Interdisciplinary Contest in Modeling (ICM), is an international contest for high school students and college undergraduates. It is designed to develop and advance interdisciplinary problem-solving skills as well as competence in written communication. The Brown SIAM Chapter organizes a local competition for teams of Brown undergraduates. The competition lasts four days, during which time students work on open-ended problems which they must clarify (since the prompts are vague in some aspects), analyze, and propose solutions with fully LaTeX'd write-ups. Brown graduate students and faculty judge the teams’ work and select two team to compete in the national competition held by COMAP (Consortium for Mathematics and its Applications). The Brown SIAM Chapter sponsors these teams’ registration fee ($100 each). This past year, the Brown team chose problem D and won the highest award, "Outstanding Winner" among the teams that chose problem D. About 3600 other teams submitted solutions for this problem. Details about the winners of the competition and the problems they responded to are included in the attached press release.
Three minute thesis is a friendly competition aimed at getting graduate students to communicate ideas about a wide range of research topics in a small amount of time. 11 PhD students gave presentations about their research including description, methods & results in 180 seconds or less. The presentations were given to a general audience made up of undergraduates, graduate students and lecturers. Additionally four judges, made up of lecturing staff representing each of the research groups in the mathematics department and a former PhD student, ranked the presentations. The presentations were ranked based on scores in several categories including presentation style and the student's ability to communicate complicated ideas to a broad audience. The top 3 presenters were awarded prizes including a free SIAM t-shirt, magnetic hour-glass and a Raspberry Pi 3.0 computer board.
Our SIAM Student Chapter hosted a weekly working group on a topic related to applied mathematics. In the Fall our jumping off point was L.C. Evans "Weak Convergence Methods for Nonlinear Partial Differential Equations" and in the Spring we delved into the topic of Mean Field Games as discussed by Jean-Michel Lasry and Pierre-Louis Lions.

About the process of developing the web pages specifically for our SIAM Student Chapter and where are possible blind lanes along this process. Our pages are completely in czech and english and have automatic exports of calendar and much more (registration submission etc.).
IMAGING SCIENCE CAMP

Imaging Science Camp is to encourage conversation and exchange of ideas in imaging sciences, and to foster cooperation in scientific research between universities in the mainland, Hong Kong and Macau. It provides participating students with presentation and learning opportunities. The programming contains poster and oral presentations as well as some hiking and visiting industries' activities. Two prizes are set up for presentations and posters sessions during the imaging camp.
The main idea of the MATH COURSE SELECTION FORUM is so there can be a one to one conversation among undergraduate students with grad students. It is very important for a student to have the proper idea and guidance about a course selection, not only from the advisor’s point of view, but most importantly from a student’s point of view. The event encourages students from all departments; mainly focusing on all engineering departments to come and join the event. The event helps them to have a better understanding of all the courses that will be offered the upcoming semester so they can make the most appropriate course selection for their own personal goals. This was the 1st Semi Annual Event which was held on March 28 in the Presidents Conference Room.
The Graduate Student Seminar (GSS) is a weekly seminar run for graduate students, by graduate students. We offer a relaxed environment for students to practice talks they plan to give at conferences, or simply to share some interesting mathematics with peers. We also run professional development workshops, some from the past have included resume writing, and how to make a website, among others. This year, we have started opening up GSS to other STEM graduate departments, including various engineering departments and computer science. We hope that this will facilitate communication between the different departments and showcase how other scientists are using math in their research.

We will be traveling to the National Center for Atmospheric Research to get a tour of the facilities and ask questions.

This is a one-day workshop on Mathematical Modeling in Medicine. Within this topic, the morning session of this workshop is focused on medical imaging related subjects (ranging from pattern recognition to mathematical physics). The afternoon session is focused on modeling (specifically wound healing, but can also include systems biology). The aim of the workshop day is to provide a podium for PhD candidates to present their work and to get to know other PhD candidates working on similar research topics.
Invited Dr. Daniela Calvetti as a guest speaker for a campus-wide talk on Uncertainty Quantification.

Join us in welcoming guest speaker

Dr. Daniela Calvetti,
Case Western Reserve University

*Uncertainty Quantification and Numerical Analysis: Interactions and Synergies*

Abstract: The computational costs of uncertainty quantification can be challenging, in particular when the problems are large or real time solutions are needed. Numerical methods appropriately modified can turn into powerful and efficient tools for uncertainty quantification. Conversely, state-of-the-art numerical algorithms reinterpreted from the perspective of uncertainty quantification can become much more powerful. This presentation will highlight the natural connections between numerical analysis and uncertainty quantification and illustrate the advantages of re-framing classical numerical analysis in a probabilistic setting.

**When:** Friday, Feb. 24 at 1:00PM
**Where:** Math and Computer Science Room W301
Friday, March 3 Society for Industrial and Applied Mathematics (SIAM) Colloquium, Speaker: Dr. Justin Tittelfitz, Amazon Web Services

Justin Tittelfitz currently works as a research scientist at Amazon Web Services. He received his PhD in Mathematics from the University of Washington in 2013. Before joining Amazon, Dr. Tittelfitz worked as a postdoctoral researcher at Purdue University, studying acoustic inverse source problems.

