



UNC
GREENSBORO

MATHEMATICS & STATISTICS

NEWSLETTER

ACADEMIC YEAR 2022-23

A MESSAGE FROM THE DEPARTMENT HEAD



Dear Friends of UNCG Math Stats,

As I complete my tenure as Department Head on July 31, 2023, and return to regular faculty life, I would like to share with you some exciting highlights about our Department during the Academic Year (AY) 2022-23.

In spite of the many challenges (COVID-19 and never-ending budget cuts, in particular), I enjoyed my tenure as Head, and together we achieved a lot of success on various fronts.

We hosted three major conferences: AISC 2022, RMSC 2022, and PDE 2023. We saw 5 of our Ph.D. students graduate and saw all of them secure exciting positions before graduating. Faculty in the department continued to publish excellent research articles, make impactful conference presentations, and secure several prestigious external grants. We also hosted 65 colloquium talks.

We welcomed a new Full Professor in Igor Erovenko who was promoted after compiling a strong teaching, research, and service record during his 20-year tenure at UNCG. You will read more about Igor a bit later in this newsletter. We also welcomed a new Associate Professor in Yi Zhang who was promoted to Associate Professor after 6 years of outstanding record at UNCG as Assistant Professor.

We said goodbye to our distinguished colleague Xiaoli Gao who chose to leave us after 9 years of service to take a job at Facebook. Another colleague, Brett Tangedal, announced his retirement after serving the department for 15 years. We wish Brett a very happy retirement.

I invite you to browse this newsletter to learn more about the various exciting things that have happened in the Department during AY 2022-23. I hope we will continue to enjoy your patronage.

Sincerely,
Sat Gupta

Fellow of the American Statistical Association

RESEARCH SPOTLIGHT

Dr. Igor Erovenko



joined the department in 2002 after completing his Ph.D. degree that same year from University of Virginia. He rose through the ranks and was approved for promotion to Full Professor this spring. He currently serves as Associate Department Head.

Dr. Erovenko's research focuses on using game theory to model various biological phenomena. The two major areas of focus of his research are evolutionary graph theory and behavioral epidemiology.

Evolutionary graph theory combines graph theory, probability theory, and mathematical biology to study evolutionary processes in finite structured populations. It uses graphs to represent populations and their interactions in structured environments and investigates how strategies evolve over time in different network structures under various updating mechanisms. It can also reveal how network structure affects the process of natural selection, the emergence of cooperation, and other social phenomena. Dr. Erovenko studies the evolution of behaviors in various social dilemmas using a realistic framework of multiplayer interactions on networks.

Behavioral epidemiology often uses game theory to model how people make decisions about their health-related behaviors, such as getting vaccinated or isolating themselves, in response to the risk of infection and the actions of others. It investigates how people perceive and respond to information, incentives, and social norms during an epidemic, as well as how their behavior affects the transmission dynamics and outcomes of the disease.

Dr. Erovenko's work in this direction has led to a recent collaborative three-year \$1 million grant award from the National Science Foundation. It is called Project INSIGHT: INclusion of challenges from Social Isolation Governed by Human behavior through Transformative research in epidemiological modeling. This project involves 4 diverse universities, and Dr. Erovenko is a Principal Investigator representing UNC Greensboro.

More information can be found at

sites.google.com/uncg.edu/igor/

EXTERNAL GRANTS IN AY 2022-23

We received two new NSF grants in AY 2022-23: a REU grant and a RMSC conference grant.

REU GRANT

Sat Gupta as PI and Scott Richer, Jianping Sun, Thomas Weighill, and Sadia Khalil as Co-PIs received new NSF funding for three years (2023-25, \$405,000) to support the Statistics REU program at UNCG. The Math Stats department has a long history of NSF supported REU programs since 2006, first in Mathematical Biology and then in Statistics since 2018.

RMSC GRANT

Thomas Weighill as PI and Sat Gupta, Igor Erovenko, Jianping Sun and Michael Hull as Co-PIs received new NSF funding for three years (2023-25, \$49,980) to support the annual UNCG-RMSC student conference. This conference series has a long history with continuous NSF support.



The 11 students in the 2023 REU program (from left to right) are Melissa Hall, Venu Poruri, Kayiba Boboto, Noah Croach, Nathan McEntire, Bailey Meche, Omar Garcia, Francisco Carrillo-Villagrana, Mae George, Jamie Lin, and Geoffrey Kleinberg.

