ELLIOT KAPLAN

Department of Mathematics ⋄ 1409 W Green St. ⋄ Urbana, Illinois 61801
eakapla2@illinois.edu ⋄ elliotakaplan.github.io

EDUCATION

University Illinois at Urbana-Champaign 2015-2021

- Doctorate in mathematics, expected May 2021
- Dissertation: *Derivations on o-minimal fields*
- Advisor: Lou van den Dries

Undergraduate at Ohio University 2011-2015

- Bachelor of Science through the 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-minimal fields, valued fields, and differential fields.

PUBLICATIONS

Generic derivations on o-minimal structures 2020+
With Antongiulio Fornasiero.
J. Math. Log., to appear.

Pairs of theories satisfying a Mordell-Lang condition 2020
With Alexi Block Gorman and Philipp Hieronymi.
Fund. Math., 251(2):131–160, 2020.

Distality for the asymptotic couple of the field of logarithmic transseries 2020
With Allen Gehret.
Notre Dame J. Form. Log., 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.
Log. Methods Comput. Sci., 16(1):Paper No. 17, 24, 2020.

Logarithmic hyperseries 2019
With Lou van den Dries and Joris van der Hoeven.
Trans. Amer. Math. Soc., 372(7):5199–5241, 2019.

Number systems with simplicity hierarchies II 2018
With Philip Ehrlich.
J. Symb. Log., 83(2):617–633, 2018.

Resolution depth of positive braids 2015
With David Krcatovich and Patricia O'Brien.
J. Knot Theory Ramifications, 24(14):1550075, 12, 2015.

PREPRINTS

T-convex T-differential fields and their immediate extensions 2021

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

Surreal ordered exponential fields 2020
With Philip Ehrlich.

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

Gateway Excellence Scholarship (full tuition) 2011 - 2015

Dean's Scholarship 2012 - 2015

Philosophy Department Student Achievement Award 2013 - 2015

Honorable mention, COMAP Mathematical Contest in Modeling 2013, 2015

Outstanding Presentation Award in the MAA Student Paper Session MathFest 2014

INVITED TALKS

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

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 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

Undergraduate Mathematics Symposium at UIC October 2014

Young Mathematicians Conference at Ohio State University August 2014

MathFest in Portland, OR August 2014

WORK EXPERIENCE

Teaching Assistant 2015-2021
University of Illinois at Urbana-Champaign

- 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)
- Facilitated group work, helped students prepare for exams, helped write worksheets and exams.

Workshop Leader Summer 2019
University of Illinois at Urbana-Champaign

- Led a three day workshop on advanced linear algebra topics for graduate students.
- Part of the Program for Interdisciplinary and Industrial Internships at Illinois, an NSF funded research program.

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

- NSF funded research program.
- Researched random matrix pencils for seven weeks, supervised by a visiting professor.
- Worked as part of a team of four within a program of fourteen students.

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

MENTORSHIP AND PROFESSIONAL SERVICE

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

Graduate Team Leader Summer 2019
Illinois Geometry Lab
Led a group of three undergraduate students in a project about three-player combinatorial games.

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