Title: Applications of Machine Learning to Fraud Detection

Abstract: In this talk, we look at how techniques from machine learning and data mining can be put to use to solve many problems, from Market Basket Analysis to Fraud Detection. We will go over some basic concepts in the field, and then look at an application of the Apriori Algorithm to finding actionable patterns in large datasets.
Girls in STEM Summer camp is designed to provide an opportunity to get hands-on experience at the cutting edge of modern STEM fields. The goal of the camp is to encourage and inspire the next generation of female STEM professionals. Students are exposed to research in various areas of science and engineering, including Marine and Environmental Sciences, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering. Students are introduced to Graph Theory, Statistics, Data Mining, and Mathematical Modeling techniques and software while developing problem-solving and analytical thinking skills. Several lab experiments, field trips, and social events are planned to provide a fun and unique learning experience for everyone. SIAM Student Chapter along with other engineering departments is the organizer of this camp which is co-sponsored by GE. The SIAM Student Chapter at Florida Tech has also held summer camps in the past, organized research colloquiums across interdisciplinary fields, and continues to strive for excellence.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP
GEORGE MASON UNIVERSITY

REPRESENTATIVE: JAMES CAMERON

MATHCOUNTS 2017

Mathcounts is a national math competition for middle school students, sponsored by nonprofits and corporations to encourage students to pursue mathematics and engineering. At George Mason University, we host the largest event for Mathcounts in the country, with over fifty participating schools and around five hundred students; and every year the competition gets larger and fiercer. GMU SIAM handles every aspect of hosting the event, from setting up for the thousands of guests to coaching and grading the exams themselves, and even planning the event with representatives from the Mathcounts Foundation.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP

GEORGE WASHINGTON UNIVERSITY

REPRESENTATIVE: JINGJING XU

CONFERENCE ON APPLIED MATHEMATICS 2017

Speakers from both academic and non academic settings.

ILLINOIS INSTITUTE OF TECHNOLOGY

REPRESENTATIVE: ADAM RUMPF

CHICAGO AREA SIAM STUDENT CONFERENCE 2017

The Chicago Area SIAM Student Conference (CASSC), an event organized by the Illinois Institute of Technology, Northwestern University, and University of Illinois at Chicago SIAM Chapters, is aimed at promoting Applied Mathematics among the youngest research community. CASSC is a conference that highlights application of mathematics in diverse disciplines. It is open to graduate and undergraduate students from all fields with an interest in applied math, some examples are engineering, computer science, biology, chemistry, social sciences, and physics.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP

IMPERIAL COLLEGE

REPRESENTATIVE: ANDREA NATALE  MS41 PRESENTER

ICL-UCL DAY

This was a student conference jointly organised with University College London. We had two plenary speakers (Prof. Helen Wilson from UCL and Prof. Grigorios A. Pavliotis from ICL) and talks from PhD students from both universities. We hope this to be the first of many events aimed at promoting contact and collaboration between students from different universities in London.

INDIAN SCHOOL OF MINES, DHANBAD

REPRESENTATIVE: CHIRAG GIRDHAR  MS28 PRESENTER

WORKSHOP ON WEB DEVELOPMENT

SIAM team conducted a workshop on web development, which was focused on introducing web designing aided by HTML and CSS to the students of first year. Approximately 150 students were in attendance in the workshop. The attendees were introduced to the various basic elements of a website and were also told how a website is structured also about the back-end with hosting part using server.
One of ITB student chapter activities is MCF and MMC 2016. MCF (Mathematical Challenge Festival) is a biennial event organized by the Students Association of Mathematics (HIMATIKA ITB) since 2002. MMC (Mathematics Modeling Competition) is a program of ITB Mathematics department. This program has a collaboration with MCF ITB and held mathematics modelling competition for high school students and college students from all around Indonesia.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP

IOWA STATE UNIVERSITY

REPRESENTATIVE: PIERSON GUTHREY

WE INVITED A SPEAKER FROM GOOGLE

Through a connection in the department, we were able to get Brian Kell to give an hour lecture at our local chapter meeting.

NATIONAL UNIVERSITY OF IRELAND, GALWAY

REPRESENTATIVE: PAUL GREANEY

CAREERS IN MATHEMATICAL SCIENCE EVENING

The Galway Chapter held a 'Careers in Mathematical Science' evening in October 2016. Mathematics graduates gave short talks on their experiences of finding employment, establishing careers, and developing networks. They also tried to answer that perennial question: what do mathematicians working in industry do all day? This was our best ever attended event: over 60 students, mostly undergraduates, were present. They heard about designing car vision systems, building communications and network software, harnessing big data in insurance, developing software that tries not to keep people on hold for too long and, of course, the challenges and rewards of educating the next generation of mathematicians. The session concluded with a presentation on where our graduates are working/studying, and outlined the careers services and supports available to students. Many of the students who attended stayed on afterwards to speak to the presenters over tea/coffee.
It is a one-day symposium. The symposium included 10 talks, with two plenary talks given by Professors and 8 talks given by eminent research fellows or Ph.D. students. All the participants from different research areas, including optimization, image processing, scientific computing, data science, and finance, took the opportunity to share ideas with each other. The symposium lasted for one day with a free buffet lunch at noon and was finished with a nice pizza dinner.
LAUNCHING ACADEMIC JOB WORKSHOP

We organized a workshop for our fellow graduate students at NJIT on Launching Academic Jobs.

