DEPARTMENT OF
MATHEMATICS
AT FLORIDA STATE UNIVERSITY

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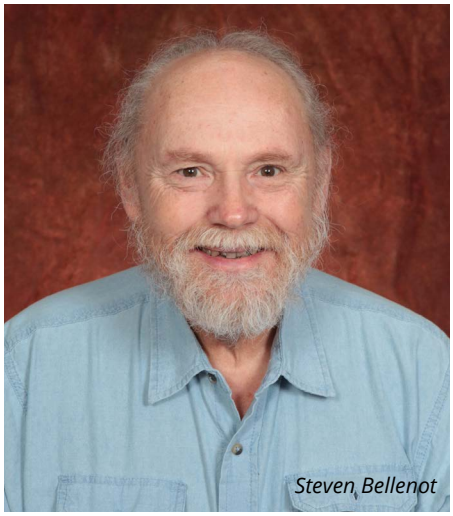
Bellenot Retirement


Steven Bellenot

Steven Bellenot, faculty member of the department for 47 years, retired in 2021. He was an iconic figure in the department, and will be missed by all. Bellenot was born in 1948 and grew up in the San Fernando Valley, part of the Los Angeles metro area. He went to Harvey Mudd College for his undergraduate studies and to Claremont Graduate School (now Claremont Graduate University) for his graduate studies. In 1974, Bellenot arrived at Florida State University where he remained until his retirement. He spent a year at Potsdam, NY at what is now Clarkson University, and a year at the University of Texas at Austin. Bellenot Married Ellen Elizabeth Van de Carr Rumsey in 1975. They had met in College in 1966. Ellen was a craftsman, now retired. Bellenot worked for NASA for seven summers at JPL, not with space travel, but with parallel programming of object oriented simulations. The work a JPL offered Bellenot a second job of being a consultant. After a few of these, Georgia Pacific became the main client. In 2005, Bellenot became the Associate Chair in the mathematics department, and for fifteen years ran the undergraduate program in mathematics. What follows is an interview of Bellenot by Shelby Fintak taken in August of 2019 for a faculty profile piece that seems to have not appeared yet. While it is a bit old, it is a fun read. Enjoy!

Seduced by The Dark Side

Every eight year old during the age of Sputnik knew one thing for sure: rockets are awesome. So naturally Steven Bellenot, former eight year old, decided to become an engineer, scientist, facilitator of space travels. This dream was reified by his father, uncles and grandfathers who were engineers before him. Bellenot enrolled at Harvey Mudd College and all was according to plan. That is, until he was seduced by the dark side.

"I was off to be some sort of engineer or scientist or what have you, [but] when I got to college I got seduced by the dark side. I discovered that you could be an engineer, solve differential equations and spend all of your time cranking out solutions. Or, if you [were] a pure mathematician, you could spend all your time thinking and then writing a proof. This was very seductive." The enormous power of knowing things. Arriving at truth through pure thought. This was more than enough to convince Bellenot to pursue

BELLENOT RETIREMENT Continued on page 3

Washington Mio

A Message from the Chair

Washington Mio

This is a very special time of the year, a time to celebrate the achievements of the FSU Mathematics Department with so much accomplished thanks to the contributions and dedication of our faculty, students, postdocs, staff, alumni and supporters. Even under the pressures and challenges posed by the pandemic we have shown great resilience, maintaining a very high level of productivity. My warmest thank-you to all for what you do!

We have myriad reasons to celebrate and be proud. The research of our faculty, postdocs and students is in very good health with a strong output covering a broad range of topics in pure and applied mathematics, extending to interdisciplinary research and cutting-edge applications. Many of our research projects receive external funding, including very prestigious and competitive awards. More than 120 students are enrolled in our graduate program, we are among the top producers of doctoral degrees in mathematics in the nation, and our graduate program has made significant strides in promoting diversity and inclusion. I find it particularly rewarding to see that the education we offer opens up so many opportunities for our graduates who move on to very successful careers in a wide range of domains. Our faculty remains very committed to the undergraduate program, working tirelessly to enhance the learning experience of our students. The positive results of the efforts by our basic mathematics faculty are clearly visible in the marked improvement in the success rates among the thousands of undergraduates we teach every year. Our staff continue to be crucial to our success, doing a wonderful job of supporting all of our business and academic operations.

Over the past two years a few colleagues have left the department to retirement or to pursue other career opportunities. I thank them all for their service, some for a career-long commitment to our department. This year we have recruited four new faculty and I look forward to having them join the department in the fall of 2022, bringing fresh new research perspectives and reinvigorating the academic activities in the department.

I have no doubt that the state of the department is strong and the outlook is bright. With your support we will continue to build on our strengths, innovating and raising the profile of the department. I invite you to continue to read this Newsletter to put names and faces to some of our accomplishments. I close reiterating my deepest appreciation of the contributions of all members of the department, our alumni for being such great ambassadors and supporters of the department, and our donors for supporting our academic activities and the success of our students.

