VINH NGUYEN

Phone: (215) 410-9460   820 Vine St
Email: nguye229@purdue.edu   West Lafayette, IN 47906

EDUCATION

PhD Purdue University, Mathematics   Aug 2015 to Present
Advisor: Bernd Ulrich

BS Pennsylvania State University, Mathematics   Aug 2010 to May 2013
Magna Cum Laude

RESEARCH STATEMENT

My research is in commutative algebra. I'm mainly interested in studying generalized multiplicities and determinantal ideals. I'm specifically interested in studying the Buchsbaum-Rim, mixed, ε, and j multiplicities. I also apply a combinatorial approach, using Stanley-Reisner theory, to study properties of determinantal ideals.

PUBLICATIONS AND PREPRINTS

- (with Hunter Simper) *Generic generalized upper triangular matrices*, (2021), preprint arXiv:2110.02264

- (with Kelsey Walters) *Lech's inequality for the Buchsbaum-Rim multiplicity and mixed multiplicity*, Proc. Amer. Math. Soc. **149** (2021)

TEACHING EXPERIENCE

Purdue University, West Lafayette   Aug 2015 to Present
Teaching Assistant, Department of Mathematics

- **MA 503 Instructor** – Abstract Algebra   Fall 2021
    o   Conducted weekly problem-solving sessions for first year graduate students

- **MA 527 Grader** – Advanced Mathematics For Engineers   Summer 2021
  And Physicists I

- **MA 162 Substitute Instructor** – Plane Analytic Geometry   Spring 2021
  and Calculus II
    o   Substitute recitation instructor for 4 weeks

- **MA 303 Grader** – Differential Equations and Partial Differential   Spring 2021
  Equations for Engineering and the Sciences

- **MA 16010 Lecturer** – Applied Calculus I   Fall 2020
  - Delivered weekly lectures, and recorded them for online learners

- **MA 162i Instructor** – Plane Analytic Geometry and Calculus II   Spring 2020
  - Flipped classroom course
  - Facilitated weekly problem-solving sessions

- **MA 162i Instructor** – Plane Analytic Geometry and Calculus II   Spring 2019
  - Flipped classroom course
  - Facilitated weekly problem-solving sessions

- **MA 161i Instructor** – Plane Analytic Geometry and Calculus I   Fall 2018
  - Flipped classroom course
  - Facilitated weekly problem-solving sessions

- **LON-CAPA Special Assignment**   Spring 2018
  - Reviewed and categorized calculus 1 exam problems on
    an online learning system

- **MA 158 Lecturer** – Precalculus - Functions and Trigonometry   Fall 2017
  - Conducted weekly lectures

- **MA 262 Grader** - Linear Algebra and Differential Equations   Summer 2017

- **MA 161 Instructor** – Plane Analytic Geometry and Calculus I   Spring 2017
  - Conducted recitation, developed and graded quizzes

- **MA 261 Instructor** – Multivariate Calculus   Fall 2016
  - Conducted recitation, developed and graded quizzes

- **MA 262 Grader** – Linear Algebra and Differential Equations   Summer 2016

- **MA 351 Grader** – Elementary Linear Algebra   Spring 2016

- **MA 161 Instructor** – Plane Analytic Geometry and Calculus I   Fall 2015
  - Conducted recitation, developed and graded quizzes

PRESENTATIONS

Invited Talks

- AMS Spring Western Sectional Meeting – TBD   Spring 2022

- JMM – Heights of Ideals of Minors of Matrices with a Given Rank   Spring 2022

- Notre Dame Algebraic Geometry/Commutative Algebra Seminar –   Spring 2021
  Lech's Inequality for Buchsbaum-Rim Multiplicity and Mixed Multiplicity

Purdue Commutative Algebra Seminar

- Generalized Principal Ideal Theorem; Heights of Ideals of Minors   Fall 2020

- Lech's Inequality for Buchsbaum-Rim Multiplicity and Mixed Multiplicity   Fall 2019

Purdue Student Colloquium

- Hilbert Polynomial and Hilbert Multiplicity   Spring 2019

- Introduction to Category Theory   Fall 2017

- Introduction to Abstract Nonsense: Category Theory for the Not-Yet   Fall 2016
  working Mathematician

CONFERENCES AND WORKSHOPS ATTENDED

- eCARs. Early Commutative Algebra Researchers – Virtual   Summer 2020

- ALGECOM-XVIIII. Algebra, Geometry and Combinatorics Day –   Spring 2020
  University of Illinois at Urbana-Champaign

- Conference on Commutative Algebra and its Interaction with   Summer 2019
  Algebraic Geometry: In Honor of Bernd Ulrich – University of Notre Dame

- Algebraic Geometry and its Broader Implications: In Honor of   Spring 2018
  Robin Hartshorne – University of Illinois at Chicago

AWARDS AND HONORS

- Abhyankar Award – Awarded yearly to a graduate student at Purdue for   Spring 2021
  outstanding thesis work in commutative algebra

- Phi Beta Kappa honor society   Spring 2013

PROGRAMMING LANGUAGES

C++, C#, Java, Macaulay2