The Graduate Student Association and
the NJIT Graduate Math Club
(Department of Mathematical Sciences)
Are pleased to present

Launching Academic Jobs

Advice for landing your first academic job
Writing CV, teaching and research statements

Speakers:

Prof. Michael S. Siegel, PhD NYU
Prof. Lou Kondic, PhD CUNY

Location: CULM Lecture Hall 2
February 1st (4:00 – 5:00 pm)
Refreshments will be served
### NORTH CAROLINA STATE UNIVERSITY

**REPRESENTATIVE: JOSEPH HART**

**FACULTY LECTURE SERIES**

This is a monthly meeting where faculty from our university presents tools and areas of active research connected to material that we learn in our core graduate courses. It serves as a connection from classical applied math to current work. We have seen good attendance and much fruitful discussion as many of these lectures have been directly applicable to the graduate research of the attendees.

### NORTHWESTERN UNIVERSITY

**REPRESENTATIVE: JOSHUA LEVY**

**BRIDGING THE GAP LECTURE SERIES**

We bring in student speakers from a range of fields to give talks once per quarter. We have had talks from physicists, biological engineers, industrial engineers, and applied mathematicians. The audience is often even more diverse, as all students in quantitative graduate programs are invited.

### OHIO STATE UNIVERSITY

**REPRESENTATIVE: RYAN READING**

**JOHN HOLMES ON FINANCIAL MATHEMATICS**

In this talk John Holmes, a post doc at OSU, gave a talk to roughly thirty people about the different avenues that one could take in the field of finance. This included both the mathematical and non mathematical side of the field. He also referenced two books in his talk. These books included Inefficient Markets by Andrei Shleifer and My Life as a Quant by Emanuel Derman. This talk was a reflection and explanation of how John got interested in financial mathematics.

### OLD DOMINION UNIVERSITY

**REPRESENTATIVE: MICHELLE PIZZO**

**MATH AWARENESS CONFERENCE**

Held conference at ODU with attendance of around 50 people. We had three invited speakers and several contributing talks.
**OREGON STATE UNIVERSITY**

**REPRESENTATIVE: DWIGHT HOLLAND**

**MEET AND GREET WITH FORMER STUDENTS IN INDUSTRY**

My chapter frequently invites former students of the math department back to share their experiences in industry. This typically involves the former student giving a talk in a seminar, and then a meet and greet with interested students later that day.

**OTTO VON GUERICKE UNIVERSITY**

**REPRESENTATIVE: BJÖRN BARAN MS41 PRESENTER**

**FROM ACADEMIA TO THE INDUSTRY: APPLIED RESEARCH AND EARLY CAREER CHALLENGES**

Are you curious about switching from academia to industry after your Master/PhD? Do you want to engage in conversations with people that took this challenge? The workshop will enable interesting exchange and discussions that allow the visitors to learn about non-university careers, opportunities and challenges to be faced after graduate studies and to understand differences between academic and entrepreneurial research. We invited speakers from different companies and fields who will give short talks about their own career pathways and experience! The guests are former MPI doctorates, company specialists and recent graduates with different backgrounds and they come from Bayer, Thorsis, Volkswagen, Evonik, icubic, BASF, Bosch, and more!
We invite some young academics to give speeches about frontier topics in scientific computing and provide opportunities for graduate students to share ideas.
Cinemath is a film club made up of six meetings between cinema and mathematics. After each projection, a professor of the Department of Mathematics at Politecnico stimulated a debate on the film among students and academics.
This one-day event was aimed at our own undergraduate and graduate students, giving them an opportunity to hear research talks, give presentations, and participate in a poster session. In addition to the research portion of the day, we included a tour of computing facilities on campus, a data science panel, and a hands on R training session. This event was a great success with 148 students participating from 30 different departments on campus.
INDUSTRY MEETS MATHEMATICS

SIAM Aachen Chapter regularly (every quarter year) organizes an event for grad students at the RWTH: IMM, wherein established engineers and scientists from industries in Germany are invited to give a short talk about their work and career prospects in their realm of work. Apart from this, their impressions of their work in industry as opposed to academia, the reasons for their choices, etc are discussed and the floor is open to questions from students.

INTEGRATION BEE

The Integration Bee is a competition held by my chapter every semester where the students compete head to head integrating single variable functions. Spring 2016’s Integration Bee was held during the 11th Annual Spuyten Duyvil Undergraduate Mathematics Conference, which SUNY New Paltz had the privilege of hosting.
This event showcased leading experts in, and users of, applied mathematics. It aims to provide insight into how mathematics and statistics can be used to solve problems across a range of disciplines. Speakers from academia and industry will present a strong case for the value of postgraduate-level skills in applied and computational mathematics.

Speakers included:
- Dr. Stefan Güttel - University of Manchester
- Dr. Maria Bruna - University of Oxford
- Dr. Kerem Akartunali - Management Science, University of Strathclyde
- Paul Sinclair - CGI

We hosted this event on May 3rd as part of Engage with Strathclyde 2017, to around 40 delegates. Dr. Güttel kicked proceedings off with an introduction to nonlinear eigenvalue problems. He was followed by Paul Sinclair of CGI, who gave an informal talk on the way digital technology is shaping organisations followed by a Q & A. After a quick coffee break, Dr. Bruna discussed the problem of diffusion in a porous medium with a spatially varying porosity. The talks were rounded off by Dr. Akartunali, whose talk touched on some of the wide ranging applications of mathematical optimisation, from staff planning to radiotherapy treatment planning. The talks were followed by networking opportunities at a wine reception and an informal dinner.
A CONVERSATION WITH