Warm regards,

Washington Mio

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AT FLORIDA STATE UNIVERSITY

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Bellenot Retirement

Continued from page 1

mathematics for the rest of his life and well, the rest is history. Bellenot received his Ph.D. from Claremont Graduate University in 1974 and secured an assistant professorship with the Department of Mathematics at Florida State University that same year.

Bellenot found few avenues for collaboration in his primary research area, infinite dimensional topological spaces, so a slight migration was in order. Before long, Bellenot taught the equivalent of an undergraduate major in computer science courses, which at the time was technically part of the math department. He took every opportunity to study new areas of the discipline in preparation. There is an expansive list on his website of all the classes he's taught over the years, from Calculus in the spring of 1973 to a Biocalculus computer lab in 2019.

For the last 15 years Dr. Bellenot has served as Associate Chair of the Math Department, organizing who teaches what and denying requests to skip classes like trigonometry. He jokingly describes his position as one of customer service and keeps his 'No is a Complete Sentence' mug close at hand for students less than satisfied with their calculus final.

Error Detected

In the midst of his tenure at FSU, Bellenot consulted for various projects and companies, like Georgia Pacific. There, Bellenot reduced the run time of their lumber processing program by a factor of 10,000. Logs could now be scanned and cut into the optimum number of 2x4" planks at speeds of 100 feet per minute. Bellenot also spent several summers working for the Jet Propulsion Lab at NASA, doing discrete event simulations on a project called Time Warp on a Hypercube.

He recalls a story from his time there: "One of our projects 5 or 6 years down the road got a new architecture, and when we put it on that new architecture we discovered that we had an error that had existed for years and years. When this error occurred, the whole program blew up. You could never nail it down and it happened so infrequently that it was never discovered, but this new architecture exposed it right away."

The mathematical aspect of writing programs with data structures always brings Bellenot much joy and debugging code has become one of his specialties. Bellenot admits he's learned a lot from looking at old problems, some over 50 years old, and fondly remembers one of his favorite programing problems inherently erred by design. The problem instructs you to correct Euler's method in a do-loop. You correct, then you correct the correction, and so on four different times.

"I happened to look at the code and checked it sort of strangely. And it turns out that it's just wrong, because your first improvement made the best improvement it could with these things, so you're making it worse. I really enjoy digging down and figuring out why things failed."

The Joys of Obsolete Technologies

Shows at The Lab theatre. Slide rules. Long drives along the California coast. Old math books wrapped up as Christmas presents. Construction sites in action. A unique and intriguing list, all of which define some of Dr. Bellenot's favorite things. He says he is an easy person to please and can find something to enjoy wherever he happens to be.

One testament to his appreciation of the simpler things in life is a talk he's given a few times entitled Joys and Virtues of Obsolete Technologies. His presentation champions the slide rule, logarithm tables, roman numerals and the abacus. It reminds us of the skills of interpretation and proper decimal placement lost to the convenience of plug and chug calculators. "New technologies means you lose some of the scaffolding that you had to do in order to get [these solutions]."

But even Dr. Bellenot can admit that not all calculators are bad. Sometimes they're quite funny. "I had a student who showed up for the second test with a brand new Ti-89 still wrapped in the plastic. He spent half the test taking the wrapping off the thing and had no idea how to use it."

Chris Tam

Tam Family Professorship

The Tam Family Professorship in Mathematics was established through an endowment by Dr. Christopher Tam. Dr. Tam is a Lawton Distinguished Professor of Mathematics at FSU. The endowment was made to honor Dr. Tam's parents and family members, and consists of two parts. The first part is to provide an annual stipend to the holder of the Professorship. The second part provides financial support for an annual Tam Family Colloquium. The colloquium speakers include the Tam Family Professor and invited outside distinguished scientists and mathematicians. In addition, funds are available to finance an annual colloquium dinner to honor the colloquium speaker and the Tam Family Professor to which all research faculty members of the Department are invited.

The inaugural Tam Family Professor is **Dr. Richard Bertram**. Dr. Bertram is a Distinguished Research Professor of FSU and the Brennan Professor of Mathematics (2015-2018). Currently, Dr. Bertram is the Director of BioMath.

Dr. Bertram obtained his Bachelor of Science degree in Applied Mathematics (Summa Cum Laude) at FSU in 1985. He subsequently obtained his Ph. D. degree in Applied Mathematics in 1993 again at FSU. After graduation, he joined the National Institute of Health in Bethesda, MD as a postdoctoral Fellow for three years. He then became an assistant professor of Mathematics at Penn State, Erie, PA. On 2001 Dr. Bertram returned to FSU as an assistant professor of Mathematics. He became an associate professor in 2004 and a professor in 2009. He is a member of the FSU Program in Neuroscience and the FSU Molecular Biophysics Program.

