

ELLIOT KAPLAN

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EMPLOYMENT

University of Mons	2025 – Present
· FNRS Postdoctoral fellow	
Max Planck Institute for Mathematics	2024 – 2025
· Postdoctoral fellow	
McMaster University	2021 – 2024
· NSF postdoctoral fellow	
· Postdoctoral fellow at the Fields Institute from July 2021 through June 2022	
· Visitor at the Max Planck Institute for Mathematics for June 2023	

EDUCATION

University of Illinois Urbana-Champaign	
· Doctorate in mathematics, May 2021	
· Dissertation: <i>Derivations on o-minimal fields</i> , advised by Lou van den Dries	
Ohio University	
· Bachelor of Science, Honors Tutorial College, May 2015	
· Mathematics major, philosophy minor, graduated summa cum laude	
· Undergraduate thesis: <i>Initial embeddings in the surreal number tree</i> , advised by Philip Ehrlich	

RESEARCH INTERESTS

Model theory and its applications. Especially o-minimality, valued fields, and differential fields.

PUBLICATIONS

13. Monotone T-convex T-differential fields	2025
With Nigel Pynn-Coates	
<i>Model Theory</i> , vol. 4, no. 1, pp. 55–100 (2025)  	
12. Hilbert polynomials for finitary matroids	2024
With Antongiulio Fornasiero	
<i>Pacific J. Math.</i> , vol. 333, no. 2, pp. 273–308 (2024)  	
11. A dichotomy for T-convex fields with a monomial group	2024
With Christoph Kesting	
<i>MLQ Math. Log. Q.</i> , vol. 70, no. 1, pp. 99–110 (2024)  	
10. Liouville closed H_T-fields	2023
<i>J. Algebra</i> , vol. 628, pp. 265–327 (2023)  	
9. T-convex T-differential fields and their immediate extensions	2022
<i>Pacific J. Math.</i> , vol. 320, no. 2, pp. 261–298 (2022)  	

8. **Surreal ordered exponential fields** 2021
 With Philip Ehrlich
J. Symb. Log., vol. 86, no. 3, pp. 1066–1115 (2021)
7. **Generic derivations on o-minimal structures** 2021
 With Antongiulio Fornasiero
J. Math. Log., vol. 21, no. 2, paper no. 2150007, 45p. (2021)
6. **Pairs of theories satisfying a Mordell-Lang condition** 2020
 With Alexi Block Gorman and Philipp Hieronymi
Fund. Math., vol. 251, no. 2, pp. 131–160 (2020)
5. **Distality for the asymptotic couple of the field of logarithmic transseries** 2020
 With Allen Gehret
Notre Dame J. Form. Log., vol. 61, no. 2, pp. 341–361 (2020)
4. **Continuous regular functions** 2020
 With Alexi Block Gorman, Philipp Hieronymi, Ruoyu Meng, Erik Walsberg, Zihe Wang, Ziqin Xiong, and Hongru Yang
Log. Methods Comput. Sci., vol. 16, no. 1, paper no. 17, 24p. (2020)
3. **Logarithmic hyperseries** 2019
 With Lou van den Dries and Joris van der Hoeven
Trans. Amer. Math. Soc., vol. 372, no. 7, pp. 5199–5241 (2019)
2. **Number systems with simplicity hierarchies II** 2018
 With Philip Ehrlich
J. Symb. Log., vol. 83, no. 2, pp. 617–633 (2018)
1. **Resolution depth of positive braids** 2015
 With David Krcatovich and Patricia O'Brien
J. Knot Theory Ramifications, vol. 24, no. 14, paper no. 1550075, 12p. (2015)

PREPRINTS

5. **Decomposing the automorphism group of the surreal numbers** 2025
 With Lothar Sebastian Krapp and Michele Serra
Preprint. Preprint.
4. **Generic derivations, differential largeness, and NTP₂** 2025
 With Christoph Kesting
Submitted.
3. **Dimension theory for the asymptotic couple of the field of logarithmic transseries** 2025
 With Allen Gehret and Nigel Pynn-Coates
Preprint. Preprint.
2. **Constant power maps on Hardy fields and transseries** 2024
Submitted.
1. **Hyperserial fields** 2021
 With Vincent Bagayoko and Joris van der Hoeven
Submitted. Preprint.

AWARDS AND ACHIEVEMENTS

F.R.S.-FNRS Postdoctoral Research Fellowship (CR – Chargé de Recherches)	2024 – 2028
NSF Mathematical Sciences Postdoctoral Research Fellowship (MSPRF)	2021 – 2024
List of Teachers Ranked as Excellent by Their Students	2015, 2017 – 2020
Kuo-Tsai Chen Prize in Mathematics	2019
Waldemar J., Barbara G., and Juliette Alexandra Trjitzinsky Fellowship	2019
Graduate College Conference Travel Award	2016
U.S. Junior Oberwolfach Fellows NSF Grant (DMS-1641185)	2016

TALKS AT WORKSHOPS AND SPECIAL SESSIONS

INdAM Intensive Period at the University of Naples Mini-Workshop on Recent Developments in the Model Theory of Fields.	May 2025
Centre International de Rencontres Mathématiques Conference on Tame Geometry.	February 2025
AMS-UMI International Joint Meeting in Palermo Model Theory Special Session.	July 2024
CMS Summer Meeting at the University of Saskatchewan Mathematical Logic in Canada Special Session.	June 2024
North American meeting of the Association of Symbolic Logic at Iowa State Model Theory Special Session.	May 2024
AMS Sectional Meeting at the University of Wisconsin-Milwaukee Model Theory Special Session.	April 2024
Banff International Research Station Workshop on Exponential Fields.	February 2024
Banff International Research Station Workshop on Neostability.	February 2023
Oberwolfach Research Institute for Mathematics Mini-Workshop on Topological and Differential Expansions of o-minimal Structures.	November 2022
Oberwolfach Research Institute for Mathematics Mini-Workshop on Surreal Numbers, Surreal Analysis, Hahn Fields and Derivations.	December 2016
Joint Math Meetings in Seattle, WA AMS-ASL Special Session on Surreal Numbers.	January 2016

