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Research

Mathematics ; Arithmetic geometry ; Shimura varieties, Langlands program, and geometric representation theory.

Employment

2022-25 *Wissenschaftlicher Mitarbeiter*, Westfälische Wilhelms-Universität Münster.

2022 *Gast*, Max-Planck-Institut für Mathematik, Bonn.

2020–21 *Research associate*, Imperial College London

2017–20 *Wissenschaftlicher Mitarbeiter*, Rheinische Friedrich-Wilhelms-Universität Bonn

Education

2015 BSc in Mathematics, Faculdade de Ciências da Universidade do Porto

2017 MSc in Mathematics, Rheinische Friedrich-Wilhelms-Universität Bonn
Advisor: Prof. Dr. Peter Scholze

2020 PhD in Mathematics, Rheinische Friedrich-Wilhelms-Universität Bonn
Advisor: Prof. Dr. Peter Scholze

Production

2017 “The Riemannian Hebbbarkeitssätze for pseudo-rigid spaces”, [arXiv:1711.06903](#).

2019 “Grassmanniennes affines tordues sur les entiers”, [arXiv:1912.11918](#), submitted.

2020 “Théorie de Bruhat–Tits pour les groupes quasi-réductifs”, [arXiv:2001.05362](#), *Journal de l’Institut de Mathématiques de Jussieu*, [Cambridge University Press](#).

- 2020 “Théorie de Bruhat–Tits, grassmanniennes affines et modèles locaux”, Dissertation. *Landesbibliothek Uni Bonn*, [bonndoc](#).
- 2020 “On the normality of Schubert varieties: remaining cases in positive characteristic”, with T. Haines and T. Richarz, [arXiv:1806.11001](#), to appear in Ann. Sci. Éc. Norm. Supér.
- 2022 “On the p-adic theory of local models”, with J. Anschütz, I. Gleason, and T. Richarz, [arXiv:2201.01234](#), submitted.
- 2022 “Tubular neighborhoods of local models”, with I. Gleason, [arXiv:2204.05526](#), submitted.
- 2022 “Singularities of local models”, with N. Fakhruddin, T. Haines, and T. Richarz, [arXiv:2208.12072](#).
- 2022 “Gaitsgory’s central functor and the Arkhipov–Bezrukavnikov equivalence in mixed characteristic”, with J. Anschütz, Z. Wu, and J. Yu. In preparation.
- 2022 “A modular ramified Satake equivalence”, with P. Achar, T. Richarz, and S. Riche. In preparation.

Talks

- 10.23 “TBD”, Geometric and categorical representation theory, Clermont-Ferrand.
- 10.23 “TBD”, 75th anniversary of M. Rapoport, Münster.
- 7.23 “TBD”, Local Langlands and p-adic methods, Bonn.
- 03.02.23 “Towards Bezrukavnikov via p-adic local models”, Oberwolfach.
- 25.10.22 “p-adic local models II”, Münster.
- 18.10.22 “p-adic local models I”, Münster.
- 08.06.22 “Modèles locaux p-adiques : géométrie”, Paris-Nord.
- 01.06.22 “Modèles locaux p-adiques : cohomologie”, Paris-Nord.
- 26.05.22 “Mini-cours sur la théorie p-adique des modèles locaux”, Caen.
- 06.05.22 “Tubular neighborhoods of local models II”, Bonn.
- 28.04.22 “Local models for p-adic shtukas”, MPI-Oberseminar, Bonn.

