ELLIOT KAPLAN

Hamilton Hall Room 103D ⋄ 1280 Main Street West ⋄ Hamilton, Ontario L8S 4K1

kaplae2@mcmaster.ca ⋄ elliotakaplan.github.io

EMPLOYMENT

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: *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

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

PUBLICATIONS

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) ⬀ ⅊

Liouville closed H_T-fields   2023
J. Algebra, vol. 628, pp. 265–327 (2023) ⬀ ⅊

T-convex T-differential fields and their immediate extensions   2022
Pacific J. Math., vol. 320, no. 2, pp. 261–298 (2022) ⬀ ⅊

Surreal ordered exponential fields   2021
With Philip Ehrlich
J. Symb. Log., vol. 86, no. 3, pp. 1066–1115 (2021) ⬀ ⅊

Generic derivations on o-minimal structures   2021
With Antongiulio Fornasiero
J. Math. Log., vol. 21, no. 2, paper no. 2150007, 45p. (2021) ⬀ ⅊

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) ⬀ ⅊

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) ⬀ ⅊

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) ⬀ 🄿

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) ⬀ 🄿

Number systems with simplicity hierarchies II 2018
With Philip Ehrlich
J. Symb. Log., vol. 83, no. 2, pp. 617–633 (2018) ⬀ 🄿

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

Monotone T-convex T-differential fields 2023
With Nigel Pynn-Coates
Submitted. ⬀ 🄿

Hilbert polynomials for finitary matroids 2022
With Antongiulio Fornasiero
Submitted. ⬀ 🄿

Hyperserial fields 2021
With Vincent Bagayoko and Joris van der Hoeven
Submitted. ⬀ 🄿

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

Graduate College Conference Travel Award 2016

U.S. Junior Oberwolfach Fellows NSF Grant (DMS-1641185) 2016

TALKS AT WORKSHOPS AND SPECIAL SESSIONS

Centre International de Rencontres Mathématiques February 2025
Conference on Tame Geometry.

AMS-UMI International Joint Meeting in Palermo July 2024
Model Theory Special Session.

CMS Summer Meeting at the University of Saskatchewan June 2024
Mathematical Logic in Canada Special Session.

North American meeting of the Association of Symbolic Logic at Iowa State May 2024
Model Theory Special Session.

AMS Sectional Meeting at the University of Wisconsin-Milwaukee	April 2024
Model Theory Special Session.	
Banff International Research Station	February 2024
Workshop on Exponential Fields.	
Banff International Research Station	February 2023
Workshop on Neostability.	
Oberwolfach Research Institute for Mathematics	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.	
Oberwolfach Research Institute for Mathematics	December 2016
Mini-Workshop on Surreal Numbers, Surreal Analysis, Hahn Fields and Derivations.	
Joint Math Meetings in Seattle, WA	January 2016
AMS-ASL Special Session on Surreal Numbers.	

SEMINAR AND COLLOQUIUM TALKS

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

Casual Math Seminar at McMaster	March 2023

An introduction to combinatorial game theory for a graduate student audience.

Summer Illinois Mathematics Camp at UIUC	July 2018

A discussion of the basics of knot theory for a high school audience.

CONTRIBUTED TALKS

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

TEACHING AND MENTORSHIP EXPERIENCE

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

Co-organizer: McMaster-Waterloo Model Theory Learning Seminar	Spring 2024
Co-organizer: ASL Special Session on Tame Geometry and Applications to Analysis *At the Joint Math Meetings in Boston, MA*	January 2023
Co-organizer: Graduate Student Conference in Logic XXII	March 2021
Organizer: Nonstandard Analysis Learning Seminar at UIUC	Spring 2021
Co-organizer: Graduate Student Conference in Logic XVIII	April 2017
Graduate student member: Undergraduate Affairs Committee at UIUC	2019 – 2020
Referee: Algebra and Number Theory.	
Reviewer: Mathematical Reviews.	

OTHER WORK EXPERIENCE

Summer Intern *Wolfram Research*	Summer 2016
Summer Researcher at UIUC *Part of the Program for Interdisciplinary and Industrial Internships at Illinois*	Summer 2015
Undergraduate Researcher at Michigan State University *Part of the Summer Undergraduate Research Institute in Experimental Mathematics*	Summer 2014
CRLA Certified Mathematics Tutor with Ohio University Tutoring Services *Lead Mathematics Tutor from Fall 2014 through Spring 2015*	2012 – 2015