

Employment

2021-2024 **J. J. Sylvester Assistant Professor** *Johns Hopkins University*
Faculty mentor: Professor David Savitt

Education

2017-2021 **Ph.D in Mathematics** *London School of Geometry and Number Theory (King's College London)*
Supervised by James Newton and Toby Gee

2016-2017 **Master of Pure Mathematics** *Université Paris 13, Mention Très Bien*

Fall 2015 **Budapest Semesters in Mathematics** *Budapest, Hungary*

2012-2016 **B.A. Mathematics** *University of California, Berkeley, Berkeley, CA, High Honors*

Publications and preprints

- **Mod ℓ gamma factors and a converse theorem for finite general linear groups** with Jacksyn Bakeberg, Mathilde Gerbelli–Gauthier, Heidi Goodson, Gilbert Moss and Robin Zhang
Submitted. [arXiv](#)
- **Zariski density of crystalline points** with Gebhard Böckle and Vytautas Paškūnas
Published in PNAS, 2023. [arXiv](#)
- **On local Galois deformation rings** with Gebhard Böckle and Vytautas Paškūnas
Accepted in Forum of Mathematics, Pi, 2023 (to appear). [arXiv](#)
- **Deformation theory of the trivial mod p Galois representation for GL_n**
Published in IMRN, 2020. [arXiv](#)

Older:

- **Graphical display of search trees for transparent robot programming** with Joaquin Pockels and David Touretzky
Published in Proceedings of the 25th International Florida Artificial Intelligence Research Society Conference (FLAIRS-25), Marco Island, FL. 2012. [link](#)

Selected Invited Research Talks

Oct 2023 **Algebra, Combinatorics, and Geometry Seminar**, University of Pittsburgh

Sep 2023 **AMS Special Session on Homological Aspects of p -adic Groups and Automorphic Representations**, University of Buffalo

Jun 2023 **Conference on Local Langlands and p -adic methods**, Hausdorff Institute, Bonn

Mar 2023 **Number Theory Seminar**, Ohio State University

Feb 2023 **Number Theory Seminar**, Stanford University

Jan 2023 **AMS Special Session on Rethinking Number Theory**, Joint Math Meetings 2023, Boston

Nov 2022 **Philadelphia Area Number Theory Seminar**, Temple University

Aug 2022 **Department Colloquium**, University of Hawaii at Manoa

May 2022 **Automorphic Project Research Seminar**, Virtual

Feb 2022 **Number Theory Seminar**, University of Chicago

Feb 2022 **Joint IAS/Princeton Number Theory Seminar**, Institute for Advanced Study

Sep 2021 **Number Theory Seminar**, Johns Hopkins University

May 2021 **Number Theory Seminar**, University of Warwick

May 2021 **Number Theory Seminar**, Purdue University

Jan 2021 **Number Theory Seminar**, UC San Diego

Dec 2020 **Number Theory Seminar**, University of Copenhagen

- Nov 2020 **London-Paris Number Theory Seminar**, Virtual
- Nov 2020 **POINT: New Developments in Number Theory**, Virtual
- Oct 2020 **Number Theory Seminar**, Cambridge University
- Jun 2020 **Séminaire de géométrie arithmétique et motivique**, Paris 13
- Jul 2019 **Conference on p -adic modular forms and Galois representations**, University of Sheffield

Scholarships and Awards

- May 2020 **Nominated for “Outstanding Teaching Assistant Award”** *King’s College London*
- 2017-2021 **London School of Geometry and Number Theory (LSGNT) Studentship**
- 2016-2017 **PGSM International Scholarship**
- Aug 2012 **AAAI Most Innovative Video Award** *Association for the Advancement of Artificial Intelligence Yearly Conference 2012, San Francisco*

[Video](#)

Seminars Organized

- 2022-2023 **Johns Hopkins Number Theory Seminar**, with Rahul Dalal
- 2021-2022 **Johns Hopkins Number Theory Seminar**, with Aurélien Sagnier
- Summer 2020 **Reading group on p -adic local Langlands for $GL_2(\mathbb{Q}_p)$** , with Andrew Graham
- Winter 2019 **Reading group on derived deformation theory of Galois representations and derived Hecke algebras**, with Carl Wang-Erickson, Pol van Hoften and Alice Pozzi
- 2018-2019 **London Junior Number Theory Seminar**, with Johannes Girsch

Professional Service

Advising

- 2022-2024 **Chen-wei (Milton) Lin**, Serving as a second advisor, primary advisor: Prof. David Gepner
- ### Undergraduate Mentorship
- 2023-2024 **Liam Baca and Yash Lal**, Mentor for an independent study in algebraic number theory.
 - Fall 2022 **Akash Sureshkumar**, Mentor for an independent study on elliptic curves.

