

# Pol van Hoften

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<https://polvanhoften2.github.io/>

## Employment

- Fall 2023- **Assistant professor (universitair docent)**, *Vrije Universiteit Amsterdam*.  
2021-2023 **Postdoctoral fellow**, *Stanford University*.

## Education

- 2017-2021 **PhD in mathematics**, *King's College London*, supervised by James Newton and Ana Caraiani.  
2015-2017 **Master mathematical sciences**, *Utrecht University*, *cum laude*.  
2012-2015 **Bachelor mathematics**, *Utrecht University*, *cum laude*.

## Publications and preprints

- 2024 *On exotic Hecke correspondences*, with Jack Sempliner, in preparation.  
2024 *Igusa stacks for Shimura varieties of Hodge type*, with Patrick Daniels, Dongryul Kim and Mingjia Zhang, coming soon.  
2024 *On a conjecture of Pappas and Rapoport*, with Patrick Daniels, Dongryul Kim and Mingjia Zhang, <https://arxiv.org/abs/2403.19771>, submitted.  
2024 *On the Piatetski-Shapiro construction for integral models of Shimura varieties*, with Jack Sempliner, <https://arxiv.org/abs/2403.10653>, submitted.  
2022 *Hecke orbits on Shimura varieties of Hodge type*, with Marco D'Addezio, <https://arxiv.org/abs/2205.10344>, submitted.  
2021 *On the ordinary Hecke orbit conjecture*, <https://arxiv.org/abs/2112.12422>, *Algebra and Number theory* **18** (2024), No. 5, 847–898 .  
2021 *The Langlands–Rapoport conjecture*, *Automorphic forms, Automorphic representations, Galois representations, and its related topics*, pages 124–133.  
2021 *Monodromy and irreducibility of Igusa varieties*, with Luciana Xiao Xiao, to appear in *American Journal of Mathematics*.  
2020 *Mod  $p$  points on Shimura varieties of parahoric level*, with an appendix by Rong Zhou, to appear in *Forum of Mathematics, Pi*.  
2019 *A geometric Jacquet–Langlands correspondence for paramodular Siegel threefolds*, *Mathematische Zeitschrift* **299** (2021), 2029–2061 .

## Invited lectures

- Jan 2024 *Mini-course consisting of 4 talks*, Yau Mathematical Sciences Center, Tsinghua University and Morningside Center of Mathematics, Chinese Academy of Sciences.

## Invited conference talks

- Sept 2024 *Clay Research Conference: New Advances in the Langlands Program*, Oxford.
- Nov 2023 *Compositio Mathematica prize symposium*, University of Amsterdam.
- Aug 2023 *Conference on global Langlands, Shimura varieties and shtukas*, HIM Bonn.
- Feb 2023 *Oberwolfach workshop on arithmetic of Shimura varieties*.
- Jun 2022 *Arithmetic and topology around the Langlands program*, Stockholm.
- Aug 2021 *Arithmetic of Shimura varieties over global fields*, Cetraro.
- Jan 2021 *Galois representations and related topics*, RIMS, Kyoto.
- Oct 2019 *Supersingular abelian varieties and related arithmetic*, Nagoya.

## Selected invited seminar talks

- June 2024 *Arithmetic algebraic geometry seminar*, Münster.
- June 2024 *Séminaire Groupes Réductifs et Formes Automorphes*, Paris.
- Mar 2024 *Intercity number theory seminar*, Amsterdam.
- Jan 2024 *Number theory seminar*, Peking University.
- Jan 2024 *Number theory seminar*, Tsinghua University.
- Dec 2023 *Friday arithmetic geometry seminar*, Imperial College London.
- Dec 2023 *London number theory seminar*.
- Apr 2023 *Princeton University/IAS number theory seminar*.
- Feb 2023 *Number theory seminar*, Johns Hopkins University.
- Dec 2022 *Algebra-number theory seminar*, University of Maryland.
- Oct 2022 *Stanford number theory seminar*, Stanford University.
- Sep 2022 *Number theory and representation theory seminar*, University of Utah.
- Jul 2022 *Algebraic geometry seminar*, TU Darmstadt.
- Jun 2022 *Geometry and algebra seminar*, Utrecht University (two talks).
- Jun 2022 *Arithmetic and algebraic geometry seminar*, University of Amsterdam (two talks).
- Jun 2022 *Number theory seminar*, Imperial College London.
- Jun 2022 *Number theory seminar*, University of Cambridge.
- Feb 2022 *Number theory seminar*, University of Wisconsin-Madison.
- Feb 2022 *Number theory seminar*, University of Chicago.
- Oct 2021 *Berkeley-Caltech-Stanford number theory seminar*.
- Jul 2021 *Oberseminar*, University of Duisburg-Essen.
- May 2021 *Number theory seminar*, University of Münster.
- Apr 2021 *Number theory seminar*, Massachusetts Institute of Technology.
- Apr 2021 *RGR webinar*, Institut de Mathématiques de Marseille.
- Mar 2021 *Number theory seminar*, UCLA.
- Feb 2021 *Algebra-number theory seminar*, University of Maryland (two talks).
- Nov 2020 *London-Paris number theory seminar*.
- Nov 2020 *Algebra and geometry seminar*, Stockholm.