Dr. Bertram is well known internationally for his research work. He has been especially active in professional conferences and workshops. He served as organizer, session chair and workshop lecturer. Presently, he is the Associate Editor of the journal "Mathematical Bioscience", "Biophysical Journal" and an editorial board member of "Bulletin of Mathematical Biology". In 2017 he won the Society for Industrial and Applied Mathematics (SIAM) Outstanding Paper Prize. Also, he was elected to the position of Chair of SIAM Activity Group for Life Sciences for a two years term (2015-2016). He has authored and co-authored more than 140 articles in peer reviewed journals and conference proceedings. His works are very well received and cited. According to Google Scholar, he has more than 6,000 citations and a H-index of 34. Dr. Bertram has received extensive external funding from the National Institute of Health and the National Science Foundation. They total to multi-millions of dollars.

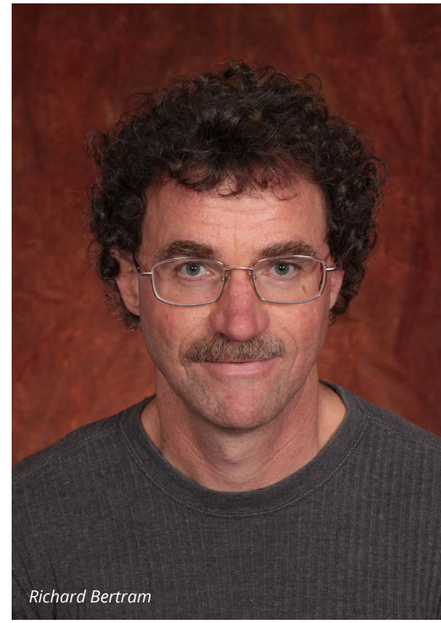
Dr. Bertram's research activity in Bio-mathematics uses mathematical models to explain biological phenomena and to discover the mechanisms involved. He is a leading expert in this approach. Below are two examples of his work in mathematical modeling of biological phenomena.

1. Understanding pulsatile insulin secretion from pancreatic islets.

Human body's insulin-secreting cells are found within cell clusters called islets of Langerhans that are distributed throughout the pancreas. There are two ways these cells can be destroyed by the body's immune system. This leads to two types of diabetes. Over a period of a number of years, Dr. Betram, in collaboration with experimentalists in FSU and other medical colleges, developed a mathematical model involving the interactions of electrical activity, calcium, dynamics, and glucose metabolism that leads to pulsatile insulin secretion. In normal humans, insulin is released in 5-minute pulses, while in type II diabetics this rhythm is gone. Studies have demonstrated that pulsatile insulin is more effective than non-pulsatile insulin in lowering the blood glucose level. Dr. Bertram and his collaborators' model is the only model that describes the mechanism for the rhythmicity. Their model is widely known throughout the community of scientists who study pancreatic islets. It has been used to design numerous experiments conducted by collaborating laboratories. The model also provides the foundation of current understanding of insulin pulsatility.

2. Understanding the processes of learning birdsong on a neural basis.

Songbirds learn to sing by listening to a tutor, much like babies learn to speak by listening to their parents. In his collaboration with the two experimental labs in the Neuroscience program at FSU (Drs. Frank Johnson and Rick Hyson), Dr. Bertram concentrated his study on finding the song learning processes and production mechanism of one type of bird, the zebra finch. This work would provide a path to establish rules for the production of sequential behavior in animals, and insights into human speech production. Dr. Bertram and his students have since developed mathematical models for the different types of neurons involved in song production in the zebra finch starting from laboratory data. These are the first biophysical models for these neurons. Dr. Bertram's group uses these models to study how the neurons change as the song is learned. Related to this study is their effort to establish neural network models that explain how song might be encoded in bird's brain. This is the most comprehensive model in the field. It is capable of explaining considerably more behaviors than other models.



Richard Bertram

Changing Faces in the Department

We wish the best of luck to **Annette Blackwelder**, **Penny LeNoir**, **James Wooland**, **Steve Bellenot**, **Ishkan Grigorian**, and **Dena McDaniel**, who have retired, and to **Kathleen Petersen** and **Nick Moore**, who are continuing their careers at other Universities. You will all be missed!

We welcome our recent hires **Bhargav Karamched**, **Nihan Acar**, **Kris Bowers**, **Angie Harris** , **Elyse Budkie**, and **Courtney Simmons**.

Congratulations go out to **Ling Zhu**, **Martin Bauer**, and **Sam Ballas** for their promotions to Associate Professor, to **Kyounghee Kim** for her promotion to full professor, to **Leah Hollingsworth** and **Diane Maltby** for their promotions to Teaching Faculty II, and to **Brian Ewald** for his promotion to Teaching Faculty III.

