Welcome to the Homepage of

Department of Mathematical Sciences

Check out the Advising Hours and (Virtual) Locations during the COVID-19 outbreak. Check out the Problem of the Week. Check out the Math Club.
The Department of Mathematical Sciences (DOMS) is a community of mathematicians and mathematical statisticians. We offer degrees at the Bachelor's, Master's and Doctoral level. Thus, besides our faculty and post-doctoral visitors, our community includes a large and valuable cadre of hard-working and talented undergraduate and graduate students.

At the **undergraduate** level, we have two kinds of degrees: general degrees for majors in **Mathematical Sciences** are labeled **Bachelor of Arts (BA)**, while our more intensive undergraduate degrees are labeled **Bachelor of Science (BS)**. There are both mathematics tracks and **actuarial science** tracks within both degrees. For more details, see the page on the **undergraduate programs**. A minor in mathematics is also possible.

At the **graduate** level, we have the **PhD in Mathematical Sciences, Master of Arts (MA) in Mathematics**, and **Master of Arts (MA) in Statistics** degrees. We cooperate with the Department of Teaching, Learning and Educational Leadership in their Master of Arts in Teaching (MAT) degree for future high school teachers. There is also a combined five-year BA/MAT degree. For more details, see the page on the **graduate programs**.
While our highest degree is a PhD “in Mathematical Sciences”, a significant number of our doctoral dissertations are written on research topics in mathematical statistics.

All faculty members and post-doctoral visitors are active researchers. The main areas of concentration in the department are: Algebra, Analysis, Combinatorics, Geometry/Topology and Statistics.

Read the page on Graduate Programs for information about financial support for graduate students.

The photos above were taken by Jinghao Li, Ph.D. 15'.

Latest Department News

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Binghamton Math Graduate awarded Norbert Wiener Prize

The 2019 Norbert Wiener Prize in Applied Mathematics will be awarded to Marsha Berger for her fundamental contributions to adaptive mesh refinement (AMR) and to Cartesian mesh techniques for automating the simulation of compressible flows in complex geometry.

Berger received her B.S. in mathematics from State University of New York at Binghamton in 1974. She went on to receive an M.S. and a Ph.D in computer science from Stanford University in 1978 and 1982, respectively. Marsha Berger is currently a Silver Professor in the Computer Science Department at the Courant Institute of Mathematical Sciences at NYU. She is a frequent visitor to NASA Ames, where she has spent every summer since 1990, and several sabbaticals. Her honors include membership in the National Academy of Sciences, the National Academy of Engineering, and the American Academy of Arts and Sciences. She is a Fellow of the Society for Industrial and Applied Mathematics. Berger was a recipient of the IEEE Fernbach award, and was part of the team that won the 2002 Software of the Year Award from NASA for its Cart3D software.

Marsha Berger is one of the inventors of AMR algorithms, used in solving partial differential equations to improve the accuracy of a solution by locally and dynamically resolving complex features of a simulation. Berger provided the mathematical foundations, algorithms, and software that made it possible to solve many otherwise intractable simulation problems, including those related to blood flow, climate modeling, and galaxy simulation. Her mathematical contributions include local error estimators to identify where refinement is needed, stable and conservative grid interface conditions, and embedded boundary and cut-cell methods. She is part of the team that created CART3D, a NASA code based on her AMR algorithms that is used extensively for aerodynamic simulations, and which was instrumental in understanding the Columbia Space Shuttle disaster. She also helped build GeoClaw, an open source software project for ocean-scale wave modeling. It is used to simulate tsunamis, debris flows and dam breaks, among other applications.
Erik Kjær Pedersen [1946 - 2020]

With sadness we report the passing on May 24, 2020 of Professor Emeritus Erik Kjær Pedersen, our friend and colleague.

Erik grew up in the Jutland Peninsula of his native Denmark. He received his Masters Degree with emphasis in topology at Aarhus University, then the leading mathematics center in Denmark. He moved on to doctoral studies at the University of Chicago, receiving his PhD in 1974 under the direction of Richard Lashof. He had a considerable reputation in research mathematics as author or coauthor of more than sixty research papers in leading journals.

Erik returned to Denmark and spent a significant part of his career at Odense University before moving to the United States in 1990. That was when he was recruited by the Mathematical Sciences Department at Binghamton as part of an innovative SUNY program called the Graduate Research Initiative, intended to advance the research profiles of the four SUNY centers. He remained in our department until the end of 2006 when he answered the call to return to Denmark as head of the mathematical sciences department at the University of Copenhagen.

While at Binghamton, Erik had a considerable and highly positive influence on the ethos of our department. He increased our profile, organized important conferences, and in his two terms as Department Chair provided strong leadership. Nobody ever called Erik Pedersen mild-mannered. His personality filled the room.

Michael Sorensen, Head of the Mathematical Sciences Department, University of Copenhagen writes: “It is with great sadness that I have to inform you that Erik Kjær Pedersen died earlier today at a hospital in Florida after a long illness. Last summer, it was found that Erik had a brain tumor. After an operation he got relatively well, but unfortunately the improvement did not last.

“Erik, as Head of [the Copenhagen] Department for 10 years, played an absolutely invaluable role both for the department and for Danish mathematics. During his time as Head of Department, MATH's international standing was very significantly improved so that we can now compete with the best European departments. The number of external grants, many of them very prestigious, exploded. The same is true of the number of PhD students and postdocs. In addition, Erik ensured that the department is financially sound and has considerable savings.”

Erik Kjær Pedersen is survived by his wife Inger Stricker Pedersen, their three children, and several grandchildren.

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Suggestions and comments about the website can be sent to webmaster@math.binghamton.edu