

Dheer Noal

Visiting Assistant Professor

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Employment

Visiting Assistant Professor, University of Wyoming, Laramie August 2022 – May 2023

Graduate Teaching Assistant, University of Delaware, Newark September 2017 – May 2022

Education

Ph.D. Mathematics, University of Delaware, Newark September 2017 – May 2022

Dissertation Title: Spectral Turán Theorems and Related Problems

Advisors: Professor Sebastian Cioabă, Professor Michael Tait

M.S. Mathematics, University of Delaware, Newark September 2017 – May 2020

Integrated M.Sc. Mathematics August 2012 – May 2017

National Institute of Science Education and Research, Bhubaneswar

Advisor: Professor Kamal Lochan Patra

Thesis: *Design Theory*

Research Interest

Discrete Mathematics, in particular **spectral graph theory** and **extremal graph theory** alongside related areas in graph and hypergraph theory, **extremal combinatorics**, **combinatorial design theory**

Publications

Submitted Preprints

- (5) Sebastian Cioabă, Dheer Noal D., Michael Tait, [A spectral Erdős-Sós theorem](#), *arXiv:2205.00990* (2022).
- (4) Sebastian Cioabă, Dheer Noal D., Michael Tait, [The spectral even cycle problem](#), *arXiv:2206.03339* (2022).

Publications

- (3) Dheer Noal D., Liying Kang, Yongtao Li, Zhenyu Ni, Michael Tait, and Jing Wang, [Spectral extremal graphs for intersecting cliques](#), *Linear Algebra and its Applications*, Volume 644, 2022, Pages 234-258.
- (2) Sebastian M. Cioabă, Dheer Noal D., and Michael Tait, [The spectral radius of graph with no odd wheels](#), *European Journal of Combinatorics*, Volume 99, 2022, 103420.
- (1) Dheer Noal D. and Kamal Lochan Patra, [Maximizing distance between center, centroid and subtree core of trees](#), *Proceedings-Mathematical Sciences*, 129.1 (2019), 1-18.

Recent Talks

AMS Fall Western Sectional Meeting - Special Session on Graphs and Matrices,
University of Utah, October 22-23 2022

Conference Talk: *Spectral Turán problems for some bipartite graphs*

University of Colorado Denver, Discrete Mathematics seminar, October 06 2022

Seminar Talk: *Spectral Turán Problems on trees and even cycles*

Illinois Institute of Technology, Discrete Mathematics seminar, October 07 2022

Invited Talk: *Spectral Turán Problems on trees and even cycles*

University of Denver, September 30 2022

Colloquium Talk: *Spectral Turán Problems on trees and even cycles*

University of Wyoming, Algebra, Combinatorics, and Number Theory seminar, August 30 2022

Invited Talk: *Spectral Turán Problems on trees and even cycles*

Chuzhou University, August 25 2022

Invited Talk: *Spectral Turán Problems on trees and even cycles*

Algebraic Graph Theory Seminar, University of Waterloo, July 04 2022

Seminar Talk: *Spectral Turán problems for trees and even cycles*

AMS Contributed Paper Session on Enumerative and Extremal Combinatorics, January 2022

Conference Talk: *The spectral radius of graphs with no odd wheels*

Graduate Student Combinatorics Conference, University of California San Diego, March 2022

Conference Talk: *Spectral Turán Problems*

Winter Research Symposium, University of Delaware, February 2022

Conference Talk: *Spectral Turán Problems*

Hallenbeck Graduate Student Seminar, University of Delaware, December 2021.

Seminar Talk: *Spectral Turán Problems*

Binghamton University Graduate Combinatorics, Algebra, and Topology Conference, November 2021

Conference Talk: *Spectral Turán Problems*

SIAM Conference on Discrete Mathematics, July 2021

Mini-symposium on Spectral Graph Theory

Conference Talk: *The spectral radius of graphs with no odd wheels*

Algebraic Graph Theory Seminar, University of Waterloo, June 2021

Seminar Talk: *The spectral radius of graphs with no odd wheels*

Discrete Mathematics Seminar, University of Delaware, April 2021

Seminar Talk: *The spectral radius of graphs with no odd wheels*

Winter Research Symposium, University of Delaware, February 2021.

Poster Presentation: *Spectral radius of graphs with no odd wheels*

Hallenbeck Graduate Student Seminar, University of Delaware, December 2020.

Seminar Talk: *Graphs maximizing spectral radius and number of edges*

GEMS Seminar, University of Delaware, August 2018

Seminar Talk: *A problem on partial sums in $\mathbb{Z}_n \setminus \{0\}$*

Academic Awards

Summer Doctoral Fellowship, The Graduate College, University of Delaware, June 2021 – August 2021.