SEMINAR AND COLLOQUIUM TALKS

Oberseminar Algebra und Geometrie at TU Dortmund	June 2025
Géométrie et Théorie des Modèles at the IHP	May 2025
Séminaire de Logique, Algèbre, Arithmétique et Géométrie at UMONS	April 2025
Logic Colloquium at the Kurt Gödel Research Center	April 2025
Oberseminar Logik at Universität Bonn	January 2025
AI Seminar at the Czech Technical University in Prague	January 2025

Théorie des Modèles et Groupes at IMJ-PRG	November 2024
Séminaire Général de Logique at IMJ-PRG	November 2024
Logic Seminar at The Ohio State University	April 2024
Logic Colloquium at the Kurt Gödel Research Center	March 2024
Waterloo Logic Seminar	January 2024
Oberseminar Modelltheorie, Geometrie und Gruppentheorie at Uni Münster	June 2023
Guest talk at HHU Düsseldorf	June 2023
Oberseminar Logik at Universität Bonn	June 2023
Leeds Logic Seminar	May 2023
Online Logic Seminar	March 2023
Purdue University Model Theory and Applications Seminar	March 2023
Logic Seminar at The Ohio State University	February 2023
Waterloo Logic Seminar	January 2023
Geometry and Model Theory Seminar at the Fields Institute	October 2022
Fields Postdoc Colloquium	April 2022
Geometry and Model Theory Seminar at the Fields Institute	January 2022
Kolchin Seminar in Differential Algebra	October 2021
Model Theory Seminar at the Fields Institute	August 2021
Topological and Differential Expansions of O-minimal Structures Seminar	February 2021
Manchester Logic Seminar	June 2020
Notre Dame Logic Seminar	June 2020
Séminaire de Logique Lyon-Paris	May 2020
Caltech-UCLA Logic Seminar	February 2020
Logic Seminar at The Ohio State University	November 2019
Graduate Model Theory Seminar at UCLA	January 2018

OUTREACH/GENERAL AUDIENCE TALKS

Graduate Colloquium at the University of Bonn	June 2025
An introduction to model theory for a graduate student audience.	
Casual Math Seminar at McMaster	March 2023
An introduction to combinatorial game theory for an undergraduate/graduate student audience.	
Summer Illinois Mathematics Camp at UIUC	July 2018
A discussion of the basics of knot theory for a high school audience.	

TEACHING AND MENTORSHIP

McMaster University	2022 – 2023
· Instructor for Linear Algebra I (Fall 2023).	

- Instructor for Engineering Mathematics I (Fall 2022).

University of Illinois at Urbana-Champaign 2015 – 2020

- Discussion section leader for Calculus II (Fall 2015, Summer 2020), Calculus III (Fall 2016, Spring 2017, Fall 2018, Fall 2019), and Applied Linear Algebra (Spring 2018, Fall 2020).
- Head teaching assistant for Elementary Linear Algebra (Fall 2017) and Applied Linear Algebra (Spring 2018, Fall 2020).
- Grader for Mathematical Logic (Fall 2016, Fall 2017) and General Topology (Fall 2017).

Preliminary Arizona Winter School (PAWS) Fall 2022
The Southwest Center for Arithmetic Geometry
 Course assistant for Ronnie Nagloo's course *Introduction to model theory with applications*.

Program for Interdisciplinary and Industrial Internships at Illinois Summer 2019
University of Illinois at Urbana-Champaign
 Workshop leader for a three-day workshop on advanced linear algebra topics for graduate students.

Illinois Geometry Lab Summer 2019
 Graduate Team Leader for a group of three undergraduate students. I designed and ran a research project on three-player combinatorial games.

Illinois Geometry Lab Spring 2018
 Graduate Mentor for a group of four undergraduate students. I helped lead a research project studying functions recognizable by Büchi automata.

PROFESSIONAL SERVICE AND OUTREACH

Co-organizer: Oberseminar Logik at Universität Bonn 2024 – 2025

Volunteer: OSU Math Department Booth at the COSI Science Festival May 2024

Co-organizer: McMaster-Waterloo Model Theory Learning Seminar Spring 2024

Co-organizer: ASL Special Session on Tame Geometry and Applications to Analysis January 2023
At the Joint Math Meetings in Boston, MA

Co-organizer: Graduate Student Conference in Logic XXII March 2021

Organizer: Nonstandard Analysis Learning Seminar at UIUC Spring 2021

Graduate student member: Undergraduate Affairs Committee at UIUC 2019 – 2020

Volunteer: Illinois Geometry Lab Booth at Illini Fest – Chicago July 2019

Co-organizer: Graduate Student Conference in Logic XVIII April 2017

OTHER WORK EXPERIENCE

Summer Intern Summer 2016
Wolfram Research

Summer Researcher at UIUC Summer 2015
Part of the Program for Interdisciplinary and Industrial Internships at Illinois

Undergraduate Researcher at Michigan State University Summer 2014
Part of the Summer Undergraduate Research Institute in Experimental Mathematics

CRLA Certified Mathematics Tutor with Ohio University Tutoring Services 2012 – 2015
Lead Mathematics Tutor from Fall 2014 through Spring 2015