11TH

in the country for number of doctoral degrees awarded in MATHEMATICS

FSU Department of Mathematics among **top U.S. Producers of Doctoral Degrees**

By Amy Walden (taken from news.fsu.edu with permission)

Over the last 20 years, the number of doctorates awarded in mathematics by U.S. institutions has nearly doubled, according to recently published data from the Survey of Earned Doctorates (SED). Florida State University is among the top contributors to that exceptional growth.

In the January edition of the Notices of the American Mathematical Society, Florida State's Department of Mathematics was ranked 11th in the country by the SED for the number of doctorates awarded, with a total of 342 doctoral degrees conferred from 2000 to 2019.

"It's great to see how the FSU mathematics graduate program has developed and grown over the years, as reflected for example in the substantial increase in the number of doctoral degrees awarded per year," said Washington Mio, mathematics department chair.

In the category of applied mathematics, FSU broke into the top 10, ranking No. 5 among public universities and No. 7 overall in number of doctorates awarded. The SED is a joint effort of the National Science Foundation, National Institute of Health, Department of Education, and the National Endowment for the Humanities, and is widely considered the most comprehensive report of earned doctorates available in the United States.

"Our standing in these rankings is quite a remarkable achievement especially considering that our faculty size is about half the size of some of the top 10 mathematics departments," said Professor of Mathematics and Associate Chair for Graduate Studies Giray Ökten. "This shows the productivity of our faculty and hard work of our students. A lot of credit also goes to faculty, some of whom are retired now, who developed our innovative graduate programs about 20 years ago."

In the early 2000s, Florida State saw a major increase in the demand for researchers and professionals with mathematical skills in the field of financial engineering and the rapidly growing domains of quantitative and computational biology and medicine. In response, the department developed and implemented new doctoral tracks in financial mathematics and biomathematics, greatly reinvigorating and expanding the doctoral program.

"We are now in the early days of a similar investment in mathematical data science and I am very optimistic about its future," Mio said.

FSU's Interdisciplinary Data Science Master's Degree Program, which welcomed in its inaugural class of graduate students in Fall 2021, features program tracks in mathematics as well as computational science, computer science and statistics.

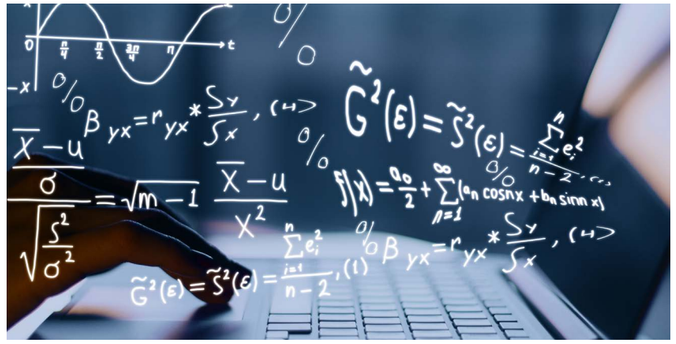
The rankings reflect progress made toward the academic and research excellence goal outlined in FSU's 2017-2022 Strategic Plan, tracking with concerted efforts on many fronts at once: attracting and retaining top faculty talent; becoming a destination for the brightest graduate students; encouraging high-impact interdisciplinary inquiry; and developing innovative teaching strategies.

"Mathematics faculty and students have been incredibly productive and efficient," said Sam Huckaba, dean of the College of Arts and Sciences. "The deliberate expansion by mathematics of innovative offerings, starting two decades ago, has provided a fantastic complement to our traditional tracks. And I am most proud that these achievements have happened with a continuing emphasis on high quality."

Mio adds that one of department's greatest strengths is the supportive, inclusive environment that has been created for students to develop and grow as mathematicians and citizens of the professional community. This includes student mentoring tailored to individual needs and consistent, constructive interactions between students and their major professors.

"As a department, we have had an important role in shaping many successful careers in a broad landscape of domains, often opening the doors to life changing opportunities for our graduates," Mio said. "I see this as a key measure of success and the ultimate reward for our collective effort in graduate education."

The success of the math department has also made Florida State a destination for scholars from around the globe, with the university routinely hosting national and international lectures and conferences. This March, the Department of Mathematics hosted the Tenth International Conference on Sensitivity Analysis of Model Output (SAMO), the first to be held in the U.S. since 2004.



NEW POSTDOC PROGRAM A SUCCESS

The Dean's Postdoctoral Scholar program at the department of Mathematics at FSU was started in 2018. It has helped to reduce the size of calculus classes, and brings fresh research blood through the department each year. Some of the postdoctoral scholars have also done service to the department, such as serving as undergraduate advisors and co-organizing seminars and conferences.

In the period from August 2018 to July 2021, ten Postdoctoral scholars were admitted in the program. Six of them have finished their training at FSU. Three of these six have moved onwards to start a tenure track position, while two others have taken a further Postdoctoral fellowship. This outstanding job placement serves as strong evidence of the success of this postdoctoral initiative.