Prof. Gil Strang came to Temple to speak at our weekly colloquium. An hour before the talk, the SIAM student chapter sponsored a small informal gathering with Prof. Strang. We provided some light snacks and we sat around the table and had a very nice conversation. We asked Prof. Strang for advice, about what he does and about various topics. About 10 people attended.
SIA&M, the Texas A&M graduate student chapter of SIAM, coordinated these seminars intended for graduate students researching or interested in areas related to industrial and applied mathematics. The seminars took place approximately twice a month during Fall and Spring. Each seminar was 50 mins to an hour long, and refreshments were provided. The seminar speakers were from academia as well as industry and national labs. In an effort to reach out to graduate students outside the Math department, the seminar flyers were distributed to Physics, Chemistry, Biology, Geo-science and several engineering departments. The final seminar was meant specially for Aerospace Engineering graduate students, delivered by an Aerospace professor in a seminar room used by the Aerospace department.

I will present three topics:

1) Combination therapy is increasingly important, but it can be challenging to determine the best possible dose levels to use. Instead of running experiments with all possible combinations of dose levels, we can use mathematical modeling and optimal control to predict the best regime. This prediction can then be tested experimentally. I will show an example for optimizing combination therapy for patients with chronic myeloid leukemia, with constraints on the allowed dose levels.

2) Mathematical models have been used for years to describe tumor size dynamics in patients who have received treatment. With the recently available immunotherapies, I propose a new mathematical model to try to better capture the different observed tumor dynamics. I will use some standard methods used in the biopharma industry to compare previous models with the new model and to examine how well they fit the data.

3) There are job openings for industry found, what background are companies looking for, and what should you include on a resume? I will give pointers for each of these questions.

Dr. Helen Moore is a mathematician and an Associate Director at Quantitative Clinical Pharmacology at Bristol-Myers Squibb in Princeton, NJ. She received her PhD in mathematics in 1995 from Stony Brook University. Over a period of 11 years in academia, she won two teaching awards and received a National Science Foundation grant for her research. She returned to the east coast in 2014 to join Bristol-Myers Squibb. She uses mathematics and statistics to model diseases and drug concentrations to improve drug development and to optimize drug regimens. Dr. Moore was recently elected to serve on the governing Council of the Society for Industrial and Applied Mathematics (SIAM) for 2017-2019.

To learn more about SIAM and become a member, visit [siam.math.tamu.edu](http://siam.math.tamu.edu)

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The most classic problem in all of the calculus of variations is the brachistochrone problem. Indeed, this problem led to the development of the subject. The problem is to determine the curve joining two points in a vertical plane, along which a particle falling from rest under the influence of constant gravity travels from the higher to the lower point in the least time. It is well known that the answer is a cycloid with its cusp at the starting point. But suppose the two points are the apart and the constant gravity model is replaced with the attractive inverse square law. What is the shape of the curve now?

Another classic problem, but in the area of integral equations, is the capillary problem. (Whereas brachistochrone means least time, capillary means same time.) The problem is to determine a planar curve such that the time required for a particle to travel from rest to its lowest point, under the influence of constant gravity, is independent of its initial placement on the curve. It is proved that, like the brachistochrone, the solution to this problem is the cycloid. But again, suppose the initial and final points are far apart and the constant gravity model is replaced with the attractive inverse square law. What is the solution now? I will discuss the answers to (and provide the inspiration for) these two questions during this presentation.

Dr. Hurdado received his PhD in aerospace engineering from Texas A&M in 1995. From 1995-2000 he worked at Sandia National Laboratories, first in experimental structural dynamics and then in intelligent systems, robots, and controls. He returned to Texas A&M in 2001 and has been a professor in the department of aerospace engineering since. Dr. Hurdado is also the director for interdisciplinary engineering programs in the College of Engineering.

To learn more about SIAM and become a member, visit [siam.math.tamu.edu](http://siam.math.tamu.edu)
Each year, we give scholarships to selected students in the Department of Mathematics & Statistics at TTU to recognize outstanding mathematical talent and dedication to the Society of Industrial and Applied Mathematics. The awardees are selected carefully out of a large number of applicants. The scholarships are given at the annual Mathematics & Statistics award banquet.
## 2017 SIAM STUDENT DAYS

**CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP**

### TUFTS UNIVERSITY

**REPRESENTATIVE: JUNYUAN LIN**

**PIE DAY EATING CONTEST**

We had 3 undergraduate students, 3 graduate students and 3 faculty members to compete in the pie eating contest. And they are provided pumpkin pie and the person who can eat the most within one minute wins the competition. It bridges between students and faculty members.

### TULANE UNIVERSITY

**REPRESENTATIVE: SELÇUK KARAKOC**

**GRADUATE SEMINARS**

Each week, a graduate student presented their research on Applied and Pure Mathematics.

