

ELLIOT KAPLAN

Hamilton Hall Room 407 \diamond 1280 Main Street West \diamond Hamilton, Ontario L8S 4K1

kaplae2@mcmaster.ca \diamond elliotakaplan.github.io

EMPLOYMENT

McMaster University

July 2021 – June 2024

- NSF Postdoctoral Fellow
- Postdoctoral Fellow at the Fields Institute July 2021 – June 2022

EDUCATION

University Illinois at 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
- Undergraduate thesis: *Initial embeddings in the surreal number tree*, advised by Philip Ehrlich

RESEARCH INTERESTS







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

PUBLICATIONS

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| <i>T</i>-convex <i>T</i>-differential fields and their immediate extensions | 2022+ |
| <i>Pacific J. Math.</i> , to appear. ↗ 📄 | |
| Surreal ordered exponential fields | 2021 |
| With Philip Ehrlich | |
| <i>J. Symb. Log.</i> , 86(3), 1066–1115, 2021. ↗ 📄 | |
| Generic derivations on o-minimal structures | 2021 |
| With Antongiulio Fornasiero | |
| <i>J. Math. Log.</i> , 21(2):2150007, 45, 2021. ↗ 📄 | |
| Pairs of theories satisfying a Mordell-Lang condition | 2020 |
| With Alexi Block Gorman and Philipp Hieronymi | |
| <i>Fund. Math.</i> , 251(2):131–160, 2020. ↗ 📄 | |
| Distality for the asymptotic couple of the field of logarithmic transseries | 2020 |
| With Allen Gehret | |
| <i>Notre Dame J. Form. Log.</i> , 61(2):341–361, 2020. ↗ 📄 | |
| Continuous regular functions | 2020 |
| With Alexi Block Gorman, Philipp Hieronymi, Ruoyu Meng, Erik Walsberg, Zihe Wang, Ziqin Xiong, and Hongru Yang | |
| <i>Log. Methods Comput. Sci.</i> , 16(1):Paper No. 17, 24, 2020. ↗ 📄 | |
| Logarithmic hyperseries | 2019 |
| With Lou van den Dries and Joris van der Hoeven | |
| <i>Trans. Amer. Math. Soc.</i> , 372(7):5199–5241, 2019. ↗ 📄 | |

Number systems with simplicity hierarchies II	2018
With Philip Ehrlich	
<i>J. Symb. Log.</i> , 83(2):617–633, 2018.  	
Resolution depth of positive braids	2015
With David Krcatovich and Patricia O'Brien	
<i>J. Knot Theory Ramifications</i> , 24(14):1550075, 12, 2015.  	

PREPRINTS

Hilbert polynomials for finitary matroids	2022
With Antongiulio Fornasiero	
<i>Preprint.</i>  	
Liouville closed H_T-fields	2022
<i>Submitted.</i>  	
Hyperserial fields	2021
With Vincent Bagayoko and Joris van der Hoeven	
<i>Submitted.</i>  	

AWARDS AND ACHIEVEMENTS

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
Honorable mention, Graduate Research Fellowship Program	2016
U.S. Junior Oberwolfach Fellows NSF Grant (DMS-1641185)	2016

INVITED TALKS

Mathematical Research Institute of Oberwolfach, Germany	November 2022
Mini-Workshop on Topological and Differential Expansions of o-minimal Structures.	
AMS Spring Central Sectional Meeting at Purdue University	April 2020
Model Theory and its Applications Special Session, canceled due to COVID-19.	
North American meeting of the Association of Symbolic Logic at UC Irvine	March 2020
Model Theory Special Session, canceled due to COVID-19.	
Summer Illinois Mathematics Camp at UIUC	July 2018
A discussion of the basics of knot theory aimed at a high school audience.	
Mathematical Research Institute of Oberwolfach, Germany	December 2016
Mini-Workshop on Surreal Numbers, Surreal Analysis, Hahn Fields and Derivations.	
Joint Math Meetings in Seattle, WA	January 2016
Surreal Numbers Special Session.	

SEMINAR TALKS

Logic Seminar at The Ohio State University	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
Lyon-Paris Logic Seminar	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

CONTRIBUTED TALKS

Joint Math Meetings in Denver, CO	January 2020
North American meeting of the Association of Symbolic Logic at CUNY	May 2019
XIX Graduate Student Conference in Logic at UW-Madison	April 2018
XVIII Graduate Student Conference in Logic at UIUC	April 2017
North American meeting of the Association of Symbolic Logic at UIUC	March 2015

TEACHING AND MENTORSHIP EXPERIENCE

McMaster University	Fall 2022 –
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- Instructor for Engineering Mathematics I (Fall 2022).

University of Illinois at Urbana-Champaign	Fall 2015 – Fall 2020
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- Led discussion sections 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
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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
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University of Illinois at Urbana-Champaign

Workshop leader for a three-day workshop on advanced linear algebra topics for graduate students.

Graduate Team Leader	Summer 2019
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Illinois Geometry Lab

Led a group of three undergraduate students in a project about three-player combinatorial games.

Graduate Mentor	Spring 2018
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Illinois Geometry Lab

Helped lead a group of four undergraduate students in a research project studying functions recognizable by Büchi automata.

OTHER WORK EXPERIENCE

- Summer Intern** Summer 2016
Wolfram Research
Helped develop a way to code theorems from general topology in the Wolfram language.
- Program for Interdisciplinary and Industrial Internships at Illinois** Summer 2015
University of Illinois at Urbana-Champaign
Researched random matrix pencils as part of an NSF funded research program.
- Lead Mathematics Tutor** August 2014 – May 2015
Ohio University Tutoring Services
- CRLA Certified Mathematics Tutor** February 2012 – May 2015
Ohio University Tutoring Services
- Summer Undergraduate Research Institute in Experimental Mathematics** Summer 2014
Michigan State University

PROFESSIONAL SERVICE

- Co-organizer** January 2023
ASL Special Session on Tame Geometry and Applications to Analysis at the JMM
- Co-organizer** Spring 2017, Spring 2021
Graduate Student Conference in Logic XVIII and XXII
- Graduate Student Member** Fall 2019 – Spring 2020
UIUC Math Department Undergraduate Affairs Committee
- Referee:** Algebra and Number Theory.
- Reviewer:** Mathematical Reviews.