

Jake Huryn

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EDUCATION

The Ohio State University

B.S. in Mathematics with Honors

Overall GPA (4.00 Scale): 3.933; Major GPA: 4.00

Expected May 2021

Cuyahoga Falls High School

May 2017

PAPERS AND PREPRINTS

- V. Bergelson, J. Huryn, and R. Raghavan. "Discordant sets and ergodic Ramsey theory." ([arXiv:2011.14515](https://arxiv.org/abs/2011.14515)).
- S. Chmutov and J. Huryn. "A few more trees the chromatic symmetric function can distinguish." In: *Involve* 13.1 (2020), pp. 109–116. ([arXiv:1901.04034](https://arxiv.org/abs/1901.04034))

RESEARCH EXPERIENCE

REU in mathematical analysis at the University of Tennessee at Chattanooga

Summer 2021

NSF-funded research program

UTC

- Topics TBA; accepted in Spring 2020, program postponed from Summer 2020

Discordant sets and ergodic Ramsey theory

Spring 2019–Autumn 2020

Undergraduate research assistant advised by Prof. Vitaly Bergelson

The Ohio State University

- Conducted research in Ramsey theory on the properties of non-piecewise syndetic sets with positive density (*discordant sets*) in the context of numerous fields of mathematics, such as combinatorics, number theory, ergodic theory, and topological and symbolic dynamics.
- Awarded a research scholarship by the Arts and Sciences Honors Committee of The Ohio State University *Spring 2020*

The chromatic B -symmetric function and acyclic orientations of signed graphs

Summer 2020

"Knots and Graphs" research program advised by Prof. Sergei Chmutov

The Ohio State University

<https://people.math.osu.edu/chmutov.1/wor-gr-su20/wor-gr.htm>

- Conducted university-funded research on the chromatic B -symmetric function, a generalization of Stanley's chromatic symmetric function to signed graphs
- Extended a result of Stanley on acyclic orientations with a fixed number of sinks to signed graphs, joining Stanley's result with a theorem of Zaslavsky which relates acyclic orientations of a signed graph to its chromatic polynomial
- Presentations:
 - The Ohio State Young Mathematician's Conference *Summer 2020*

The chromatic symmetric function and Stanley's tree conjecture

Summer 2018–Summer 2019

"Knots and Graphs" research program advised by Prof. Sergei Chmutov

The Ohio State University

<https://people.math.osu.edu/chmutov.1/wor-gr-su19/wor-gr.htm>

<https://people.math.osu.edu/chmutov.1/wor-gr-su18/wor-gr.htm>

- Conducted university-funded research on graph theory and Stanley's chromatic symmetric function
- Generalized a previous partial result of Martin, Morin, and Wagner on Stanley's tree conjecture
- Studied the properties of expressions of the chromatic symmetric functions in various bases for the ring of symmetric functions
- Presentations:
 - Midwest Graph Theory Conference LXII *Autumn 2019*
 - The Ohio State Young Mathematician's Conference *Summer 2018*

WORK EXPERIENCE

The Ohio State University Department of Mathematics

MATH 4181H: Honors Analysis I mentor and grader

Autumn 2020

- Held biweekly "mentoring sessions" with another mentor to aid students of MATH 4181H, many of whom were being exposed to proof-based mathematics for the first time
- Graded homework

Student Instructional Associate

Autumn 2018, Autumn 2019, Spring 2020

MATH 1148, MATH 1150, MATH 1130

- Led two bi-weekly recitations of ≈ 30 students
- Administered and graded quizzes and exams
- Assisted students outside of recitation in office hours and tutoring

HONORS AND AWARDS

- ▷ Robert C. Tumbleson merit-based scholarship
Department of Mathematics 2020
The Ohio State University
- ▷ Undergraduate Research Scholarship 2020
College of Arts and Sciences Honors Program *The Ohio State University*
- ▷ Earl J. Mickle Memorial Fund merit-based scholarship 2019
Department of Mathematics *The Ohio State University*
- ▷ Rickard Fund merit-based scholarship 2018-2019
Department of Mathematics *The Ohio State University*
- ▷ Edward G. Mayes merit- and need-based scholarship 2018
College of Arts and Sciences *The Ohio State University*
- ▷ Maximus Scholarship
The Ohio State University Autumn 2017–Spring 2021

TALKS AND PRESENTATIONS

- Reading Classics seminar** *The Ohio State University*
- ▷ “Partitions and the pentagonal number theorem” Autumn 2020
 - ▷ “The history of set theory and the continuum hypothesis” Spring 2020
 - ▷ “Egyptian fractions” Autumn 2019
 - ▷ “Coxeter friezes” Spring 2019
 - ▷ “The Peano curve” Autumn 2018
 - ▷ “Purely periodic continued fractions” Spring 2018
- What Is . . . ? seminar** *The Ohio State University*
- ▷ “What is the Grigorchuk group?” Summer 2019
 - ▷ “What is FRACTRAN?” Summer 2018
- Other talks**
- ▷ “Representation theory of finite groups” Autumn 2019
Given as a part of the The Ohio State University Directed Reading Program
 - ▷ “Kakeya’s needle problem over finite fields” Autumn 2018
Given in MATH 5529H: Honors Combinatorics
 - ▷ Numerous lectures on graph theory, the chromatic symmetric function,
and Jones’s construction of links from Thompson’s group Summer 2018, Summer 2019
Given as a part of the “Knots and Graphs” research program Summer 2020

SKILLS AND ACTIVITIES

Skills

- ▷ Proficient in \LaTeX and \tikz (including \tikzcd)
- ▷ Familiar with Python and C++

Activities

- ▷ Participated in The Ohio State University Directed Reading Program studying representation theory Autumn 2019
- ▷ Participated in the “Código” Python bootcamp May 2019
- ▷ Member of the Radical Pi math club at OSU Autumn 2017–Present
- ▷ Score of 30 on the 2019 Putnam Competition (rank of 276 out of 3,428)
- ▷ Score of 10 on the 2018 Putnam Competition (rank of 1,157 out of 4,623)