PREVIOUS EXTERNAL GRANTS OVER THE PAST 4 YEARS

The Department has had tremendous success with external grants over the past 4 years. In 2021-22 we saw a record number of external grants. Maya Chhetri and Cliff Smyth received Simons Foundation grants (2022-27, \$42,000 each); Dan Yasaki (PI) and Monika Goel (Co-PI) received NSF grant (\$93,470); Igor Erovenko is Co-PI on a 3-year NSF grant (\$220,000); Sat Gupta is Co-PI on a 5-year 3.4 million NSF grant; Tom Lewis is Co-PI on a \$33,000 VI NASA EPSCoR grant; Shivaji received a one-year NSF grant (\$80,000); and John Stufken received a 3-year \$150,000 NSF grant.

In 2020-21, Xiaoli Gao, Dan Yasaki and Yi Zhang received 5-year Simons Foundation grants (2021-26, \$42,000 each); Tom Lewis received an NSF grant as PI (2021-24, \$119,972) and another NSF grant as Co-PI (2021-24, \$114,944); and Yi Zhang secured an NSF grant as PI (2021-24, \$114,944), and another NSF grant as PI (2021-22, \$12,500). Scott Richter was Co-PI on a NICHD \$1,383,566, 3-year grant with Maryanne Perrin from the Nutrition Department serving as the PI.

In 2019-20, the Department received 3 major NSF awards (Talia Fernós (\$283,000, \$46,000), Sat Gupta (\$324,000), and R. Shivaji (\$239,000)); and one Army Research Office grant (Yu-Min Chung, \$158,000).

Dan Yasaki won the Board of Governors Alumni Teaching Excellence Award, a first for the department. He also won the Senior College Teaching Excellence Award (4th such award in recent years).



Greg Bell has been appointed Dean of the Graduate School.



Ratnasingham Shivaji received the UNCG Outstanding Faculty Mentor Award.



Igor Erovenko was promoted to Full Professor.



Lecturer Monika Goel was promoted to Senior Lecturer.



Yi Zhang was promoted to Associate Professor with permanent tenure.



AISC 2022

We hosted the biennial International Conference on Advances in Interdisciplinary Statistics and Combinatorics (AISC) during October 7–9, 2022. The conference received support from several external sponsors, including Institute for Mathematics and its Applications (IMA), National Institute of Statistical Sciences (NISS), and Springer.

The two keynote speakers were Wendy Martinez (ASA President in 2020 and recipient of the ASA Founders Award in 2017) and Srinivasa Varadhan (Frank Jay Gould Professor of Science at Courant Institute/NYU, winner of the Abel Award (2007), and winner of the National Medal of Science from President Obama (2010)). The plenary speakers were Richard Davis (Columbia University), Bobby Gramacy (Virginia Tech), Eiren Jacobson (Centre for Research into Ecological and Environmental Modelling, University of St Andrews, UK), Karen Kafadar (ASA President 2019, University of Virginia), Regina Liu (Rutgers University), and Jerry Reiter (Duke University). The conference also featured 125 other presentations spread over 29 parallel sessions.

The conference website can be found at sites.google.com/uncg.edu/aisc-2022/



Undergraduate Presentation Award Winners and Mentors (from left to right): Dr. Abhyuday Mandal; Yiren Hou, mentored by Dr. Mandal; Livia Betti and Zoe McDonald, both mentored by Dr. Miller; Dr. Steven Miller; Dr. Sadia Khalil; William McCance, mentored by Dr. Gupta and Dr. Khalil; and Dr. Sat Gupta

FACULTY AND STAFF CHANGES



Two of our colleagues left us in AY 2023. Xiaoli Gao left us after 9 years of service to take a job at Facebook. Brett Tangedal announced his retirement after 15 years of service in the department. We wish Xiaoli the very best in her new job and wish Brett a happy retirement. Both will be missed.

PDE 2023

The department virtually hosted the second UNCG Partial Differential Equations (PDE) Conference on July 9–11, 2023. The conference provided a forum for researchers to share results on recent advances in both the mathematical and computational analysis of differential equations.

Plenary talks were given by Thomas Bartsch, Alina Chertock, Manuel Del Pino, Qiang Du, Irene Fonseca, Peter Monk, and Chi-Wang Shu; 76 contributed talks were delivered; and a special presentation was made dedicating the conference to Professor Pavel Drábek. The conference had 240 registered participants from 36 countries. The series will continue in 2025.

RMSC 2022

The UNCG Regional Mathematics and Statistics Conference (RMSC) took place virtually on November 12th, 2022. This free student conference had over a hundred registered participants from six countries and included 37 talks by students on a wide variety of topics including statistics, mathematical biology and topological data analysis.

The plenary speaker, Moon Duchin from Tufts University, delivered a talk on modelling ranked choice voting. A panel of experts from academia and industry shared their experience and answered questions from participants on the topic “What can you do with a graduate degree in math or stats?”. Next year, the conference will be held in person for the first time since 2019. We have received a 3-year funding grant from NSF for hosting the conference during 2023–25 with Dr. Thomas Weighill as the Lead Organizer.

