



Odds 'n N's

Newsletter

Department of Mathematics

North Dakota State University

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Letter from the Chair

Dear Alumni of Mathematics at NDSU,

As some of you may know already, Dr. Duncan stepped down as department chair in August 2020 and is currently on leave to serve as Interim Dean in the graduate school at NDSU. I have been elected as the new department chair and am excited about this opportunity. In this newsletter I will share some of the recent developments in our department.

The year 2020 has been an eventful year that brought some unexpected challenges.

For most universities, North Dakota State University included, a main challenge consisted in determining how to deliver instruction to our students while adhering to social guidelines that made face-to-face instruction difficult.

The Math department teaches some of the largest classes on campus (Engineering, Science, and Business all require Calculus in some form). It is a source of pride in my faculty that they devised ways to deliver a mix of face-to-face and remote teaching that allowed students direct contact with their instructors, even if students and instructors were connected remotely.

It should be acknowledged that the technology implemented for instruction was made possible largely by the federal CARES

grant that NDSU received in order to allow its continued instruction during the pandemic.

We look forward to returning to full in-person instruction in fall semester. There are several initiatives that had to be postponed during the pandemic, in particular, the Sonia Kovalevsky High School Day where female high school students participate in a day of fun activities to learn more about Mathematics and employment in the Mathematical Sciences.

Last, but not least, I would like to mention the senior seminar that graduating students complete at the end of their fourth year. Despite social distancing, student participants and faculty advisors have worked successfully during the semesters and have produced exciting projects.

The projects of Spring 2020 could not be presented in live talks, so the students recorded presentations to be viewed at <https://www.ndsu.edu/pubweb/~littmann/Capstone.html>

The current senior seminar projects are being presented in remote live talks via Zoom. We look forward to return to in-person presentations at the end of next semester.

Sincerely,



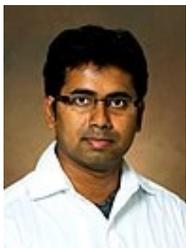
Friedrich Littmann, Chair

Departmental News



Maria Alfonseca Cubero was awarded a Simons Foundation grant, titled “Geometric and Harmonic Analysis of Convex Bodies”. Her research focuses on the study of the geometry of convex and star bodies. Convex bodies are fundamental in many areas of mathematics, physics and computer science, and convexity has important applications to medicine and tomography. Some research problems she and her graduate students and collaborators have

been working on are precisely about tomography, i.e., reconstruction of a convex body from information about its lower dimensional sections or projections in Euclidean spaces of any dimensions (not only 3) or in hyperbolic spaces.



Indranil SenGupta was awarded a Simons Foundation grant, titled “Refinement of stochastic processes via machine/deep learning”. His research focuses on the study of stochastic processes in mathematical finance, with applications in data science. In recent years, Dr. SenGupta has primarily been working on methodology associated with stochastic models related to mathematical finance, machine/deep learning-based improvement of stochastic

models, and the development of sequential hypotheses testing algorithms for streams of observations that are driven by a Lévy process. These directions share a plethora of remarkable theoretical and practical links and inspire a broad spectrum of cross-fertilized ideas.

Azer Akhmedov was promoted to Full Professor of Mathematics. Dr. Akhmedov joined our department in 2008. His research focuses on geometric aspects of groups and the dynamics of group actions. He mainly studies subgroups of Lie groups and the diffeomorphism groups of manifolds of small dimension. He is supervising one graduate student pursuing a Ph.D. degree.



Bill Martin retired in 2020 and is now a Professor Emeritus in our department. Dr. Martin came to NDSU in 1995 from the University of Wisconsin-Madison where he earned his PhD. His NDSU position was a joint appointment in Mathematics (tenure home) and the School of Education, where he served as Head from 2004-2017.



Bill’s research and service focused on mathematics education, both at the undergraduate level and in middle and high schools. He held grants funded by the NSF, EPSCOR, ND DPI or the Bush Foundation for his entire time at NDSU. He participated in a variety of outreach projects designed to attract a diverse population to continue their studies in mathematics and science, including at ND Tribal colleges and schools.

While Bill continues involvement with several Math projects, Bill and wife Chris enjoy spending more time with their 5 children and 8 grandchildren in retirement.

New Graduate Students

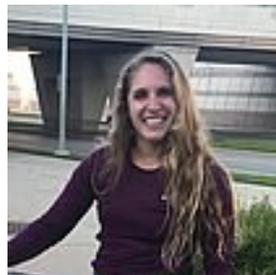


Fauzia Haque was born and raised in Dhaka, Bangladesh. She completed her graduation from University of Dhaka, majoring in mathematics. Shortly after her graduation, she started working as a mathematics teacher before coming to the USA for further study. She

works as a volunteer in two different organizations, both working with distressed children and infants. She enjoys learning new language and has interest in literature. She completed her Diploma in Spanish language and Junior level in Korean language.



Stephanie Juntunen is originally from Amsterdam, Montana. She earned both her Bachelor and Master degree in Mathematics from Montana State University in Bozeman, achieving her Masters in 2019. Her interests outside of mathematics include gardening, hiking with her doodle Zoe and most recently, teaching her infant daughter how to walk.



Courtney Magnuson is originally from Willmar, Minnesota. She earned her Bachelor's degree in mathematics in 2019 from Minnesota State University Moorhead while also earning a physics minor. Her love of math started in elementary school, and she wants to help others enjoy math, too. During her free time, she enjoys CrossFit training, coaching

high school strength and conditioning, being outside, and playing with her puppy Maggie.