### UNIVERSITY OF AKRON

**REPRESENTATIVE: WILLIAM SANDS**

**FIELD TRIP TO APPLIED VISION**

Last year, the SIAM Student Chapter at the University of Akron arranged a field trip to Applied Vision, a company that develops image processing software for the food and beverage industry. Their software helps to identify potential imperfections in packaging and labeling. This allowed our members to learn about problems outside academia and how skills in programming and machine learning are becoming invaluable.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP
UNIVERSITY OF BATH

REPRESENTATIVE: FRANCISCO DE MELO VIRÍSSIMO

ANNUAL BATH STUDENT CHAPTER CONFERENCE

Local conference on mathematics and its applications, aimed for PhD and late-Masters students with plenary talks given by recognized scientists, contributed talks given by PhD students and poster session.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP

UNIVERSITY OF CALIFORNIA, MERCED

REPRESENTATIVE: VICTORIA ARIAS

SAMPLE TALKS

Every Friday afternoon, our student chapter provides those who are interested with light refreshments, usually coffee and cookies, and Some Applied Math for People to Learn (SAMPLe) Talks! These talks are given by anyone in applied math regardless of rank, or simply anyone interested in applied math. The first half hour is spent mingling and networking over coffee, and the talk including questions afterwards adds up to the second half hour.

UNIVERSITY OF CAMBRIDGE

REPRESENTATIVE: LISA MARIA KREUSSER

INDUSTRIAL SEMINAR SERIES

From Facebook, Google, Tesco and the world's largest oilfield services company Schlumberger to consultants, pharmaceutical companies and multi-billion dollar investment managers we have invited great speakers from all types of companies, including many global players, to give a talk at our weekly seminar series. These talks give an overview of where mathematicians can work in industry.

UNIVERSITY OF COLORADO UNDERGRAD

REPRESENTATIVE: WILLIAM SHAND

COLORADO JOURNAL OF APPLIED MATHEMATICS

At CU Boulder, we've created a bi-annual publication that displays our undergraduates' class projects and summaries of the research that they've been engaging in.
On March 13, 2017, the UD student chapter of the Society for Industrial and Applied Mathematics (SIAM) visited Constellation Energy in the Harbor East section of Baltimore. The visit was hosted by Constellation’s Frank Henshaw, Managing Director of Trading, and Ali Ahmadzadeh, Lead Quantitative Analyst. The visit included a tour of Constellation’s new energy commodity trading floor marked as the newest and most state-of-the-art in the United States. The visit was organized from the UD side by chapter president Kevin Aiton and faculty advisor Richard Braun.
SIAM SEMINAR PRESENTATIONS

We had seminars every other weeks which one of the PhD students or faculty members gave a talk about their research and pizza and snacks were provided at end of seminars. We have a SIAM gators webpage which you can find by this link http://siam.math.ufl.edu/
WIAM 2016 - combining the 5th Symposium of German SIAM Student Chapters and the MathMods Alumni Meeting  From Wednesday, August 31, to Friday, September 2, the workshop WIAM16 was held at the Dept. of Mathematics. Largely organized by Ph.D. students, this workshop combined this year's annual meeting of the German SIAM student chapters, where we were happy to greet representatives of the Charles University in Prague Chapter, too, and the annual MathMods alumni meeting. This combination promised a broad range of topics covered by the contributed talks—and the speakers delivered! From induction machines, over persistent homology to aqueous humor flow in the human eye, the topics discussed were as diverse as the speakers' backgrounds. In addition to the talk sessions, there was a poster session, an introductory panel, made up of workshop participants and our chapter's Faculty Advisor Prof. Jörn Behrens, discussing the question in which ways academia does (or doesn't) prepare for jobs in the industry, and an industrial session, with invited talks from speakers with working experience on industrial jobs. Guided tours around Hamburg on the first evening gave the opportunity for the participants to get to know Hamburg as well as each other. The workshop was a great success, which would not have been possible without the financial and organizational support from the MIN Graduate School, SIAM and the Dept. of Mathematics. And of course, a special Thank You belongs to our participants, who on a personal as well as scientific level filled the workshop with life! In total the workshop was attended by approximately 70 external guests. There were 23 talks and 8 posters have been presented.
On Monday, April 10, we drove up to Chicago from Urbana, IL for a tour of Argonne National Lab. Our tour guide, a UIUC alumnus, met us at the Argonne Information Center where we acquired our visitor badges and boarded the tour shuttle. The first stop was lunch at the Argonne cafeteria. They had several food stations serving a variety of delicious looking dishes and a large dining area that included several partitioned meeting-and-eating spaces. Three tables had been reserved for our group. While we ate, our guide described the various internship and employment opportunities, showed us how to apply online, and gave some pointers on the application process. As we drove to our next stop, our guide pointed out some of Argonne’s renewable energy efforts, including some solar- and wind-powered LED street lamps. Then we arrived at the Theory and Computer Science building, which houses the Argonne Leadership Computing Facility and several other Argonne divisions. This seven-story building was designed to create an open, flexible, work area for collaboration and problem solving. In the center of the facility, to our surprise, we encountered a large atrium housing a Zen rock garden. Then we headed upstairs to meet one of the scientists, another UIUC alumnus, who uses the 10-petaflop MIRA supercomputer for his research. He described a few of their current projects, including a wind turbine airflow simulation that provoked interested questions from several of our scientific computing PhD students doing research in fluid flow modeling. Then he took us into the server room for an up-close encounter with MIRA. Our next stop was the Nuclear Energy Discovery Center. Here we learned about Argonne’s history and the development of the first nuclear reactors. We got to check our radiation levels using a 50-year-old Geiger counter, and saw the log book containing the entry from the day of the first man-made sustained nuclear reaction that read, “we’re cookin!” We also discussed the latest nuclear reactor technology, including new methods to reuse or safely dispose of nuclear waste. The final stop on the tour was the Advanced Photon Source. First we viewed this facility from above where we could see the impressive 1225-foot-diameter circular path where electrons are accelerated to 99.999% of the speed of light. Then we went downstairs to get a closer look. Surrounding the large circular path are several tangential straight sections containing insertion devices that cause the accelerated electrons to produce x-rays. Research stations at these straight sections containing the x-ray beams can be rented by groups who want to use x-rays in their research. Our guide told us about an upcoming talk open to the public where a researcher would be presenting findings of a study on Picasso’s paints. They had used the x-rays to analyze paint that Picasso used, and were able to determine whether he worked with traditional artist’s paint or common household paint. Apparently this was going to settle a long-running debate but our guide would not to tell us the results ahead of the talk. The tour lasted about 3 hours and could have been longer if we didn’t have to drive back to Urbana. As the shuttle took us back to our vehicles we got one last view of Argonne’s beautiful campus. The students found the visit worthwhile and interesting. It was a great opportunity for us to learn more about research happening at Argonne and what it might be like to work in a national lab.
Each fall, the University of Kentucky SIAM Student Chapter hosts a department wide Chili Cook-Off. Everyone, both graduate students and faculty, is encouraged to attend and bring a dish. An evening of games and socializing with a healthy dose of competition, the event is a great way to build relationships between students and faculty, while giving a face to our SIAM chapter and encouraging new students to join. Moreover, the fall Chili Cook-Off allows SIAM officers a chance gather student input on what type of SIAM-invited speakers and industry-related field trips would like to be seen in the following semester.
On Wednesday 22nd February the Manchester SIAM-IMA Student Chapter hosted an industry problem solving event, led by Dr. Peter Appleby, a data scientist at Auto Trader. Auto Trader is a fully digital, FTSE 250 listed company which lists new and second hand cars. Auto Trader’s website has over 48 million monthly visits, and each visit may include dozens of searches. This gives them a wealth of data on how people go about choosing a car, and understanding the interconnections in this data is extremely valuable. Mathematics provides the tools to make sense of these vast quantities of data. During the afternoon which was attended by both undergraduate and postgraduate students, Peter gave a talk outlining how these data management problems arise, and some of the tools Auto Trader use to solve them. He then highlighted two particular problems, one involving clustering of the data, and another on regression analysis. After the introduction, we moved to a computer cluster and worked in groups on solving these problems. Participants with no programming experience contributed by teaming up with more experienced students. The afternoon concluded with a discussion session where different groups reported on what they had achieved, and issues that they had come across. The event was a great success and gave undergraduates and postgraduates alike a chance to see how maths is used in industry. The chapter would like to thank Auto Trader for running this event, and we hope to organize similar events in the future.
UMass Dartmouth hosted renowned physicist Dr. Kip Thorne on March 29, 2016. Dr. Thorne is the originator and guiding hand of the 2014 blockbuster movie Interstellar, which is based on black holes, spatial wormholes, and other concepts at the forefront of theoretical physics. Two screenings of Interstellar took place on the day of Dr. Thorne’s visit to the Dartmouth campus. Dr. Thorne, the Feynman Professor of Theoretical Physics, Emeritus at Caltech, joined UMass Dartmouth faculty, students, and the local community for a series of talks and a panel discussion on the science of Interstellar.