To summarize the productivity of the postdoctoral scholars, here are some key statistics on scientific output and awards:

Publications

During their time at FSU, the Postdoctoral scholars have published a total of **18 peer reviewed articles**. In addition, they have submitted 12 preprints for publication.

Scientific talks

In the same period, they have given **over 70 talks and presentations** and have attended numerous conferences and workshops.

Awards and Grants

They have been awarded **19 (internal and external) grants and awards**, including two AMS-Simons Postdoctoral Travel Grant and one NSF-Eager grant.

SAMO 2022

The Department of Mathematics was the host for the 10th International Conference on Sensitivity Analysis of Model Output (SAMO), March 14-16, 2022, at the Florida State Conference Center. Giray Ökten, who is the current president of the SAMO society, was the chair of the local organizing committee. The other members of the organizing committee were Aseel Farhat, Nick Cogan, Yousuff Hussaini, and Billy Oates.

The SAMO conference, held every three years, is dedicated to advances in research on sensitivity analysis methods and their interdisciplinary applications. Sensitivity analysis aims to understand and quantify how uncertainty in the output of a model can be apportioned to different sources of uncertainty in the model input. These methods are powerful tools in physics, operations research, chemistry, biology, engineering, environmental science, nuclear and industrial safety, economics and finance.

The conference was held as a hybrid conference. There were 44 talks and 13 poster presentations. The plenary speakers were:

- Agnès Lagnoux, assistant professor of mathematics at the Institut de Mathématiques de Toulouse and Université Toulouse – Jean Jaurès, in Toulouse, France;
- Juliane Mai, research assistant professor of civil and environmental engineering at the University of Waterloo, in Ottawa, Canada;
- Art Owen, professor of statistics at Stanford University, California;
- Samuele Lo Piano, a postdoctoral researcher from the School of the Built Environment at the University of Reading, U.K.;
- Clémentine Prieur, professor of mathematics at Université Grenoble Alpes, Saint-Martin-d'Hères, France; and
- Sébastien Da Veiga, statistics research engineer from Safran Tech in Paris.

The conference proceedings will be published by Socio-Environmental Systems Modelling (SESMO), a journal of the International Environmental Modelling & Software Society. SAMO 2022 was made possible by contributions from Oak Ridge Associated Universities, FSU Office of Research, College of Arts and Sciences, and the Department of Mathematics.

Quant Symposium

The twenty-second and twenty-third Quant Symposiums at the Florida State University were funded by the College of Arts and Sciences and the Department of Mathematics, aimed toward career enhancement for graduates in financial mathematics. Due to the Covid-19, both symposiums were conducted on Zoom. The twenty-second symposium was held on November 21, 2020 at the Department of Mathematics, and the twenty-third symposium was held on November 20, 2021.

In the twenty-second symposium, we had three well-established professionals, Cristian Homescu (Director, Chief Investment Office, Bank of America), Nick Costanzino (Quantitative Portfolio Strategist, Barclays) and Stephen Pennington (Founder, Stephen Pennington Analytics & Advisory), who gave talks on machine learning for quantitative investment and wealth management, the usage of machine learning for developing investment strategies and self-consistent pricing of structure securities for bond pricing.

In the Twenty-third symposium, we had a distinguished non-FSU guest, Jing Zou (Managing Director, RBC) who gave us an introduction to model risk management for pricing models, and we also had two PhD alumni from FSU, Zailei Cheng, former student of Lingjiong Zhu, now a Vice President at Citi, Tampa, who talked about model risk management for banks, and Jian Li, former student of Nick Cogan, now an Applied Scientist at Amazon, Seattle, who talked about causal machine learning and its applications.

At the end of both events, a panel of professionals, including our guests, answered students' questions about issues related to the job market.

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Department News

Alumni News

Haibin Hang (PhD 2020, Mio) works as a data scientist for Amazon.

Zhiqiu Li (PhD 2020, Zhu) is at Wells Fargo, Charlotte, NC.

Xiaoyu Wang (PhD 2021, Zhu) is a postdoctoral researcher at Washington University in St. Louis.

Yiran Chen (PhD 2022, Okten) works at Citi, Tampa.

Arun Polala (PhD 2020, Okten) is at Wells Fargo, NYC.

Jamie Fox (PhD 2020, Okten) works at Wells Fargo, Charlotte.

Hubeyb Gurdogan (PhD 2021, Kercheval) is a postdoctoral researcher at the University of California at Berkeley.

Heting Yan, (PhD 2020, Kercheval) works at Microsoft, Inc, Bellevue, WA.

Opal Graham (PhD 2020, Bowers) is at the University of North Georgia.