UNIDEL Fellowship, Department of Mathematical Sciences, University of Delaware, February 2021 – May 2021.

UNIDEL Fellowship, Department of Mathematical Sciences, University of Delaware, September 2021 – February 2021.

GEMS Fellowship, Department of Mathematical Sciences, University of Delaware, June 2018 – August 2021.

KVPY Fellowship, Awarded annually to around 100 undergraduate students annually. Aimed at encouraging students to take up research careers in the areas of basic sciences. Funded by the Department of Science and Technology of the Government of India, 2013 – 2017.

INSPIRE Fellowship, A national level scholarship awarded to undergraduates of the basic sciences, to encourage pursuit of doctoral research. Funded by the Department of Science and Technology of the Government of India, 2012 – 2013.

Schools and Conferences attended

Models and Methods for Sparse (Hyper) Network Science, hosted by Mathematics Research Communities (June 2022).

7th Lake Michigan Workshop on Combinatorics and Graph Theory (2022), hosted by University of Illinois, Chicago.

17th Graduate Student Combinatorics Conference (GSCC 2022), in-person workshop and virtual conference hosted by University of California San Diego.

Summer School in Discrete Mathematics (2022), hosted online by Universidad de Chile.

Workshop on Spectral graph and hypergraph theory: connections and applications (2021), hosted online by AIM.

Binghamton University Graduate Combinatorics, Algebra, and Topology Conference (2021), hosted online by Binghamton University.

SIAM Discrete Mathematics Conference (2021), hosted online by SIAM.

Open Problems in Algebraic Combinatorics (2021), hosted online by the University of Waterloo.

Moscow Conference on Combinatorics and Applications (2021), hosted online by the Moscow Institute of Physics and Technology, Laboratory of Combinatorial and Geometric Structures.

Erdős Lecture Series (2019), at the University of Memphis, Memphis.

MSRI Summer School on the Polynomial Method (2019), at the Mathematical Sciences Research Institute, Berkeley.

Vijyoshi National Science Camp (2013), at the Indian Institute of Science, Bengaluru.

Research Projects

GEMS Project: Constructing New Families of Difference Sets

With Professor Qing Xiang and Denys Fenchenko at the Department of Mathematical Sciences, University of Delaware, 2018.

Summer Project: Centre, Centroid and Subtree Core of trees

Under the guidance of Professor Kamal Lochan Patra at the National Institute of Science Education and Research (NISER), Bhubaneswar, 2016.

Summer Project: General Topology and Basics of Quotient Topology, Topological Groups and Linear Algebra

Under the guidance of Professor Basudeb Datta at the Indian Institute of Science (IISc), Bengaluru, 2014.

Teaching Experience

As Instructor of Record:

- Fall 2022: Math 2200 (Calculus 1)

As Teaching Assistant:

- Spring 2022: Math 242 (Analytic Geometry and Calculus B, Discussion & Laboratory)
- Fall 2021: Math 221 (Calculus 1, Discussion)
- Fall 2020: Math 221 (Calculus 1, Discussion)
- Spring 2020: Math 242 (Analytic Geometry and Calculus B, Discussion & Laboratory)
- Fall 2019: Math 241 (Analytic Geometry and Calculus A, Discussion)
- Spring 2019: Math 230 (Finite Mathematics and Applications, Discussion)
- Fall 2018: Math 241 (Analytic Geometry and Calculus A, Discussion)
- Spring 2018: Math 230 (Finite Mathematics and Applications, Discussion)
- Fall 2017: Math 241 (Analytic Geometry and Calculus A, Discussion)

Brief description of courses at University of Wyoming

- MATH 2200: Calculus 1 (This is the first semester out of three of Calculus for STEM majors)

Brief description of courses at University of Delaware

- M241: Analytic Geometry and Calculus A (This is the first semester out of three of Calculus for STEM majors)
- M242: Analytic Geometry and Calculus B (This is the second semester out of 3 of Calculus for STEM majors)
- M221: Calculus I (This is the only semester of Calculus for Business and Life Sciences majors)
- M230: Finite Mathematics with Applications (This course is meant for Business and Life Sciences majors and they are introduced to topics such as Probability, Stochastics and Combinatorics)

Academic Service

I have refereed manuscripts for the following journals:

Discrete Mathematics

Linear Algebra and its Applications

Journal of Combinatorics

Graphs and Combinatorics

Operators and Matrices

European Journal of Combinatorics

Vice President, *SIAM University of Delaware Student Chapter*, August 2021–May 2022.

I chaired a session at the 17th Graduate Student Combinatorics Conference (GSCC 2022).

I was a volunteer at the Delaware Science Olympiad, 2020.

I have mentored two graduate students as part of the AWM peer mentoring program (University of Delaware).