UNIVERSITY OF NEW MEXICO

REPRESENTATIVE: ADELINE KORNELUS

CAREER AFTER PH.D

panel discussion featuring speakers from academia, national lab, and industry
UNF hosted a guest speaker from Johnson and Johnson Vision Care. Dr. Naveen Agarwal engaged future math and statisticians with a talk on big data in the work place, where big data will take us in the future, and the exciting aspects and approaches to big data as a whole.

Abstract
Big Data is big! It has the potential to create brand new business opportunities and disrupt existing business models. There have been many success stories in recent years, but many companies continue to struggle in achieving results from their Big Data programs. According to a recent report from McKinsey Global Institute, less than 30% of the potential value of Big Data has been realized in the Manufacturing, Public Sector and Healthcare industries. Why?

In my presentation, I will provide an overview of the applications of Big Data analytics in industry. I will share my experience in applying some of these technologies in our Contact Lens business at J&J Vision Care. I will present a few case studies to highlight applications of statistical methods in solving business problems. Finally, I will share my insights for mathematicians and statisticians to have a successful career in industry.

Bio:
Dr. Naveen Agarwal has over 15 years of diverse industry experience in leadership roles ranging from R&D to Business Analytics. He holds a Ph.D. in Polymer Science & Engineering from University of Massachusetts, Amherst. As a Certified Six Sigma expert and Certified Quality Engineer, he has been applying advanced statistical methods to solve a broad range of business problems for over 10 years. Most recently, he has been leading a team of analysts in the Sales and Marketing function at J&J Vision Care.

In his spare time, he enjoys distance running, community work and spending time with family.

Join us for excellent talk, food and refreshments!