Graduate Student News

Yiran Chen published a journal article in January 2022 and gave a talk in Monte Carlo Methods and Applications 2021, titled "Monte Carlo and quasi-Monte Carlo simulation of copulas"**.**

Shreya Bose gave several talks, including at the 5th Eastern Conference on Mathematical Finance (October 2021), Applications to Financial Engineering workshop (December 2021), The Second Waterloo Student Conference in Statistics, Actuarial Science, and Finance (November 2021), SIAM Annual Meeting (July 2021), AMS Spring Southeastern Sectional Meeting (March 2021), and Joint Annual Meetings, MAA-FL/FTYCMA (February 2021).

Faculty Awards

Martin Bauer, together with his collaborators, was awarded the NSF grant "Data-Driven Elastic Shape Analysis with Topological Inconsistencies and Partial Matching Constraints". In addition, he has been awarded collaboration grants from the Erwin Schrödinger Institute (2022, with P. Harms and P. Michor) and from the University of Bergen (2020, with K. Modin, M. Maurelli, and A. Schmeding). Recently, together with B. Khesin, K. Modin, S. Preston and C. Vizman, he has been awarded a grant from the Banff International Research Station for Mathematical Innovation and Discovery to organize a conference on Geometry and Fluid Dynamics to be held in November 2023. Finally, his paper "Structural Connectome Atlas Construction in the Space of Riemannian Metrics" (with K. Campbell, H. Dai, Z. Su, T. Fletcher, S. Joshi) has been awarded the best paper award (Francois Erbsmann Prize) of the conference Information Processing in Medical Imaging 2021 (IPMI 2021).

Lingjiong Zhu was awarded an NSF grant titled "Collaborative Research: Langevin MCMC Methods for Machine Learning" in 2021.

Faculty News

Giray Okten gave three lectures at CIRM (Centre International de Rencontres Mathematiques) in Marseille Luminy, France, titled "Number sequences for simulation and derivative pricing", as part of the Research School on Quasi-Monte Carlo Methods and Applications in November 2020. He also gave a talk at FSU titled "Global Sensitivity Analysis of Power System Reliability", which was part of the "Workshop on Energy Security and Hurricane Disaster Resilience for Florida's Power System", in January 2020.

Phil Bowers wrote a book: Lectures on Quantum Mechanics : A Primer for Mathematicians, Cambridge University Press, 553 pages, December 2020.

Eric Klassen been offered (and accepted) a visiting professorship at the Institut Henri Poincare (part of Sorbonne University) in Paris during Fall 2022, while on sabbatical from FSU.

CONGRATULATIONS
to all our students who passed actuarial exams

April 1, 2019 - March 31 2021

EXAM P

Alexis Arden	Jordan Hayes	Danielle Marino
Rose Behnke	Austin Hendrickson	Caramen McDaniel
Alexandria Bosch	Megan Heuker	Olivia Pearson
Rosenmaya Burch	Lauren Hodne	Aaron Putriment
Darby Carraway	Reagan Huet	Jordan Rundle
Robert Chiriac	Samir Iskandarani	Jonah Smith
Jerrell Daniel	Callie Jameson	Raine Stryczny
Michael Deveikis	Carly Kish	Catherine Williams
Jacob Driggers	Casey Koon	Xiao Wen Tan
Christine Marie Gepilano	Lindsey Leadbetter	Kim Voudris
Jared Giotta	Alisa Mallard	Grace Zani

EXAM FM

Alexis Arden	Luis Jimenez	Vanessa Polidoro
Domenico Barile	Ariel Jones	Ryan Purcell
Alexandria Bosch	Sasank Kandipati	Dalton Raeckers
Rosenmaya Burch	James Kaufman	Matthew Reyna
Rebecca Caro	Carly Kish	Jordan Rundle
Robert Chiriac	Casey Koon	Carson Sence
Alexander Cote	Emilee Krick	Connor Sherman
Matt Diaz	Nathan Lacombe	Jonah Smith
Andrew Fowler	Lindsey Leadbetter	Georgia Traynor
Luis Garcia	Amber Matherne	Claudia Matilda Vevera
Ethan Gemma	Kelly McCarthy	Kimberly Voudris
Christine Gepilano	Melissa Miranda	Christina Waltz
Lauren Hodne	Caramen McDaniel	Samantha Ward
Dane Horton	Richard Parrish	Xiao Wen Tan
Hannah Howard	Shaylah Paxton	Patricia Wilson
Carson Hundley	Kayla Pfeffer	Grace Zani
Dana Hylton	Benny Pirrone	

EXAM IFM

Luke Dilworth
Jared Giotta
Olivia Pearson
Kristen Swinski

EXAM S-TAM

Suwon Kang

EXAM L-TAM

Anthony Maiello

Mathematics Honors Day 2021

Every year in the spring, the Department of Mathematics recognizes graduate and undergraduate students for their teaching, academic, or service achievements. The following are the award winners from the Annual Honors Day event in Spring 2021:

Dwight B. Goodner Mathematics Fellowship

Millie and Dwight Goodner established this award to recognize teaching excellence in mathematics by graduate students.

