Pallav Goyal

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Education

- **University of Chicago**
  Ph.D. in Mathematics, 2017-present
  Master of Science, 2017-2019
  Advised by Victor Ginzburg
  GPA - 4.0/4.0

- **Indian Institute of Technology Kanpur**
  B.S. in Mathematics and Scientific Computing, 2013-2017
  Minor in Algorithms
  CPI - 9.9/10.0

Research Interests

- Representation Theory, Algebraic Geometry, Combinatorics

Publications

3. **Almost commuting scheme of symplectic matrices and quantum Hamiltonian reduction**
   Pallav Goyal
   (in preparation)

2. **Invariant Theory of finite general linear groups modulo Frobenius powers**
   Pallav Goyal
   Communications in Algebra, Vol. 46, no. 10 (2018)

1. **Projective Normality of G.I.T. quotient varieties modulo Finite Groups**
   Pallav Goyal, Santosha Pattanayak
   Communications in Algebra, Vol. 45, no. 7 (2017)

Honors and Fellowships

- **McCormick Fellowship**
  University of Chicago, 2017-2019

- **Director's Gold Medal**
  Indian Institute of Technology Kanpur, 2017
  For outstanding all round achievement and leadership among the graduating batch students

- **General Proficiency Medal**
  Indian Institute of Technology Kanpur, 2017
  For being ranked 1 in the Department of Mathematics and Statistics

- **Academic Excellence Award**
  Indian Institute of Technology Kanpur, 2014,2015,2016
  For outstanding academic performance during each of the academic sessions

- **International Collegiate Programming Contest**
  Finalist for the ICPC Regionals - Amritapuri in 2013, 2014

- **Bronze Medal at the 54th IMO**
  54th International Mathematical Olympiad, Santa Marta, Colombia

- **Kishore Vaigyanic Protsahan Yojana Fellowship**
  Department of Science and Technology, Government of India, 2013

- **National Talent Search Scholarship**
  National Council of Education, Research and Training, 2009

Programs and Conferences attended

10. **Quantized symplectic singularities and applications to Lie theory** (June 2022), Massachusetts Institute of Technology

9. **On the crossroads of algebra, geometry and physics**, (May 2022) Yale University

8. **Lie Theory and Poisson Geometry** (January 2022), CIRM

7. **Compactifications, configurations, and cohomology** (October 2021), Northeastern University

6. **Summer School in Algebraic Combinatorics** (June 2021) (via Zoom)

5. **DG Methods in Commutative Algebra and Representation Theory** (May 2020) (via Zoom)

4. **Midwestern Algebraic Geometry Graduate Conference** (May 2020) (via Zoom)

3. **Quantum Structures in Algebra and Geometry** (August 2019), Northeastern University

2. **Graduate Summer School on the Geometry and Modular Representation Theory of Algebraic Groups** (August 2019), Stony Brook University

1. **AAGAA - Arithmetic and Algebraic Geometry** (August 2019), University of Michigan, Ann Arbor

Service

- **Co-organiser, Student Representation Theory Seminar**, University of Chicago

  - Deformation Theory and Deligne's Conjecture (Fall 2020)
  - Perverse Sheaves and Kazhdan-Lusztig Conjectures (Winter 2020)
  - D-modules and Beilinson-Bernstein Localization (Fall 2019)

- **Co-organiser, WOMP** - Warmup and Orientation Program for incoming math graduate students, University of Chicago (2019)

Personal Development

- **Academic and Professional Writing (LRS)** (Fall 2022)
  Course offered by the Writing Program (UChicago) on tools for making academic research and technical writing more lucid and effective for readers

- **College Teaching Certificate** (expected Winter 2023)
  Program offered by Chicago Center for Teaching to help instructors reflect on their pedagogical style and to learn and implement better teaching practices through seminars, workshops and feedback from professionals

- **College Teaching and Course Design** (Spring 2020)
  Course offered by Chicago Center for Teaching on student-centered pedagogical strategies for designing and implementing an undergraduate course

- Workshops attended geared towards teaching:

  - Workshop on Inclusive Teaching (Spring 2022)
  - Seminar and Workshop on Teaching statement and Portfolio (Winter 2022)
  - Fundamentals of Teaching in Science (Fall 2021)

Teaching and Mentorship

- **Instructor of record**

  - Calculus II (Fall 2022)
  - Studies in Mathematics II (Winter 2022)
  - Mathematical Methods for Social Sciences (Fall 2021)
  - Calculus III (Spring 2021)
  - Linear Algebra (Fall 2020, Winter 2021)
  - Elementary Functions and Calculus III (Spring 2020)
  - Elementary Functions and Calculus II (Winter 2020)
  - Elementary Functions and Calculus I (Fall 2019)

- **Teaching assistant**

  - Analysis in $\mathbb{R}^n$ (Spring 2019)
  - Abstract Linear Algebra (Winter 2019)
  - Representation theory of finite groups (Fall 2018)

- **UChicago DRP supervision**

  - Jakob Wellington - Elliptic Curves Cryptography (Fall 2022)
  - Andrey Shapiro - Spectral graph theory (Spring 2022)
  - Alex Sheng - Invariant theory of finite groups (Winter 2022)
  - Drew Melman-Rogers - Adjoint functor theorem (Fall 2021)
  - Judson Kuhrman - Representation theory of compact Lie groups (Spring 2021)
  - Yuchen Chen - Linear algebraic groups (Winter 2021)

- Ruochuan Xu - An introduction to knot theory (Fall 2020)
- Neil Mauskar - Fourier analysis (Spring 2020)
- Claudia Yao, Ajay Mitra - Representation theory of complex semisimple Lie algebras (Winter 2020)
- Thiviya Kumaran - Deep learning (Fall 2019)
- Elizabeth Ombrellaro - Group theory and ring theory (Spring 2019)
- Spencer Dembner - Dirichlet's class number formula for imaginary quadratic fields (Winter 2019)
- Roy McKenzie - An introduction to generating functions (Fall 2018)

- **UChicago REU supervision**

  - Alex Sheng - Elliptic curves with complex multiplication (2022)
  - Ben Goldman - An overview of Lie Theory and Peter-Weyl Theorem (2021)
  - Henry Hale - Representations of quivers and Gabriel's theorem (2021)
  - John Naughton - Schubert Calculus and Enumerative Geometry (2021)
  - Yueheng Zhang - Spectral graph theory (2020)
  - Anushka Murthy - Introduction to matroids (2020)
  - Sayali Gove - Probabilistic methods in Combinatorics (2020)

Languages and Skills

- Hindi (Native), English, German (Level I), Spanish (Level I)
- LaTeX, C/C++, Python, SageMath, Mathematica, HTML-CSS, Octave

Last updated: November 15, 2022