CONTACT
INFORMATION

Faculty of Mathematics and Computer Science
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RESEARCH
INTERESTS

Algebraic number theory, with a particular emphasis on integral p-adic Hodge theory
and geometric aspects of moduli spaces of p-adic Galois representations.

EMPLOYMENT

University of Münster

Postdoctoral researcher, 2020-2023

Max Planck Institute for Mathematics (Bonn)

Postdoctoral researcher, 2018-2020

EDUCATION

**Kings College London and the London School of Geometry and Number
Theory**

Ph.D. in Mathematics, 2014-2018
Thesis: *On the reduction modulo p of crystalline representations*

- Supervised by Fred Diamond.

University of Warwick

MMath 2010-2014

- Awarded first class degree.

PAPERS

1. *Degenerating products of flag varieties and applications to the Breuil–Mézard con-
jecture*
Submitted 2021.
2. *Potential diagonalisability of pseudo-Barsotti–Tate representations*
Submitted 2020.
3. *Explicit Serre weights for* GL_2 (with Misja Steinmetz)
In preparation.
4. *On the irreducible components of some crystalline deformation rings*
Forum of Mathematics Sigma, Volume 8, 2020, e22.
5. *Potentially diagonalisable crystalline lifts with controlled Hodge–Tate weights*
Documenta Mathematica, 26, 795-827, 2021.
6. *Inertial and Hodge–Tate weights of crystalline representation*
Mathematische Annalen, 376(1), 645-681.

SERVICES

- Co-organised (with Eugen Hellmann) Münster number theory seminar (Summer
2021).
- Co-founded London junion number theory seminar (2016-2017)
- Referee for journals including Algebra and Number theory, Forum of Math Pi, Ann.
Sci. de l'ENS, J. de l'Ecole Poly. Math, J. Théor. Nombres Bordeaux, and Math.
Res. Lett.

INVITED CONFERENCE TALKS	• Banff International Research Station, Modularity and Moduli Spaces, CMO Oaxaca (Oct. 2019)

INVITED SEMINAR TALKS	• SUSTech, China (Mar. 2022) • Université Paris 13 (Feb. 2022) • University of Chicago Number theory seminar (Oct. 2021) • Queen Mary University London (Mar. 2021) • University of Arizona (Feb. 2021) • University of Münster (Nov. 2020) • University of Rennes (cancelled) (Jan. 2020) • University of Leiden (Dec. 2019) • Essen Arithmetic Geometry Research Seminar (Apr. 2019) • Max Planck Institute for Mathematics Number Theory Seminar (Apr. 2019) • Max Planck Institute for Mathematics Oberseminar (Nov. 2018) • University of Purdue Automorphic Forms and Representation Theory Seminar (May 2018) • University of Chicago Number Theory Seminar (May 2018) • Junior London Number Theory seminar (Jan. 2018) • Junior London Number Theory seminar (Oct. 2016) • London Number Theory Study groups (2015 - 2018, at least one talk a term)

AWARDS	2016	Awarded funding by King's College London Global research grant to support a visit to Professor Frank Calegari and Professor Matthew Emerton at University of Chicago. Value: GBP 2000.
	2013	Awarded funding from the University of Warwick for a summer research project supervised by Dr. Damiano Testa. Project Title: Galois conjugate polynomials. Value: GBP 1000.
	2012	Awarded funding from the University of Warwick for a summer research project supervised by Dr. Daan Krammer. Project Title: The Braid group of $\mathbb{Z}^n$. Value: GBP 1000.

TEACHING EXPERIENCE

University of Münster

Masters course: Deformation theory of Galois representations (Winter semester 2021/22)

- Course aimed at masters and Phd students.

King's College London

Teaching Assistant (2016-2018)

- Ran tutorials for classes of 10-20 first and second year undergraduates (Elementary Number Theory, Linear Methods, Geometry, Curves and Surfaces, Introduction to abstract algebra).

University of Warwick

First year tutor (2013-2014)

- Tutored a group of 5 first year mathematics students over the course of a year. Graded their assignments for analysis, linear algebra, number theory and abstract algebra courses.

King's College London Mathematics School

Class tutor (2017-2018)

- Taught two groups of 16-17 year old students mathematical problem solving classes.

CONFERENCES attended	Fall	2015	Motives and Automorphic Forms (Clay research conference), Oxford
	Spring	2016	Recent developments in integral p-adic cohomology theories, Bonn
	Spring	2016	Recent trends in p-adic Cohomology, London
	Summer	2016	Fundamental groups in arithmetic geometry, Paris
	Summer	2016	London-Paris Number Theory Seminar on p-adic groups and arithmetic geometry, Paris
	Fall	2016	Automorphic Forms: theory and computation, London
	Fall	2016	London-Paris Number Theory Seminar on perfectoid spaces, Paris
	Winter	2017	p-adic methods for modular forms and Galois representations, Barcelona
	Spring	2017	Arizona Winter School on perfectoid spaces, Arizona
	Summer	2017	London-Paris Number Theory Seminar on the trace formula, automorphic forms, and arithmetic manifolds, London
	Summer	2017	Journées Arithémiques 2017, Caen
	Summer	2017	BICRM p-adic Hodge theory and automorphic forms, Beijing
	Spring	2018	Arizona Winter School on Iwasawa theory, Arizona
	Summer	2018	A celebration of Barry Mazur, Cambridge MA
	Summer	2018	Geometerisation of the Langlands program, Lyon
	Summer	2018	Workshop on Galois representations, Heidelberg
	Fall	2018	Conference on Arithmetic Algebraic Geometry, Bonn
	Spring	2019	p-adic Langlands correspondence and Iwasawa theory, Lille
	Spring	2019	The p-adic Langlands programme and related topics, London
	Summer	2019	The geometry and arithmetic of algebraic varieties, Bonn
	Summer	2019	Arithmetic geometry in Carthage, Tunisia
	Fall	2019	The Emerton–Gee stacks and related topics, Bonn

LANGUAGES   English (native), French (reading), German (beginner).