

# BEN YOUNG

benyoung@cs.wisc.edu  
<https://ben-m-young.github.io/>

## EDUCATION

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University of Wisconsin-Madison, Madison, WI, USA

September 2021 - *present*

- Ph.D. in Computer Science
- Advisor: Prof. Jin-Yi Cai

Case Western Reserve University, Cleveland, OH, USA

August 2017 - May 2021

- B.S., M.S. in Computer Science, B.A. in Mathematics
- Advisor: Prof. Harold Connamacher
- GPA: 4.0 of 4.0

## HONORS AND AWARDS

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Cisco Systems Distinguished Graduate Fellowship

2025-2026

- Department of Computer Sciences, UW-Madison

Best Student Paper, Track A, ICALP 2025

2025

- For “The Converse of the Real Orthogonal Holant Theorem”.

Graduate Student Instructor Award

2023-2024

- Department of Computer Sciences, UW-Madison

## PUBLICATIONS (author order is alphabetical except for [5])

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- [1] **The Converse of the Real Orthogonal Holant Theorem.**

Ben Young

*52nd International Colloquium on Automata, Languages, and Programming (ICALP 2025)* : 136:1-136:20.

**Best Student Paper, Track A.**

- [2] **Quantum Algorithms for Discrete Log Require Precise Rotations.**

Jin-Yi Cai and Ben Young

*ACM Transactions on Quantum Computing* 6.3 (Sept. 2025)

- [3] **Equality on all  $\#$ CSP Instances Yields Constraint Function Isomorphism via Interpolation and Intertwiners.**

Ben Young

[arXiv: 2211.13688 \[cs.DM\]](#), 2022

Submitted to *The Electronic Journal of Combinatorics*.

- [4] **Planar  $\#$ CSP Equality Corresponds to Quantum Isomorphism - A Holant Viewpoint.**

Jin-Yi Cai and Ben Young

*50th International Colloquium on Automata, Languages, and Programming (ICALP 2023)* : 33:1–33:17.

*ACM Transactions on Computation Theory* 16.3 (Sept. 2024).

- [5] **The Number of Labeled  $n$ -ary Abelian Groups and Totally Symmetric Medial Quasigroups.**

Ben Young, Austin Hacker, and Harold Connamacher

*Journal of Algebraic Combinatorics* 57 (Jan. 2023).

## TEACHING

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### Head Teaching Assistant and Guest Lecturer

- UW-Madison: An Introduction to the Theory of Computation (CS 520) Spring 2025

### Grader and Guest Lecturer

- UW-Madison: Graph Homomorphisms, #CSP, Tensor Networks (CS 880) Fall 2024

### Head Teaching Assistant

- UW-Madison: Introduction to Algorithms (CS 577) Fall 2022 - Spring 2023

### Teaching Assistant

- UW-Madison: Introduction to Algorithms (CS 577) Spring 2022 & Fall 2023 - Fall 2024
- UW-Madison: Introduction to Discrete Mathematics (CS 240) Fall 2021
- Case Western Reserve University: Theoretical Computer Science (EECS 343) Spring 2020 & Spring 2021

## TALKS

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**ICALP 2025**, Aarhus, Denmark July 2025

- “The Converse of the Real Orthogonal Holant Theorem”.

**Guest Lecture**, CS 520, UW-Madison Apr. 1, 2025

- Turing-recognizable and undecidable languages.

**Theory of Computing Seminar**, UW-Madison Feb. 13, 2025

- “The Converse of the Real Orthogonal Holant Theorem and Symmetric Tensor Diagonalization”

**Guest Lecture**, CS 880, UW-Madison Oct. 1 and 3, 2024

- “Planar #CSP Equality Corresponds to Quantum Isomorphism - A Holant Viewpoint”

**Combinatorics Seminar**, UW-Madison Feb. 19, 2024

- “General and Planar #CSP Equality Corresponds to Classical and Quantum Isomorphism”

**ICALP 2023**, Paderborn, Germany July 2023

- “Planar #CSP Equality Corresponds to Quantum Isomorphism - A Holant Viewpoint”

## SERVICE

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**Mentor** – UW-Madison Computer Science Graduate School Summer Mentoring Program 2025

**Reviewer** – *ICALP 2025* 2025

**Reviewer** – *Advances in Combinatorics* 2024