- 15.03.22 “On the p-adic theory of local models”, Hong Kong.
- 09.02.22 “On the p-adic theory of local models II”, Rampage.
- 12.01.22 “On the p-adic theory of local models”, München.
- 07.12.21 “Sur la théorie p-adique des modèles locaux”, Orsay.
- 29.11.21 “Sur la théorie p-adique des modèles locaux”, Paris Rive Gauche.
- 26.10.21 “On the p-adic theory of local models”, Fields Medal Symposium, Toronto.
- 11.11.20 “Towards the Scholze–Weinstein conjecture on local models”, London.
- 09.10.20 “Vers la conjecture de Scholze–Weinstein sur les modèles locaux”, Paris Nord.
- 24.07.20 “On the geometry of mixed characteristic affine Grassmannians”, Oberwolfach.
- 28.11.19 “Twisted affine Grassmannians in wildly ramified cases”, Bonn.
- 21.11.19 “Bruhat–Tits theory for pseudoreductive groups”, Bonn.
- 21.10.19 “Twisted affine Grassmannians over \mathbf{Z} ”, Modularity and Moduli Spaces, Oaxaca.
- 11.10.19 “Twisted affine Grassmannians and local models of Shimura varieties”, London.
- 30.08.19 “Twisted Kac-Moody groups over the integers”, Luminy.
- 20.12.18 “Local models for some wildly ramified groups”, Bonn.
- 27.04.17 “The Riemannian Hebbarkeitssatz for pseudo-rigid spaces II”, Bonn.
- 20.04.17 “The Riemannian Hebbarkeitssatz for pseudo-rigid spaces I”, Bonn.

Conferences

- 10.23 “Geometric and categorical representation theory” Clermont-Ferrand, France (speaker).
- 10.23 “Conference on the occasion of Michael Rapoport’s 75th birthday” Münster, Germany (speaker).
- 07.23 “Local Langlands and p-adic methods” Bonn, Germany (speaker).

- 02.23 “Arithmetic of Shimura varieties” , Oberwolfach, Germany (speaker).
- 07.22 “ Summer School on The Langlands Programme” , Paris, France.
- 05.22 “30e Rencontres arithmétiques de Caen” , Caen, France (speaker).
- 11.21 “2021 Fields Medal Symposium: Peter Scholze” , Toronto, Canada (speaker).
- 07.21 “Oberwolfach Arithmetic Geometry” , Oberwolfach, Germany (speaker).
- 10.19 “Modularity and moduli spaces” , Oaxaca, Mexico (speaker).
- 08.19 “Hausdorff School on the Emerton-Gee stack and related topics” , Bonn, Germany.
- 09.19 “Immeubles et grassmanniennes affines” , Luminy, France (speaker).
- 06.19 “Arithmetic Geometry in Carthage” , Cartaghe, Tunisia.
- 05.19 “The p-adic Langlands programme and related topics” , London, England.
- 06.18 “Groupes algébriques et géométrisation du programme de Langlands” , Lyon, France.
- 04.17 “Leçons Hadamard par P. Scholze” , Paris, France.
- 03.17 “Arizona Winter School 2017: Perfectoid Spaces” , Tucson, USA.
- 10.16 “Oberwolfach Seminar on Perfectoid Spaces” , Oberwolfach, Germany.

Seminars

- été 23 Seminar “Homological and Frobenius methods in commutative algebra”.
- Fall 22 Arbeitsgemeinschaft “Bezrukavnikov” , with K. Zou.
- Fall 22 Seminar ”Darstellungstheorie endlicher Gruppen” , with E. Viehmann.
- Fall 20 London NT study group “Geometrization of the Langlands program” , with M. Tamiozzo.

Visits

- July 22 Grenoble, with P. Achar and S. Riche.

June 22 Paris-Nord, with S. Morra and A.-C. Le Bras.

Fall 21 Paris-Saclay, with K. Česnavičius.

Feb 20 Imperial College London, with A. Caraiani.

Dec 18 Jussieu, with J. Anschütz and T. Richarz.

Referee

Annals of Mathematics, Mathematische Annalen, Representation theory, Canadian Journal of Mathematics, Épijournal de Géométrie Algébrique

Languages

Portugais (native), French, English, German, Spanish (fluent), Italian (conversational).

References

Thomas Haines, Stefano Morra, Timo Richarz, Peter Scholze, Eva Viehmann