sabhal Mòr Ostaig, Isle of Skye
06/2011	South England Profinite Groups meeting on Iwasawa Algebras University of Cambridge
04/2011	Instructional workshop on the noncommutative main conjectures University of Münster, Germany
08/2010	New Trends in Noncommutative Algebra University of Washington, USA
07/2010	Iwasawa 2010 Conference Fields Institute, Canada
06/2010	Kent Algebra Days University of Kent in Canterbury
12/2009	Non-abelian Fundamental Groups in Arithmetic Geometry: Final Workshop. Isaac Newton Institute, Cambridge
09/2009	Noncommutative algebra and Iwasawa theory ICMS, Edinburgh

Colloquium talks

05/2016	Heidelberg
03/2015	Warwick

Workshop organisation

12/2020	*Tropical Geometry, Berkovich Spaces, Arithmetic D-Modules and p-adic Local Systems.* Imperial College London
7/2019	*Geometric methods in p-adic representation theory.* EPSRC-funded workshop held at Trinity College Dublin
12/2017	*$\mathcal{D}$-modules, geometric representation theory and arithmetic applications* Clay Mathematics Institute Workshop, Oxford

Grants awarded

2013-2018	*Geometrisation of p-adic representations of p-adic Lie groups.* Early Career Fellowship from the EPSRC. Total value: £787972.
2007-2009	*Algebraic structure of Iwasawa algebras.* Early Career Fellowship from the Leverhulme Trust. Total value: £55000.

Post-docs mentored

2014-2016	Przemyslaw Chojecki
2016-2018	Thomas Bitoun

2018-2019 Andreas Bode

PhD students

Ben Lewis, Queen Mary University of London (2010-2014).
Primitive factor rings of p-adic completions of enveloping algebras as arithmetic differential operators.

Billy Woods, University of Oxford (2012-2016).
Virtually nilpotent Iwasawa algebras are catenary.

Richard Mathers, University of Oxford (2015-2019).
Twisted coadmissible equivariant $\mathcal{D}$-modules on rigid analytic spaces.

Adam Jones, University of Oxford (2016-2020).
Prime ideals of Iwasawa algebras over solvable groups.

Ioan Stanciu, University of Oxford (2016-2020).
Affinoid enveloping algebras and their representations.

Nadav Gropper, University of Oxford (2018-2022).
Jointly supervised with Minhyong Kim.
Surfaces and p-adic fields I: Dehn twists.

James Timmins, University of Oxford (2019-2023).
Ring-theoretic properties of augmented Iwasawa algebras.

James Taylor (2020-), Finn Wiersig (2020-),
Arun Soor (2021-), Ken Lee (2022-)

MSc students

Ben McDonnell, University of Oxford (2016).
The centre of the hyperalgebra.

Joshua Ciappara, University of Oxford (2018).
Invariants of $\widehat{\mathcal{D}}$-modules.

Teaching

Oxford

Galois Theory, 2022-2024, Part B lectures.
Introduction to Representation Theory, 2020-2024, Part B lectures.
Representation theory of semisimple Lie algebras, 2020, Part C lectures.
Commutative Algebra, 2019-2020, Part B lectures.
Noncommutative Rings, 2015-2018, Part C lectures.
Iwasawa algebras, 2016. Graduate lecture course for the TCC.
2013-present: undergraduate tutorials for 1st and 2nd years at Brasenose.

QMUL

Introduction to Algebra, 2012-2013.
1st year lecture course for 250 students.

Nottingham

Group theory, 2011. 3rd year lecture course.
Applied algebra for engineers, 2010-2011. Large 1st year service module.
Rings and modules, 2010. Examples classes for a 3rd year lecture course.
Algebraic geometry, 2009-2010. 4th year lecture course.
Algebraic number theory, 2007-2008. 4th year lecture course.

2009-2011: supervised 3rd year projects and 4th year dissertations.
2009-2011: gave regular weekly tutorials to a small group of 1st years.

Cambridge

2000-2006: supervised undergraduates on various courses, including: *Numbers and sets*, *Linear algebra*, *Groups, rings and modules*, *Galois theory*, *Representation theory* and *Hilbert spaces*.

Graduate courses

Geometric representation theory, 2011.
14 lectures at POSTECH, Pohang, South Korea.

Noncommutative Iwasawa algebras, 2007.
12 lectures at Fudan University, Shanghai, China.

Noetherian Algebras, 2004-2005. Part III course.

Service

Director of the Bath-Bristol-Imperial-Oxford-Warwick Taught Course Centre for graduate students (2018-2022).

Served on an EPSRC Prioritisation Panel (2019).

Reviewer of grant proposals for the NSA and for the EPSRC.

Referee for Selecta, Amer. J. Math., Bull. LMS., J. Algebra, Rend. Padova, J. Number Theory, J. Pure and Applied Algebra.

Reviewer for Springer Graduate Texts in Mathematics.

External examiner of PhD theses: Cambridge $\times 3$, Sheffield, Rennes, Hebrew University.

Recent seminar talks

UEA, Exeter, Caen, Nottingham, Weizmann, Birmingham, Essen, London Algebra Colloquium, Manchester, Bristol, London Number Theory Seminar