Ream, Julia
Shisode, Tarak
Wei, Meng
Chen, Yiran
Li, Xin

Kenneth G. Boback Award

This award is presented to an outstanding senior undergraduate majoring in Mathematics.

Hayden, Seth

Bettye Anne Case Actuarial Science Award

This award is presented to an outstanding undergraduate student majoring in Actuarial Science. This award was established by Courtney and Shari White.

Wingfield, James

Bettina Zoeller Richmond Award

This award is presented to graduate students for outstanding service to the Department.

Adjetey, Isaac

Clara Kibler Davis Scholarship (Graduate)

Ream, Julia
Provat, Shirin
Bose, Shreya
Wang, Xiaoyu
Bou Kaed Bey, Heba
Davenport, Angelica
Bruce, Nicole
Rogowski, Susan

Clara Kibler Davis Scholarship (Undergraduate)

Scorca, Skylar
Reynolds, Kadesha
Martino, Skylar
Besaw, Emilee
Greene, Mia
Mila, Emily
Falcon, Caroline
Baker, Blakeley

Distinguished Teaching Assistants

This award is presented to graduate students for outstanding service to the Department.

Anderson, Austin
Aurko, Abdullah
Chanda, Anindya
Chandramouli, Sathyanarayanan
Chen, Yiran
Davenport, Angelica
Dent, Samuel
Estebe, Cody
Gurdogan, Hubeyb
Li, Xin
Molina Gonzalez, Braulio
Parkman, Virginia
Ream, Julia
White, Edward
Zhou, Yi

Tam Family Award for Excellence in Graduate Student Teaching

Davenport, Angelica
Parkman, Virginia

Tam Family Award for Excellence in Graduate Student Research

Kimrey, Josh
Chanda, Anindya

Bettye Anne Busbee Case Graduate Fellowship and Doctoral Mentor Recognition

Hartman, Emmanuel (Mentors: Martin Bauer and Eric Klassen)
Bose, Shreya (Mentor: Ibrahim Ekren)
Anderson, Austin (Mentor: Alexandar Reznikov)

MATH PUZZLER

In this issue we present a Math Puzzler. The question comes from the FSU High School Math Contest. A prize* will be awarded for the best solution with the clearest explanation submitted by September 1, 2022. Solutions can be submitted to newsletter@math.fu.edu. We hope you are challenged by this Puzzler!

A checker is placed on an infinite checkerboard. The square it is placed on is called its home square. You then begin to move the checker around. Each move must be in a straight line, either up, down, left, or right; and each successive move after the first must be at right angles to the previous move. Furthermore, on the first move, the checker must be moved exactly one square away from its previous square; on the second move, exactly two squares; on the third move, exactly three squares; and so on: on the k'th move, the checker must move exactly k squares away from its previous location. What is the fewest number of moves you can make to return the checker to its home square?

**FSU Mathematics faculty and their families, and those affiliated with the FSU High School Math Contest (sponsors, participants, math club members, etc.) are not eligible for the prize. The newsletter editor and staff will determine prize eligibility.*

FSU Mathematics PhD Recipients

Spring 2021

NAME	AREA	ADVISOR	THESIS TITLE
Hubeyb Gurdogan	Financial Math	Alec Kercheval	Eigenvector Shrinkage for Estimating Covariance Matrices
Huang Hua	Applied & Computational Math	Adrian Barbu & Kyle Gallivan	Robust Machine Learning and the Application to Lane Change Decision Making Prediction
Joshua Kimrey	Biomath	Richard Bertram	Geometric Singular Perturbation Analysis of Early Afterdepolarizations in Cardiac Myocytes: Canard Analysis of Cardiac Action Potential Models
Benjamin Prather	Pure Math	Mark van Hoeij	Octonions—Hilbert spaces, Fibrations, and Analysis
Tarak Shisode	Applied & Computational Math	Jinfeng Zheng	Improving the Accuracy of 3D Chromosome Structure Inference and Analyzing the Organization of Genome in Early Embryogenesis Using Single Cell Hi-C Data
Xiaoyu Wang	Pure Math	Mark van Hoeij	Algorithms for Simplifying Differential Equations

Fall 2020

NAME	AREA	ADVISOR	THESIS TITLE
Shayea Waqaian Aldossari	Pure Math	Mark van Hoeij	Algorithms for Simplifying Differential Equations
Peng Diao	Applied & Computational Math	Mark Sussman	Parareal Algorithm Applied to the Stefan Problem
Yeuran Oh	Biomath	Richard Bertram	Islet Synchronization in a Hybrid Experimental and Mathematical System

