

# Himanshu Gupta

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# University of Delaware

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**Research Interests:** Algebraic graph theory, Algebraic combinatorics, Random walks, and Spectral hypergraph theory.

## Education

**University of Delaware** . . . . . Newark, DE USA  
*PhD Mathematics (expected May 2023)* . . . . . 2018 - Present  
– Advisor: Sebastian Cioabă  
*MS Mathematics* . . . . . 2018 - 2020  
**Indian Institute of Science** . . . . . Bangalore, India  
*MS Mathematics* . . . . . 2015 - 2018  
– Advisor: Arvind Ayyer  
**Delhi University** . . . . . Delhi, India  
*B.Sc. (Honors) Mathematics* . . . . . 2012 - 2015

## Publications

1. On the eigenvalues of the graphs  $D(5, q)$ , with Vladislav Taranchuk. (Submitted and under peer review).
2. The least Euclidean distortion constant of a distance-regular graph, *Discrete Applied Mathematics*, Vol. 325, 212-225 (2023), with Sebastian Cioabă, Ferdinand Ihringer, and Hirotake Kurihara. .
3. Constructions of cospectral graphs with different zero forcing numbers, *The Electronics Journal of Linear Algebra*, Vol. 38, 280-294 (2022), with Aida Abiad, Boris Brimkov, Jane Breen, Thomas R. Cameron, and Ralihe R. Villagran.
4. On the eigenvalues of Grassmann graphs, Bilinear forms graphs and Hermitian forms graphs, *Graphs and Combinatorics*, 38, Article number: 30 (2022), with Sebastian Cioabă.
5. *Correlation Function in the Finite Toom Model*, M.S. thesis under the supervision of Prof. Arvind Ayyer, Indian Institute of Science, Bangalore, India (2018).

## Awards and Honors

Baxter Sloyer Teaching Award . . . . . 2021-2022  
*Department of Mathematical Sciences, University of Delaware*  
UNIDEL Fellowship . . . . . Spring 2021  
*Department of Mathematical Sciences, University of Delaware*  
Graduate Teaching Assistantship . . . . . 2018-2023  
*Department of Mathematical Sciences, University of Delaware*  
IISc Graduate Fellowship . . . . . 2015-2018  
*Indian Institute of Science (IISc), Bangalore, India*  
INSPIRE Scholarship for Higher Education . . . . . 2012-2015  
*Ministry of Science and Technology, India*

## Research Talks

### Past Talks

Algebraic Graph Theory International Webinar . . . . .	Online - Nov 15, 2022
Discrete Math Seminar, University of Delaware . . . . .	Newark, DE - Nov 04, 2022
Discrete Math Seminar, Illinois State University . . . . .	Online - Oct 20, 2022
Discrete Math Seminar, Rutgers University . . . . .	New Brunswick, NJ - Oct 10, 2022
Combinatorics and Optimization Seminar, Carnegie Mellon University . . . . .	Pittsburgh, PA - Oct 6, 2022
Discrete Math Seminar, Princeton University . . . . .	Princeton, NJ - Sep 29, 2022
Discrete Math and Combinatorics Seminar, University of South Carolina . . . . .	Columbia, SC - Sep 23, 2022
Combinatorics Seminar, University of Wisconsin-Madison . . . . .	Online - Sep 19, 2022
Discrete Math Seminar, Arizona State University . . . . .	Tempe, AZ - Sep 16, 2022
10th PhD Summer School in Discrete Mathematics . . . . .	Rogla, Slovenia - Jun 27, 2022
Discrete Math Seminar, University of Delaware . . . . .	Newark, DE - Oct 7, 2021
Hallenbeck Graduate Student Seminar, University of Delaware . . . . .	Newark, DE - Nov 4, 2020
Summer Research Symposium, University of Delaware . . . . .	Newark, DE - Aug 16, 2019

## Teaching Experience

### Instructor

Math 210 - Discrete Math I - (30 students) . . . . .	Fall 2022
Math 241 - Calculus I - (20 students) . . . . .	Summer 2022
Math 210 - Discrete Math I - (31 students) . . . . .	Spring 2022
Math 242 - Calculus II - (22 students) . . . . .	Winter 2022
Math 242 - Calculus II - (58 students) . . . . .	Winter 2021
Math 221 - Calculus I - (16 students) . . . . .	Winter 2020

### Teaching Assistant

Math 230 - Finite Mathematics and its Applications . . . . .	Fall 2021
Math 241 - Calculus I . . . . .	Fall 2020
Math 221 - Calculus I . . . . .	Spring 2020
Math 221 - Calculus I . . . . .	Fall 2019
Math 221 - Calculus I . . . . .	Spring 2019
Math 241 - Calculus I . . . . .	Fall 2018

## Academic Service

Co-organizer, Special Session on Models and Methods for Sparse (Hyper) Network Science . . . . .	Jan, 2023
<i>American Mathematical Sciences, Joint Mathematics Meeting (JMM)</i>	
Co-organizer, Hallenbeck Graduate Student Seminar . . . . .	2022-2022
<i>Department of Mathematical Sciences, University of Delaware</i>	
President . . . . .	2020-2021
<i>University of Delaware Chapter of SIAM</i>	
Secretary . . . . .	2019-2020
<i>University of Delaware Chapter of SIAM</i>	
Newsletter Coordinator . . . . .	2017-2018
<i>Indian Institute of Science Chapter of SIAM</i>	

AWM Peer student Mentor . . . . . 2019-2020  
*Department of Mathematical Sciences, University of Delaware*

GEMS Undergraduate Student Mentor . . . . . Summer 2019  
*Department of Mathematical Sciences, University of Delaware*

**Reviewer of journals:** *Discrete Mathematics, Finite Fields and Their Applications, Linear Algebra and its Applications, Operators and Matrices, and The Electronic Journal of Linear Algebra.*

**Conferences, Workshops, and Summer Schools**

MSRI Summer School on Random Graphs . . . . . Berkeley, CA - Jul 5-15, 2022

10th PhD Summer School in Discrete Mathematics . . . . . Rogla, Slovenia - Jun 26-Jul 2, 2022

AMS: MRC Models and Methods for Sparse (Hyper) Network Science . . . . . Java Center, NY - Jun 5-11, 2022

7th Lake Michigan Workshop on Combinatorics and Graph Theory . . . . . Chicago, IL - May 14-15, 2022

AIM: Workshop on Spectral graph and hypergraph theory . . . . . Online - Dec 6-10, 2021

Fields: Workshop on Algebraic Graph Theory and Quantum Information . . . . . Online - Aug 23-27, 2021

AMS: MRC Finding Needles in Haystacks . . . . . Online - Jun 6-12, 2021

Erdős Lecture Series . . . . . Memphis, TN - Sep 12-14, 2019

Finite Geometry and Extremal Combinatorics . . . . . Newark, DE - Aug 21-24, 2019

31st Cumberland Conf. on Comb., Graph Theory and Computing . . . . . Orlando, FL - May 18-19, 2019

15th Graduate Student Combinatorics Conference . . . . . Philadelphia, PA - Apr 5-7, 2019

AMS Sectional Meeting #1141 . . . . . Newark, DE - Sep 29-30, 2018

Summer school on Representations Theory of Finite Groups . . . . . Chennai, India - Jun 12 - Jul 1, 2017

**Computer Skills and Training**

- $\LaTeX$ , SageMath, Python, and Wolfram Mathematica.
- Training in Python coding, Statistical Learning, Data science, and optimization, INMAS, Spring 2021.

**Interests**

- Photography, Sketching, Reading, Hiking, and Cooking.

— *Last updated on Nov 15, 2022.*