- Nov 2020 *Number theory lunch seminar*, University of Sheffield.  
 Jun 2020 *Séminaires de géométrie arithmétique et motivique*, Paris 13.  
 Apr 2020 *Number theory seminar*, University of Warwick.  
 Dec 2019 *Algebra, geometry and number theory seminar*, Leiden University.  
 Nov 2019 *ENS de Lyon number theory seminar*, École normale supérieure de Lyon.  
 Jul 2019 *Arithmetic and algebraic geometry seminar*, University of Amsterdam.

## Supervision

- 2023-2024 *Pedro Gómez de Terreros Oramas*, Master's thesis.  
 2024 *David Bukva*, Bachelor's thesis.

## Teaching Experience

- 2023- *VU Amsterdam*.  
 ○ Linear algebra for computer science (Spring 2024)  
 ○ Fourier Analysis (Fall 2023)
- 2022-2023 *Stanford University*.  
 ○ Topics in algebraic geometry: Deligne–Lusztig theory (Winter 2023)  
 ○ Graduate algebraic geometry (Fall 2022)  
 ○ Reading course on Shimura varieties in characteristic  $p$  (Spring 2022)
- 2018-2020 **Graduate teaching assistant** *King's College London*.  
 ○ Groups and Symmetry (Fall 2020)  
 ○ Introduction to number theory (Fall 2019/Fall 2018)
- Summer 2019 **Undergraduate research opportunities programme** *Imperial College London*, Together with Chris Williams, I supervised Tin Lau's summer project on local fields.
- 2018-2019 **London maths outreach**, I am a cofounder of London Maths Outreach, which is a program run by PhD students in London to teach extracurricular topics in math to high school students in the London area, especially students from state schools. In the Fall of 2018 and 2019 I taught a course on cryptography through this program.
- Summer 2018 **Counselor** *Ross mathematics program Asia*, 5 weeks, I was personally responsible for grading and tutoring four students. I taught the thrice-weekly seminars to groups of fifteen students. Moreover I taught an 11-part graduate level evening course to other counselors on local fields and perfectoid fields.
- 2013-2017 **Teaching assistant** *Utrecht University*.  
 ○ Rings and Galois theory (Spring 2017)  
 ○ Introduction to probability and statistics (Winter 2016)  
 ○ Measure theory (Fall 2016/Fall 2015)  
 ○ Summer school in geometry at Utrecht University (two weeks in August 2016).  
 ○ Lab course optics (Spring 2014). In the summer of 2014 I was involved in redesigning part of the curriculum for this course.  
 ○ Introduction to special relativity (Fall 2013)

## Teaching training

- 2023-2024 *Basic teaching qualification (BKO)*, VU Amsterdam, 5 months.  
 Fall 2022 *Math teaching workshop*, Stanford University, 3 days.

Fall 2018 *Graduate teaching assistant workshop*, King's College London, 1 day.

## Service and other professional activities

*Referee for journals including IMRN, JEMS, Math. Ann., and Math. Z..*

2024-2027 *Member of the exam board for mathematics/business analytics at VU Amsterdam..*

2023 *Member of Sean Cotner's thesis committee.*

2022 *Member of Konstantin Miagkov's area exam committee.*

### Seminars organised

Winter 2023 *Berkeley–Stanford number theory learning seminar on EG stacks*, with Lie Qian.

Fall 2022 *Berkeley–Stanford number theory learning seminar on EG stacks*, with Lie Qian.

Spring 2022 *Berkeley–Stanford number theory learning seminar on moduli of  $L$ -parameters.*

Fall 2021 *Reading group on "A unipotent circle action on  $p$ -adic modular forms".*

Winter 2020 *Reading group on Deligne–Lusztig theory*, with Miriam Norris.

Winter 2019 *Organised the London number theory reading group on 'derived structures in the Langlands programme'*, with Carl Wang-Erickson, Ashwin Iyengar and Alice Pozzi.

## Selected study group talks

Apr 2023 *Intro to condensed mathematics*, Stanford-Berkeley number theory learning seminar.

Sept 2022 *Intro to the Emerton–Gee stack*, Stanford-Berkeley number theory learning seminar.

Apr 2022 *A tale of two Bernstein centers*, Stanford-Berkeley number theory learning seminar.

Feb 2022 *The geometric Satake equivalence*, Stanford rigid automorphic forms study group.

Oct 2021 *Higher Coleman theory (three talks)*, Stanford number theory reading group.

Dec 2020  *$\mathrm{Bun}_G$  as a cohomologically smooth Artin  $v$ -stack*, LNTSG.

Dec 2020 *Higher Coleman theory (two talks)*, London number theory study group.

Mar 2020 *Deligne-Lusztig induction*, Seminar on Deligne-Lusztig theory.

Feb 2020 *Construction of unitary moduli schemes*, Liu-Tian-Xiao-Zhang-Zhu study group.

Jun 2019 *Igusa varieties & Mantovan's formula*, London number theory study group.

Mar 2019 *The derived Hecke algebra and derived deformation theory*, LNTSG.

Oct 2018 *Perverse sheaves*, London number theory study group.

Jun 2018 *Proof of the (derived) direct summand conjecture*, Imperial College reading group.

Apr 2018 *Perfectoid rings and the pro-étale site*, London number theory study group.

Jan 2018 *Pure motives*, London number theory study group.

Mar 2017 *Mixed complexes*, Seminar on perverse sheaves, University of Nijmegen.

Mar 2016 *Descent of morphisms*, Topics in algebraic geometry, University of Leiden.

## Languages

Dutch **Native speaker**

English **Fluent**