

CONTACT
INFORMATION

School of Mathematical Sciences
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RESEARCH
INTERESTS

Algebraic number theory, the p -adic Langlands program, and links to geometric representation theory. I am particularly interested in combining tools from integral p -adic Hodge theory and algebraic geometry to study of moduli spaces of p -adic Galois representations.

EMPLOYMENT

Queen Mary University of London

Marie Skłodowska-Curie (MSCA) Postdoctoral Fellow, since 2025

University of Glasgow

Rankin-Sneddon fellow, 2023-2025

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, 01/12/2018

Thesis: *On the reduction modulo p of crystalline representations*. Supervisor: Fred Diamond

University of Warwick

MMath 2010-2014. Awarded first class degree.

GRANTS AND
AWARDS

1. Marie Skłodowska-Curie (MSCA) Postdoctoral research fellowship. 2025. Value: EU 260,000
2. Funding for 1 month visit to the Max Planck Institute for mathematics, Bonn. 2024. Value: EU 2500.
3. King's College London Global research grant. 2016. Value: GBP 2000.

PAPERS

1. *Resolving moduli spaces of 3-dimensional crystalline representations and Modularity* (with Bao Le-Hung and Brandon Levin)
In preparation, 2026
2. *GKLO representations of twisted Yangians in type AI and quantizations of symmetric quotients of the affine Grassmannian*, (with Tomasz Przezdziecki and Lukas Tappeiner),
Submitted, 2025
3. *Irreducibility of some crystalline loci with irregular Hodge–Tate weights*
Proc. Amer. Math. Soc. 153 (2025), 15-30

4. *Cycles relations in the affine grassmannian and applications to the Breuil–Mézard conjecture for G -crystalline representations*
Compositio Mathematica, Volume 161, Issue 9, (2025), pp. 2320 - 2372
5. *Explicit Serre weights for GL_2* (with Misja Steinmetz)
Submitted 2022.
6. *Degenerating products of flag varieties and applications to the Breuil–Mézard conjecture*
Selecta. Math. 30, 17 (2024)
7. *Potential diagonalisability of pseudo-Barsotti–Tate representations*
Journal de Théorie des Nombres de Bordeaux, Volume 35 (2023) no. 2, pp. 335-371.
8. *On the irreducible components of some crystalline deformation rings*
Forum of Mathematics Sigma, Volume 8, 2020, e22.
9. *Potentially diagonalisable crystalline lifts with controlled Hodge–Tate weights*
Documenta Mathematica, 26, 795-827, 2021.
10. *Inertial and Hodge–Tate weights of crystalline representations*
Mathematische Annalen, 376(1), 645-681.

SERVICES

- Co-organised (with Shu Sasaki and Miriam Norris) Queen Mary Algebra and Number theory seminar (Winter term 2026).
- Organised the Summer semester 2022 Oberseminar (study group) in Münster on Modularity lifting theorems.
- Co-organised (with Eugen Hellmann) Münster number theory seminar (Summer semester 2021).
- Co-founded London junion number theory seminar (2016-2017)
- Referee for journals including Forum of Math Pi, Ann. Sci. de l'ENS, J. Reine Angew. Math., Algebra and Number theory, J. de l'Ecole Poly. Math, IMRN, J. Théor. Nombres Bordeaux, Documenta Mathematica, and Math. Res. Lett.

CONFERENCE TALKS

- Journées Arithmétiques 2023, Nancy (July 2023)
- Banff International Research Station, Modularity and Moduli Spaces, CMO Oaxaca (Oct. 2019)

SEMINAR TALKS

- Imperial College London, Number theory seminar (Nov. 2025)
- University of Durham, Algebra and Number theory seminar (Nov. 2025)
- Queen Mary University of London, Algebra and Number theory seminar (Oct. 2025)
- University of Bath, Number theory seminar (April 2025)
- University of Warwick, Number theory Seminar (Jan. 2025)
- University of Edinburgh, Algebra seminar (Jan. 2024)
- University of Cambridge, Number theory seminar (Jan. 2024)
- Jussieu, Séminaire Groupes Réductifs et Formes Automorphes (Nov. 2023)
- University of Glasgow, Algebra and Number theory seminar (Nov. 2023)
- Queen Mary Number theory seminar (July 2023)
- University of Münster (Sep. 2022)
- 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, Bonn, Number Theory Seminar (Apr. 2019)

- Max Planck Institute for Mathematics, Bonn, 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)

TEACHING
EXPERIENCE

University of Glasgow

Calculus side of Maths 1C, Winter term 2024-25

- Lecturer for first year undergraduate course aimed at non-mathematics students.

Calculus side of Maths 1, Winter term 2023-24

- Lecturer for first year undergraduate mathematics course.

Further complex analysis, Winter term 2023-24 and 2024-2025

- Course head for fourth year undergraduate course on complex analysis.

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 Mathematics School

Class tutor (2017-2018)

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

REFERENCES

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LANGUAGES

English (native), French (reading), German (intermediate).