

# ELLIOT KAPLAN

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## EMPLOYMENT

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### 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

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### University of Illinois Urbana-Champaign

- Doctorate in mathematics, May 2021
- Dissertation: *Derivations on o-minimal fields*, 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: *Initial embeddings in the surreal number tree*, advised by Philip Ehrlich

## RESEARCH INTERESTS

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

## PUBLICATIONS

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14. **Generic derivations, differential largeness, and  $NTP_2$**  2026  
With Christoph Kesting  
*Ann. Pure Appl. Logic*, vol. 177, no. 6, paper no. 103730, 9p. (2026) [↗](#) [↖](#)
13. **Monotone  $T$ -convex  $T$ -differential fields** 2025  
With Nigel Pynn-Coates  
*Model Theory*, vol. 4, no. 1, pp. 55–100 (2025) [↗](#) [↖](#)
12. **Hilbert polynomials for finitary matroids** 2024  
With Antongiulio Fornasiero  
*Pacific J. Math.*, vol. 333, no. 2, pp. 273–308 (2024) [↗](#) [↖](#)
11. **A dichotomy for  $T$ -convex fields with a monomial group** 2024  
With Christoph Kesting  
*MLQ Math. Log. Q.*, vol. 70, no. 1, pp. 99–110 (2024) [↗](#) [↖](#)

10. **Liouville closed  $H_T$ -fields** 2023  
*J. Algebra*, vol. 628, pp. 265–327 (2023) [↗](#) [📄](#)
9.  **$T$ -convex  $T$ -differential fields and their immediate extensions** 2022  
*Pacific J. Math.*, 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

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4. **Decomposing the automorphism group of the surreal numbers** 2025  
 With Lothar Sebastian Krapp and Michele Serra  
*Submitted* [↗](#) [📄](#)
3. **Dimension theory for the asymptotic couple of the field of logarithmic transseries** 2025  
 With Allen Gehret and Nigel Pynn-Coates  
*Submitted* [↗](#) [📄](#)
2. **Constant power maps on Hardy fields and transseries** 2024  
*Submitted* [↗](#) [📄](#)
1. **Hyperserial fields** 2021  
 With Vincent Bagayoko and Joris van der Hoeven  
*Submitted* [↗](#) [📄](#)

## AWARDS AND ACHIEVEMENTS

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<b>F.R.S.-FNRS Postdoctoral Research Fellowship</b> (CR – Chargé de Recherches)	2024 – 2030
<b>NSF Mathematical Sciences Postdoctoral Research Fellowship</b> (MSPRF)	2021 – 2024
<b>List of Teachers Ranked as Excellent by Their Students</b>	2015, 2017 – 2020
<b>Kuo-Tsai Chen Prize in Mathematics</b>	2019
<b>Waldemar J., Barbara G., and Juliette Alexandra Trjitzinsky Fellowship</b>	2019
<b>Graduate College Conference Travel Award</b>	2016
<b>U.S. Junior Oberwolfach Fellows NSF Grant</b> (DMS-1641185)	2016

## TALKS AT WORKSHOPS AND SPECIAL SESSIONS

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<b>BeNeLux Mathematical Congress</b> Mathematical Logic Special Session.	April 2026
<b>INdAM Intensive Period at the University of Naples</b> Mini-Workshop on Recent Developments in the Model Theory of Fields.	May 2025
<b>Centre International de Rencontres Mathématiques</b> Conference on Tame Geometry.	February 2025
<b>AMS-UMI International Joint Meeting in Palermo</b> Model Theory Special Session.	July 2024
<b>CMS Summer Meeting at the University of Saskatchewan</b> Mathematical Logic in Canada Special Session.	June 2024
<b>North American meeting of the Association of Symbolic Logic at Iowa State</b> Model Theory Special Session.	May 2024
<b>AMS Sectional Meeting at the University of Wisconsin-Milwaukee</b> Model Theory Special Session.	April 2024
<b>Banff International Research Station</b> Workshop on Exponential Fields.	February 2024
<b>Banff International Research Station</b> Workshop on Neostability.	February 2023
<b>Oberwolfach Research Institute for Mathematics</b> Mini-Workshop on Topological and Differential Expansions of o-minimal Structures.	November 2022
<b>Oberwolfach Research Institute for Mathematics</b> Mini-Workshop on Surreal Numbers, Surreal Analysis, Hahn Fields and Derivations.	December 2016
<b>Joint Math Meetings in Seattle, WA</b> AMS-ASL Special Session on Surreal Numbers.	January 2016

## SEMINAR AND COLLOQUIUM TALKS

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<b>PKU Model Theory Seminar</b>	March 2026
<b>Oberseminar Algebra und Geometrie at TU Dortmund</b>	June 2025
<b>Géométrie et Théorie des Modèles at the IHP</b>	May 2025
<b>Séminaire de Logique, Algèbre, Arithmétique et Géométrie at UMONS</b>	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

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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.	
Undergraduate Friday Seminar at UIUC	March 2021
An introduction to Conway's surreal numbers for an undergraduate 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**

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**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**

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**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**

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**Summer Intern**

Summer 2016

*Wolfram Research***Summer Researcher at UIUC**

Summer 2015

*Part of the Program for Interdisciplinary and Industrial Internships at Illinois*