SERMON 2023

UNCG hosted The Southeast Regional Meeting On Numbers (SERMON) on May 6, 2023. The meeting included 26 precipitants and featured eleven talks.

For details see

mathstats.uncg.edu/number-theory/conferences/sermon-2023/

COLLOQUIUM SERIES IN THE DEPARTMENT

Coming out of COVID-19, we used a hybrid model for our colloquia. We are pleased that most of our colloquium talks were in-person. We hosted a total of 65 talks in the 2022-23 Academic Year—including 5 Helen Barton Lectures and 5 dissertation defenses.

RESEARCH SPOTLIGHT



Dr. Sadia Khalil is a

Visiting Assistant Professor (VAP) in the department since Fall 2022. Before coming to UNCG, she served as an Assistant Professor in the Department of Statistics at Lahore College for Women University (LCWU) in

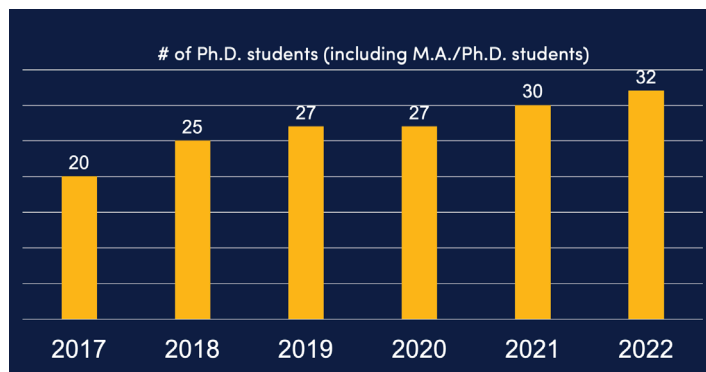
Pakistan. She completed her Ph.D. in 2017 in Statistics from National College of Business Administration and Economics (NCBA&E) under the joint supervision of Professor Muhammad Hanif Mian and Professor Sat Gupta. Dr. Khalil's research area is Sampling with particularly greater focus on Randomized Response Technique (RRT) models. She was the first researcher to examine the joint impact of measurement errors and non-response in Optional RRT models and co-authored the first paper that examined RRT models under a unified measure of estimator efficiency and model privacy. As a recognition of her strong research record, she received the Research Productivity Award from LCWU in 2023.

At UNCG, Dr. Khalil has served on the dissertation committees of Ph.D. students Badr Aloraini and Pujita Sapra, and currently serves on the dissertation committee of Wenhao Shou. Her co-authored paper with Badr Aloraini received the 2nd best paper award in the National Research Competition for Young Statisticians by Saudi Association for Statistical Sciences in 2021. She is Co-Investigator on the National Science Foundation REU Grant (DMS-2244160) for 2023–2025. She was also informally involved in the 2020–22 REU programs, co-authoring papers with her undergraduate mentees. The REU students she co-mentored received the 2nd best presentation award at AISC 2022, and the best presentation award at AISC 2021. Dr. Khalil has made many research presentations and organized sessions at various conferences. She serves as an Associate Editor for the Journal of Statistical Theory and Practice, a Springer journal.

Dr. Khalil has a strong passion for teaching and student success. During her teaching journey she has taught a wide variety of courses such as Sampling Techniques, Biostatistics, Categorical Data Analysis, Time Series Analysis, Probability, and Statistical Inference. As a brand-new VAP in Fall 2022, she requested to teach a Ph.D. level course in Sampling and did a great job in her very first teaching experience in the US.

More information can be found at sites.google.com/view/sadia-khalil

GROWTH OF OUR PH.D. PROGRAM



Thanks to University funding and aggressive recruitment efforts, the department has seen a major growth in Ph.D. enrollment in recent years. We had a total of 32 Ph.D. students at the start of Fall 2022 semester, including 5 self-funded Ph.D. students.

GRADUATED PH.D. STUDENTS



Five (5) of our Ph.D. students graduated in 2023. These include (from left to right) Ananta Acharya (postdoc position at Utah State, Advisor: Shivaji); Kalani Thalagoda (postdoc at Tulane University, Advisor: Dan Yasaki); Pujita Sapra (Visiting Assistant Professor at High Point University, Advisor: Sat Gupta); Shalmali Bandyopadhyay (Assistant Professor at UT Martin, Advisor: Maya Chhetri); and Neil Prichard (Advisor: Thomas Weighill).

We have graduated 15 Ph.D. students over the past 4 years.



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