Anakin Dey

Curriculum Vitæ

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www.anakin.phd

Research Interests

Algebraic and Geometric Complexity Theory, Algebraic Combinatorics, Computational Algebra

Education

Autumn 2024 – Spring 2030 **PhD Mathematics**, *The Ohio State University*
Advised by Dave Anderson and Zeyu Guo
Master's awarded in Autumn 2026 for successful candidacy exam

Autumn 2020 – Spring 2024 **BSLAS Mathematics**, *University of Illinois Urbana-Champaign*
Minor in Computer Science
Graduation with Highest Distinction

Publications

2026 **An Exponential Top Fan-In Hierarchy for Border Depth-4 Circuits**
Anakin Dey, Pranjal Dutta, and Zeyu Guo
Submitted to STOC 2027, ECCC

2025 **Debordering Closure Results in Determinantal and Pfaffian Ideals**
Anakin Dey and Zeyu Guo
Innovations in Theoretical Computer Science 2026, LIPIcs

2025 **Optimizing a Model-Agnostic Measure of Graph Counterdeceptiveness via Reattachment**
Anakin Dey, Sam Ruggerio, Manav Vora, and Melkior Ornik
IEEE Cyber Awareness and Research Symposium 2025, IEEE

2024 **Classifying Primitive Solvable Permutation Groups of Rank 5 and 6**
Anakin Dey, Kolton O'Neal, Duc Van Khanh Tran, Camron Upshur, and Yong Yang
Journal of Group Theory, Degruyter

2022 **Post-Disaster Repair Crew Assignment Optimization Using Minimum Latency**
Anakin Dey and Melkior Ornik
IEEE International Smart Cities Conference 2022, IEEE

Talks

2026 **An Exponential Top Fan-In Hierarchy for Border Depth-4 Circuits**
AlGeCom XXVIII Lightning Talk

2026 **What Is Hilbert's 17th Problem?**
OSU What Is. . . ? Seminar

2026 **Debordering Closure Results in Determinantal and Pfaffian Ideals**
9th Workshop on Algebraic Complexity Theory

2026 **Symmetric Functions and the Affine Symmetric Group**
RTG 2026 Workshop: Affine Combinatorics and Quantum K-Theory

2026 **Debordering Closure Results in Determinantal and Pfaffian Ideals**
UIUC Theory Seminar

2026 **Debordering Closure Results in Determinantal and Pfaffian Ideals**
Purdue Theory CS/Math Seminar

Last Edited on 2026-11-18 at 13:30:17. See anakin.phd/cv for the most up-to-date version.

2026 **Debordering Closure Results in Determinantal and Pfaffian Ideals**
Innovations in Theoretical Computer Science 2026

2025 **The Affine Symmetric Group**
OSU Affine Grassmannian Seminar

2025 **What Is Algebraic Complexity Theory?**
OSU What Is. . . ? Seminar

2024 **Classifying Primitive Groups using Computer Algebra and Change Making**
China-US Group Theory Summit 2024

2023 **Classifying Primitive Groups using Computer Algebra and Change Making**
UIUC Department of Mathematics Undergraduate Friday Seminars

2023 **Classifying Primitive Solvable Permutation Groups of Rank 5 and 6**
China Three Gorges University Algebra and Combinatorics Seminar

2022 **Post-Disaster Repair Crew Assignment Optimization Using Minimum Latency**
IEEE International Smart Cities Conference 2022

Research Experience

Spring 2024 **Undergraduate Research Assistant**, *ICLUE*
Under Prof. Alexander Yong, University of Illinois Urbana-Champaign

Summer 2023 **Undergraduate Research Assistant**, *REU in Algebra, Combinatorics, and Statistics*
Under Prof. Yong Yang, Texas State University

Autumn 2021 – Autumn 2023 **Undergraduate Research Assistant**, *LEADCAT Lab*
Under Prof. Melkior Ornik, University of Illinois Urbana-Champaign

Directed Reading

Spring 2023 **Fine-Grained Complexity Theory**
Under Prof. Timothy M. Chan, University of Illinois Urbana-Champaign

Winter 2022 – Spring 2023 **Algebraic Complexity Theory**
Under Robert Andrews, University of Illinois Urbana-Champaign

Student Organizations

Spring 2026 – Current **Graduate Representative**, *OSU Cycle*
Ohio State University Cycle

Spring 2025 – Current **Vice President**, *OSU MGSA*
Ohio State University Math Graduate Student Association

Autumn 2022 – Spring 2024 **Founder and President**, *ACM SIGma*
Special Interest Group in Math and Algorithms

Autumn 2021 – Spring 2024 **Admin**, *ACM SIGPwny*
Special Interest Group in Cybersecurity

Teaching Experience

Autumn 2025 – Current **Graduate Teaching Associate**, *The Ohio State University*

- Math 3345 – Foundations of Higher Mathematics
  (*Spring 2026*, Grader)
- Math 1151 – Calculus I
  (*Autumn 2025*, TA)

Spring 2021 – Spring 2024 **Undergraduate Course Assistant**, *University of Illinois Urbana-Champaign*

- CS 225H – Honors Data Structures (*Spring 2024*)
- CS 374 – Introduction to Algorithms and Models of Computation (*Spring 2022 – Autumn 2022, Autumn 2023*)
- CS 173 – Discrete Structures (*Spring 2021 – Spring 2024*)
- CS 475 – Models of Computation (*Spring 2023*)
- CS 125 – Introduction to Computer Science (*Spring 2021*)

Mentoring

Autumn 2026 – Current **Mentor**, *OSU Cycle*

- How Hard is it to Compute Polynomials? (*Autumn 2026 – Spring 2027*, 2 students)

Organization

Autumn 2026 **STEM Puzzlehunt**

Spring 2026 **Cycle/MGSA/Spectra Puzzlehunt**

Spring 2026 **5th Annual OSU Cycle Conference**

Spring 2026 **Commutative Algebra Reading Group**

Spring 2025 – Current **MGSA Seminar**

Fellowships and Awards

Autumn 2026 **David Goss Technology & Academic Innovation Stimulus Fund**
The Ohio State University Department of Mathematics

Autumn 2024 – Spring 2025 **University Fellowship**
The Ohio State University Graduate School

Posters

2026 **Debordering Closure Results in Determinantal and Pfaffian Ideals**
AlGeCom XXVII

2026 **Debordering Closure Results in Determinantal and Pfaffian Ideals**
OSU Computer Science and Engineering Poster Expo

2023 **Classifying Primitive Solvable Permutation Groups of Rank 5**
TXST REU Poster Session

Service

Autumn 2026 – Current **Steering Committee**
Combinatorics Online

Autumn 2026 – Current **Graduate Student Representative**
The Ohio State University Department of Mathematics Graduate Studies Committee

Reviewer

- FOCS 2026

Professional Experience

Summer 2022 **Software Engineering Intern**, *CME Group*

Summer 2021 **Software Engineering Intern**, *SiteIQ*