ELLIOT KAPLAN

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EMPLOYMENT

McMaster University   July 2021 – present

· 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

Liouville closed H_T-fields   2023+
J. Algebra, to appear. ⬀ ⬇

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, pp. Paper No. 2150007, 45, 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, pp. Paper No. 17, 24, 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, pp. 1550075, 12, 2015. ⬀ 🗎

PREPRINTS

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

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

TALKS AT WORKSHOPS AND SPECIAL SESSIONS

Banff International Research Station February 2023
Workshop on Neostability.

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.

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
Surreal Numbers Special Session.

SEMINAR TALKS

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
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
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   Fall 2022 – present

· Instructor for Engineering Mathematics I (Fall 2022).

University of Illinois at Urbana-Champaign   Fall 2015 – Fall 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.

OTHER WORK EXPERIENCE

Summer Intern   Summer 2016
Wolfram Research

Summer Researcher   Summer 2015
University of Illinois at Urbana-Champaign
Part of the Program for Interdisciplinary and Industrial Internships at Illinois

Lead Mathematics Tutor   2014 − 2015
Ohio University Tutoring Services

CRLA Certified Mathematics Tutor   2012 − 2015
Ohio University Tutoring Services

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

PROFESSIONAL SERVICE

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

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.