Aritra Roy was born in Durgapur, located in the Burdwan district in West Bengal and was raised in Kolkata, a city which is also located in West Bengal, India. His curiosity in Mathematics had been nurtured from a very young age from his father. In 2016, he completed his Bachelor's degree in Mathematics from Maulana Azad College, which is affiliated with Calcutta University, West Bengal. In 2019, he completed his Masters in Mathematics from Jadavpur University, West Bengal. He joined NDSU as a graduate student in Spring 2021 and is interested in Applied Math. Besides math he enjoys watching anime, playing badminton, cricket, football and video games.



Heena Shaikh grew up Mumbai, the financial capital of India and later moved to Lucknow in Uttar Pradesh, about a night's drive from the capital, New Delhi. In 2020, she earned her Bachelor's degree in Mathematics and minors in Physics and Computer science from Integral University. Heena's passion for the subject began at a very young age, convinced that the complexities of the world can be understood, explained, and logically solved through the study of mathematics. Her interest grew even more in college, focusing on algebra, statistics, tensor analysis, numerical computing, calculus and trigonometry. While attending college, Heena was recognized for her outstanding achievements by the government of India and awarded two scholarships. Heena became the first in her family to earn a Bachelor's degree and the first to leave home to pursue a PhD. She began her studies at NDSU in the fall of 2020. Her other interests include music and dance.



Graduate Student News

Cody Martin earned his Ph.D. degree, advised by Azer Akhmedov. His thesis is titled "Knot Groups and Bi-Orderable HNN Extensions of Free Groups".

Eric Sarfo Amponsah earned his Ph.D. degree, advised by Artem Novozhilov. His thesis is titled "Mathematical Modeling of Epidemics: Parametric Heterogeneity and Pathogen Coexistence". He is now a lecturer at the University of Massachusetts Amherst.

Shantanu Awasthi and **Morgan O'Brien** are the winners of the departmental research award. Shantanu is advised by Indranil SenGupta and Morgan is advised by Dogan Comez.

Michael Preheim was awarded the departmental teaching award. He is advised by Josef Dorfmeister.



Shantanu Awasthi



Morgan O'Brien



Michael Preheim

Scholarship Recipients 2020

<i>Phyllis & Robert Anderson Scholarship in Memory of A. Glenn Hill</i>	Ryan Doering	<i>Hawthorn Mathematics Scholarship</i>	James Barker
<i>Gil Nelson Scholarship</i>	Luke Tollefson	<i>Jim and Joyce Johnston Math Scholarship</i>	Samuel Wolf and Brooke Bergen
<i>James H. Olsen Scholarship</i>	Dylan Zapzalka	<i>Mathilda Thompson Scholarship</i>	Kelsey Engebrose
<i>Lloyd Olson Scholarship</i>	Nathan De La Garza	<i>Hill - Tidd Scholarship</i>	Genesis Paul
<i>Fred Haring Scholarship</i>	Jacob Rinehart	<i>Ronald M. Mathsen Mathematics Scholarship</i>	Trevor Otterdahl
<i>Warren E. Shreve Scholarship</i>	Jacob Rinehart	<i>Mathematics Scholarship</i>	Luke Tollefson
<i>Lonnie D. Hass Scholarship</i>	Amy Horter	<i>Mark and Carol Kiemele Endowed Scholarship</i>	Trevor Otterdahl
<i>David Ferguson Memorial Scholarship</i>	Genesis Paul	<i>Mathematics Endowment Scholarship</i>	Lauren Sampson and Logan Kjos
<i>Davis Cope Scholarship</i>	Tessa Zima		

Donors to the Department 2020

James Young
Paul and Marilyn Johnston
Bruce and Marian Klein
David Torkelson
Warren and Roberta Shreve
Steven Lehmann
Virginai Haggart
Ronald and Lilliam Mathsen
Mrs. Thomas Drayton
Betsy Fowler
Thomas and Nancy Zmyslinski
David and LaVonne Nelson
Jeffrey and Roxanne Johnson
Peggy and John Kelley
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Arthur Bell
Edward and Claudia Scribner
June Reich
Donn and Kirsten Diederich
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Marvin and Janice Leidal
Dale and Barbara Haaek
John Bursack
Ralph Parkhouse
Gregory Binkley
Mark and Carol Kiemele
Bruce and Marian Klein
Dana Hill
Gerald and Doris Clyne
Patrick and Frances Didier
Lonnie and Mary Hass
James Meier
Gregory and Nancy Bjerke

We would like to say a big thank you to all of you who have contributed to the Mathematics scholarships and department fund.

You are playing a vital role as we educate the next generation of mathematicians!

Your partnership and support help deserving students, allow us to reach out to the local community, and give undergraduate and graduate students opportunities that would otherwise be unavailable to them.

Included is my gift of \$ _____ .

Please utilize my gift for
_____ Scholarship.

Detach and send with your gift to

NDSU Foundation and Alumni Association
P.O. Box 5144
Fargo, ND 58105

Make checks payable to NDSU Foundation and Alumni Association.

Payment option

- Check enclosed
- Charge my credit card
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Card No. _____

Expiration Date _____

Billing Address _____

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KEEP IN TOUCH!

Do you have news to share with your former classmates? Please take a minute to complete the following section and return it to us via fax, e-mail, or the postal service to the address listed below. We'd love to hear from you! Also, if you would like us to put a recent picture of you into the next newsletter, send it along.

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

TELEPHONE _____ E-MAIL _____

PLACE OF WORK _____ POSITION _____

COMMENTS, AWARDS, ACHIEVEMENTS _____