Individuals who require reasonable accommodation in order to participate must notify the Mathematics & Statistics Department at 630-2633.
As a group, the SIAM student chapter at Notre Dame organized a tour of NASA's Glenn Research Center in Cleveland, Ohio. The diverse group consisted of graduate and undergraduate students in Math, Applied Math, Physical and Biological sciences and Engineering disciplines including mechanical and aeronautical engineering. With some additional outreach and paperwork, international students were also included on the tour. Dr. Herb Schilling who heads the Graphics and Visualization Lab (GVL) at NASA Glenn led the group to explore aeronautic and space state-of-the-art research and test facilities at various NASA laboratories across the campus. We visited SLOPE (Simulated Lunar Operations) and the Mars Curiosity Rover design facility, where researchers develop innovative wheels that can navigate lunar and Martian terrain. We considered mechanical challenges in wheel and traction performance for a simulated extraterrestrial soil bed, and discussed some current research improvements for such terrains. Next we visited the Icing Research Tunnel (IRT) facility to understand the effects of in-flight icing on full-size aircraft components. Since the end of World War II, NASA Glenn has been developing and testing ice protection systems for piston and propeller-driven aircraft here. The lab investigates de-icing and anti-icing fluids to prevent the buildup of ice on gas turbine powered aircraft for commercial and military applications. On this part of the tour, we went inside one of the giant NASA wind tunnels that facilitate the study of icing phenomena in fluid-structure interactions. We went on to the "Drop by the Zero-G" facility, where researchers explore better ways to achieve weightlessness on earth for experiments. 467 feet deep, the NASA Glenn Drop-tower is the largest drop tower of its kind and helps test the effects of microgravity on experiments and hardware. Further, we visited the dome, which houses the Aero-Acoustic Propulsion Laboratory. Here, researchers investigate new and innovative models of noise reduction concepts for subsonic and supersonic aircraft. Finally we visited the GVL (which Dr. Schilling leads) and the related GRUVE (Glenn's Reconfigurable User-interface & Virtual Reality Exploration) labs. The researchers and interns in this department create 3-D and virtual reality products based on science and engineering specifications for a 24-foot display wall, a panoramic 3D theater or a fully immersive virtual reality room. We also examined an interactive fluid dynamics project where users can place objects of various patterns on a screen and observe the flow patterns around the interfaces. Overall, students thoroughly enjoyed the experience exploring the research that takes place at the final frontier in government facilities. Quite a few alumni of Notre Dame hold positions at NASA GRC and one member of our SIAM Chapter tour already has an internship lined up with NASA this summer through the NASA Pathways Program. We hope more students will take our lead in exploring new and exciting research opportunities both in Earth bound and boundless aeronautical exploration in service for the benefit of all.
ANNUAL STUDENT CONFERENCE

Our chapter hosts an annual student conference where graduate students from Oxford and other British Universities present their research in front of a student audience either during plenary talks or poster presentations. The conference is opened and closed by a lecture from an established researcher.
Four guest speakers from different fields of applied math were invited to speak at our career panel event. They each talked about their journeys after studying mathematics in college and shared their experiences. They also answered questions from students in college and high school, and they encouraged students to pursue a degree in the field of science and technology.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP

UNIVERSITY OF TENNESSEE

REPRESENTATIVE: BETSEY HEINES

SIAM-SPONSORED COLLOQUIUM

Lunchtime colloquium with invited speaker. Lunch provided.

UNIVERSITY OF TENNESSEE

REPRESENTATIVE: KYLIE BERRY

HOUSEHOLDER SEMINAR SERIES

Event Sponsored by Women in Computing at ORNL and our SIAM chapter. University of Tennessee, Knoxville. The purpose of the seminar is to have distinguished mathematicians present research on various topics in computational and applied mathematics. The series began in 2014 and is held twice per year, alternating each time between the two institutions. The seminar series honors Dr. Alton S. Householder, who spent the majority of his career in the Mathematics Division at Oak Ridge National Laboratory (now the Computational Science and Mathematics Division), serving as the director for much of that time, before joining the Department of Mathematics at the University of Tennessee. Householder specialized in mathematical biology and numerical analysis. He is best known as the inventor of the Householder transformation in linear algebra and the root-finding algorithm known as Householder’s method, as the founding organizer of the Gatlinburg Symposium on Numerical Linear Algebra (now called the Householder symposium), and as the author of the textbook The Theory of Matrices in Numerical Analysis (1961). Householder also published the monograph Mathematical Biophysics of the Central Nervous System (1946) and the book Principles of Numerical Analysis (1953). He served as president of the Association for Computing Machinery (1954-1956) and the Society for Industrial and Applied Mathematics (1963-1964).

This year the talks were given by: Suzanne C. Brenner, of LSU. She will speak on (April 27 and April 28)

Lecture 1 (General Audience): Computational Mathematics*  April 27, 3:00 pm, ORNL, JICS Building, Room 128  This is a general talk about computational mathematics. We will trace its fascinating history from ancient times to modern day in terms of people, machines and algorithms. We will discuss the goals and practices of computational mathematics, and the challenges and opportunities that it provides.

Lecture 2 (Technical): Finite Element Methods for Fourth Order Elliptical Variational Inequalities  April 28, 3:30 pm, UTK, Ayres Hall, Room 405  Fourth order elliptic variational inequalities appear in obstacle problems for Kirchhoff plates and optimization problems constrained by second order elliptic partial differential equations. The numerical analysis of these variational inequalities is more challenging than the analysis in the second order case because the complementarity forms of fourth order variational inequalities only exist in a weak sense. In this talk we will present a unified framework for the a priori analysis of finite element methods for fourth order elliptic variational inequalities that are applicable to CI finite element methods, classical nonconforming finite element methods, and discontinuous Galerkin methods.
SURVIVAL SKILLS FOR A STUDENT

At this event Professor Margot Gerritsen was invited to discuss what is referred to as the "Imposter Syndrome". It is the mental image that many graduate students place upon themselves. They believe that they are not "smart" enough or the weakest link among their peers. To better understand the "Imposter Syndrome" Professor Gerritsen conducts a survey based study on Stanford graduate students in science and engineering. Her findings showed us that a large number of graduate students have this mindset. It was an eye opening event as student realized that their fears and low confidence is universal among most graduate students. It helped us all take a step back and reflect on our personal struggles as students and understand that our peers have the same struggles. She ended the talk discussing the struggles she experienced because of the Imposter Syndrome and gave advice on overcoming it.

