

# Michael Morrow, Ph.D.

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## Education

**University of Kentucky**, Kentucky, USA

Ph.D. Mathematics

Advisor: Uwe Nagel

May 2024

**University of Kentucky**, Kentucky, USA

M.S. Mathematics

April 2021

**Central Washington University**, Washington, USA

B.S. Mathematics

June 2019

## Research Interests

Computational and combinatorial commutative algebra, asymptotic algebra

## Publications and Preprints

*Computing Gröbner Bases and Free Resolutions of  $OI$ -Modules*

with U. Nagel, accepted by [Journal of Algebra](#), 2023. Available at [arXiv:2303.06725](#).

*The OIGroebnerBases Package for Macaulay2*

submitted, 2023. Available at [arXiv:2310.04891](#).

*Symmetric Free Resolutions*

with U. Nagel, in preparation.

## Software

*OIGroebnerBases.m2*

a Macaulay2 package, 2023. Available at [github.com/morrowmh/OIGroebnerBases](https://github.com/morrowmh/OIGroebnerBases).

Also available as part of the official [Macaulay2](#) release as of version 1.23.

*FIResolutions.m2*

a Macaulay2 package, in preparation. See [github.com/morrowmh/FIResolutions](https://github.com/morrowmh/FIResolutions).

## Awards and Fellowships

**Summer Research Fellowship**

University of Kentucky

Summer 2023

**Eaves Fellowship**

University of Kentucky

Summer 2022

**Dale and Mary Jo Comstock Scholarship**

Central Washington University

Spring 2019

## Talks and Presentations

*Computational Methods for  $OI$ -Modules*

- Ph.D. Thesis Defense, University of Kentucky

April 2024

*Syzygy Computations in  $OI$ -Modules*

- (Invited) Joint Mathematics Meetings, San Francisco, CA
- (Invited) CMS Winter Meeting, Montreal, QC

January 2024  
December 2023

*Finite Computation of Gröbner Bases for  $OI$ -Modules*

- (Invited) Algebra and Geometry Seminar, University of New Mexico
- Qualifying Talk, University of Kentucky

October 2023  
December 2021

*Computing Gröbner Bases and Free Resolutions of  $OI$ -Modules*

- (Poster) BrianFest, University of Nebraska-Lincoln

August 2023

*Gröbner Bases and Syzygies of Sequences of Related Ideals*

- Spectra Survey of Mathematics Conference, University of Kentucky
- (Invited) AMS Fall Southeastern Sectional Meeting, University of Tennessee-Chattanooga

May 2023  
October 2022

*Computing Free Resolutions of OI-Modules*

- Algebra Seminar, University of Kentucky

November 2022

*Equivariant Gröbner Bases*

- Master's Talk, University of Kentucky

April 2021

## Conferences and Workshops

### Joint Mathematics Meetings

San Francisco, CA

January 2024

### BrianFest

University of Nebraska-Lincoln

August 2023

### Summer CAMP

Professional development workshop

University of Nebraska-Lincoln

August 2023

### Commutative Algebra and its Interaction with Algebraic Geometry

SLMath summer school

University of Notre Dame

May 2023

### Spectra Survey of Mathematics Conference

University of Kentucky

May 2023

### AMS Fall Southeastern Sectional Meeting

University of Tennessee-Chattanooga

October 2022

### WARTHOG

Infinite-dimensional methods in commutative algebra

University of Oregon

June 2022

### Macaulay2 Conference

Cleveland State University

May 2022

## Teaching Experience

### Instructor of Record, University of Kentucky

- Contemporary Math
- Matrix Algebra
- College Algebra

Spring 2024

Spring 2023

Summer 2021, Summer 2020

### Recitation Leader, University of Kentucky

- Elementary Calculus
- Calculus II
- Calculus III
- Calc for Life Sciences
- Finite Math
- Algebra and Trig for Calculus

Fall 2023 (Lead TA\*), Spring 2020

Fall 2022

Spring 2022

Fall 2021

Spring 2021

Fall 2020, Fall 2019

### Algebra Prelim Peer Coach\*\*, University of Kentucky

May 2023, December 2022

\*: mentors other TAs and provides peer observations and feedback

\*\*: organizes several 3-hour long group problem sessions and coaches peers on test-taking strategies

## Service and Outreach

### UKY MathLab Undergraduate Research Project Leader

University of Kentucky

Fall 2023

### Algebra Seminar Organizer

University of Kentucky

Fall 2023

### Graduate Student Peer Mentor Program

University of Kentucky

Fall 2020 - Fall 2022

### Julia Robinson Math Festival

University of Kentucky

November 2019

### Kittitas Valley Math Circle

Central Washington University

September 2017 - June 2019