Thesis Defenses

- Spring 2023 **Kalyani Kansal**, Served on Ph.D thesis defense committee at Johns Hopkins.
- Spring 2023 **Luochen Zhao**, Served on Ph.D thesis defense committee at Johns Hopkins.
- Spring 2022 **Zhongyipian Lin**, Served on Ph.D thesis defense committee at Johns Hopkins.

Refereeing

- Advances in Mathematics
- IMRN

Outreach

- Oct 2023 **JHU Undergraduate Colloquium**, Expository talk on Fermat’s Last Theorem.
- Feb 2021 **London High School Outreach Talk**, Expository talk on the p -adic numbers to high school students in London (virtual).
- May 2020 **Logic Gates Virtual Course**, Developed and taught a virtual 4 week course on logic gates to high school students as part of the London Maths Outreach program, which I co-founded.

[Videos](#)

- Dec 2017 **Allderdice High School Outreach Talk**, Gave an expository talk on the p -adic numbers to students at my former high school

Teaching Experience

- Spring 2024 **Graduate topics course in Number Theory** *Johns Hopkins University*

- Fall 2023 **Calculus II** *Johns Hopkins University*
- Spring 2023 **Introduction to Topology** *Johns Hopkins University*
- Spring 2023 **Algebraic Number Theory II** *Johns Hopkins University*
- Fall 2022 **Algebraic Number Theory I** *Johns Hopkins University*
- Spring 2022 **Calculus I** *Johns Hopkins University*
- Spring 2022 **Algebraic Number Theory II** *Johns Hopkins University*
- Fall 2021 **Algebraic Number Theory I** *Johns Hopkins University*
- 2017–2020 **Outreach Instructor** *London Maths Outreach*, Co-founded/taught for the program.
- Spring 2020 **Graduate teaching assistant** *King's College London*, Taught weekly tutorials to 3 groups for "Representation Theory of Finite Groups", taught by Dmitri Panov
- Fall 2018 **Graduate teaching assistant** *King's College London*, Taught weekly tutorials to 3 groups for "Elementary Number Theory", taught by James Newton
- Dec 2017 **High School Outreach** *Allderdice High School/UCL*, Gave expository talks to high school students on the p -adic numbers
- Summer 2015 **Counselor** *PROMYS Program*, 6 weeks, Mentored high school students learning undergraduate level algebraic number theory. Participated in the counselor seminar.

Conferences/Workshops Attended

- Sep 2023 *AMS Fall Eastern Sectional Meeting*, University of Buffalo
- Jun 2023 *Conference on Local Langlands and p -adic methods*, Hausdorff Institute, Bonn
- Jan 2023 *Arithmetic Aspects of Deformation Theory*, Banff International Research Station
- Jan 2023 *Joint Math Meetings*, Boston, MA
- Dec 2022 *Junior Number Theory Days*, Boston, MA
- Dec 2021 *Junior Number Theory Days*, Johns Hopkins University
- Jul 2021 *Rethinking Number Theory II*, Online
- Apr 2021 *Towards a mod p Langlands correspondence*, Essen, Germany (online)
- Apr 2021 *Derived Galois Deformation Rings and Cohomology of Arithmetic Groups*, Oberwolfach, Germany (online)
- Nov 2020 *London-Paris Number Theory Seminar*, Online
- Sep 2020 *Workshop on Serre weights conjectures and geometry of Shimura varieties*, Online
- May 2020 *CARTOON Conference*, Online
- Oct 2019 *Modularity and Moduli Spaces*, Oaxaca, Mexico
- Sep 2019 *Hausdorff School on the Emerton-Gee stack and related topics*, Bonn, Germany
- Jul 2019 *p -adic modular forms and Galois representations*, Sheffield, United Kingdom
- Jun 2019 *Padova school on Serre conjectures and the p -adic Langlands program*, Padova, Italy
- May 2019 *Workshop on the p -adic Langlands program and related topics*, London, England
- Apr 2019 *MSRI Hot Topics: Recent progress in the Langlands program*, MSRI, Berkeley
- Nov 2018 *Young Researchers in Algebraic Number Theory*, Sheffield, United Kingdom
- Jul 2018 *Workshop on Galois Representations*, Heidelberg, Germany
- Apr 2018 *MSRI Hot Topics: The Homological Conjectures*, MSRI, Berkeley, CA
- Mar 2018 *Arizona Winter School 2018: 'Iwasawa Theory'*, University of Arizona, Tucson, AZ
- Jun 2017 *Géométrie d'Arakelov et applications diophantiennes*, Institut Fourier, Grenoble

Programming Languages

HTML, CSS, LESS, SQL, JavaScript, Sage, Python, Objective-C, Swift, Lisp, C, C++

References

- Prof. James Newton
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- Prof. David Savitt
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- Prof. Gebhard Böckle
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- Prof. Matthew Emerton
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(teaching)