CONFERENCES

During the semester, we invite a researcher in applied mathematics to give a talk at our department for graduate and undergraduate students. During the talk we offer free food and it is a good time for networking.
On the 28th of July 2016, the SIAM Student Chapter Trier went on a field trip to Frankfurt Airport to visit the Fraport Airport Services Company. Taking an early train from Trier to the airport in Frankfurt, the program started with a general introduction to get to know the company. Afterwards, we were invited for a guided bus tour around the airfield, where we got an insight into the infrastructure of the airport. We learned a lot about the plane dispatches, the starting and landing system and how all task areas at the airport fit together. Back in the meeting room, we listened to four very interesting talks about how to join the company, and how mathematicians manage their daily work. The speakers gave information on many fascinating topics, like how to optimize the way of luggage from the plane to the appropriate baggage carousel or how to optimize starting and landing or dispatching times. (See also our web page for further activities: https://www.uni-trier.de/index.php?id=24347&L=2)

The purpose of this event was to promote mathematics as a career in terms of both academia and industry. This event was aimed to both PhD students and undergraduate students. This conference was split into two stream; an "applied math" stream and a "statistics & machine learning" stream. Each stream consisted of two PhD students, two members of industry and two academics speaking and discussing their research. The event as overall a success where speakers and attendees enjoyed the day and thought the motivation behind the event was useful. We hope to continue this for the next academic year.
### UNIVERSITY OF WASHINGTON

**REPRESENTATIVE: JACOB PRICE**

**MATH FAIR**

We went to a local elementary school to present short, fun, mathematics workshops to children from 2nd to 5th grade.

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### UNIVERSITY OF WISCONSIN-MADISON

**REPRESENTATIVE: TOMÁŠ MORRELL**

**SEMINAR IN APPLIED MATHEMATICS**

Weekly graduate student seminar where we present both interesting papers and our own research.

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### UPPSALA UNIVERSITY

**REPRESENTATIVE: GONG CHENG**

**EXCURSION TO SPOTIFY**

We had the chance to visit Spotify Headquarters in Stockholm where they told us about some Machine Learning techniques that are used to analyze and classify their music.
### Utrecht University of Netherlands

**Representative:** Ajinkya Kadu  
**Poster Presenter:**

**Canoeing**

Utrecht is a beautiful city with lots of canals surrounding it. Taking out a canoe in the waters on a sunny day is a wonderful experience. We organized a canoeing trip for SIAM chapter members and saw an attendance of 12 members. This event was mainly a social event, and partly a group activity.

### Virginia Commonwealth University

**Representative:** Kyle Wendling  

**Career Panel**

VCU Math and Statistics professors, along with other professionals, answered questions from students about career paths, including best strategies and potential obstacles, along with what different jobs actually entailed.

### Virginia Tech

**Representative:** Selin Sariaydin  

**SIAM Poster Session**

Our chapter organized a poster session on March 17, Friday. We encouraged graduate and undergraduate students and SIAM members to present their research since participating in a poster session is a very popular method of effective communication of your research to a wide audience. It is also important since communicating your work effectively in a minute or two and presenting it on limited space on a poster requires practice.

### Washington University

**Representative:** Weijian Zhang  

**MS41 Presenter**

**Research Colloquium**

Every lab from the department of electrical and systems engineering presented a poster. The aim of this colloquium was to explain the ongoing projects to all of the students, and also to improve the collaboration between different groups.
2017 SIAM STUDENT DAYS
CHAPTER REPRESENTATIVE BREAKFAST WITH SIAM LEADERSHIP
WESTERN KENTUCKY UNIVERSITY

REPRESENTATIVE: RACHEL FRENCH POSTER PRESENTER

RESEARCH PRESENTATIONS
Our members gathered together and listened to a variety of faculties, graduate students, and undergraduate students present their current research topics in applied mathematics. This event worked as a way to not only show the many ways that applied mathematics can be researched through academia but also to show possibly research opportunities with our faculty members.

WILLIAMS COLLEGE

REPRESENTATIVE: ELIZA MATT

HELPED ORGANIZE TRIP TO DATAFEST AT MIDDLEBURY
We helped spread information about DataFest, a competition working with big data, encourage people to sign up and organize transportation. We are hoping to get ideas and either host our own big data analyzing competition next year, or get a bigger group to go to the one at Middlebury.

WORCESTER POLYTECHNIC INSTITUTE

REPRESENTATIVE: CAROLINE JOHNSTON POSTER PRESENTER

WORCESTER POLYTECHNIC INSTITUTE SIAM STUDENT TALKS
The Worcester Polytechnic Institute SIAM chapter is not very large, so we do not hold very many events. However, once a quarter we hold a student talk, either given by an undergraduate or graduate student but always geared towards an undergraduate audience. These talks have covered diverse areas of mathematics from control theory to data science. They aim to expose undergraduates to different areas of mathematics and provide them with resources if necessary. Pizza is also served during the talks!