FSU Mathematics PhD Recipients

Summer 2020

NAME	AREA	ADVISOR	THESIS TITLE
Orhan Akal	Applied & Computational Math	Adrian Barbu	Learning Chan-Vese
John Henry Bergschneider	Pure Math	Wolfgang Heil	2-Stratifolds with Finite Fundamental Group
Patrick Eastham	Biomath	Nick Cogan	A Novel Model for Precipitation Reactions in Microfluidic Devices
Lydia Parker Marie Eldredge	Pure Math	Kathleen Petersen	Minimal Mahler Measure in Cubic Fields
Jamie Fox	Financial Math	Giray Okten	Applications of Polynomial Chaos to Monte Carlo Simulation
Yangzi Guo	Applied & Computational Math	Adrian Barbu	A Study of Feature Interactions and Pruning on Neural Networks
Opal Jane Graham	Pure Math	Philip Bowers	Rigidity of Point and Sphere Configurations
Haibin Hang	Pure Math	Washington Mio Paolo Aluffi	A New Formulation of 1-D Persistent Homology Via Correspondence Modules
Yang Liu	Applied & Computational Math	Mark Sussman & M. Yousuff Hussaini	A Novel Numerical Method for Resolving Micro-Structure Based on Supermesh for Multi-Material Systems
Zhiqiu Li	Applied & Computational Math	Lingjiong Zhu	Option Pricing for An Affine Jump-Diffusion Model
Matthew McCurdy	Applied & Computational Math	Nick Moore & Xiaoming Wang	Convection in Coupled Fluid-Porous Media Systems: A Tale of Two Fluids
Michael Niemeier	Pure Math	Ettore Aldrovandi	Central Extensions of Simplicial Groups and Presheaves of Simplicial Groups
Deniz Ozturk	Biomath	Nick Cogan	Dynamics of Reversible and Irreversible Fouling and Optimal Control Analysis of Backwashing Timing for Hollow Fiber Microfiltration
Arun Kumar Polala	Financial Math	Giray Okten	Multilevel Monte Carlo and Debiased Monte Carlo Methods in Financial Engineering
Zhe Su	Pure Math	Eric Klassen & Martin Bauer	Elastic Shape Analysis of Curves and Surfaces
Kangwei Xing	Financial Math	Arash Fahim	Model-Independent Superhedging with Portfolio Constraints in Continuous Time under Weak S topology
Canlin Zhang	Biomath	Xiuwen Liu & Richard Bertram	Natural Language Processing by Deep Neural Networks

FSU Mathematics PhD Recipients

Spring 2020

NAME	AREA	ADVISOR	THESIS TITLE
Grayson Jorgenson	Pure Math	Paolo Aluffi	Secant Indices, Duality Defect, and Generalizations of the Segre Zeta Function
Heting Yan	Financial Math	Mike Mesterton-Alec Kercheval	Deep Learning for Limit Order Book Trading and Mid-Price Movement
Thanittha Kowan	Pure Math	Philip Bowers	Conformal Tilings and Expansion Complexes

Fall 2019

NAME	AREA	ADVISOR	THESIS TITLE
Antigoni Georgiadou	Applied & Computational Math	Mark Sussman & Tomas Plewa	Global Optimization in Stellar Evolution Applications
Feifan Liu	Applied & Computational Math	Mark Sussman	Novel Numerical Analysis Methods, Using the WENO and WENO-Z Algorithms, for Combining Observational Data with Model Predictions for Improving Forecasts

Summer 2019

NAME	AREA	ADVISOR	THESIS TITLE
Johnna Pauline Barnaby	Biomath	Harsh Jain	Mathematical Models of Prostate Cancer Progression and Response to Treatment
Carolyn Marie Eady	Biomath	Nick Cogan	On the Use of Conformal Mappings, Invariants and Warpings in Investigations of the Cortical Surface
Inmaculada Concepcion Sorribes Rodriguez	Biomath	Harsh Jain	Gliomas Diagnosis, Progression and Treatment: A Mathematical Approach
Matthew Crawford Villemarette	Applied & Computational Math	Mark Sussman	Second Order Discrete Maximum Preserving Finite Difference and Finite Element Methods for Nonlinear Parabolic Equations

FSU Mathematics PhD Recipients

Spring 2019

NAME	AREA	ADVISOR	THESIS TITLE
Manu Aggarwal	Biomath	Nick Cogan	Mathematical Modeling and Sensitivity Analysis for Biological Systems
Andrey Igorevich Manakov	Financial Math	Jerry Magnan	Construction of a General Trading Approach for Financial Markets with Artificial Neural Networks
Mohammad Aamir Rasheed	Pure Math	Wolfgang Heil	Surface Subgroups of 3-Manifold Groups
Seyyed Navid Salehy	Financial Math	Alec Kercheval	Random Walks Over Point Processes and their Application in Finance
Seyyed Nima Salehy	Financial Math	Giray Okten	Belief Function Theory: Monte Carlo Methods and Applications to Stock Markets
Ryan Michael Vinson	Biomath	Richard Bertram	Modelling the Synchronous Behavior of Pancreatic Islets

DEPARTMENT OF MATHEMATICS

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For information about donations with special targets like outreach, named awards, or lecture series, please contact **chair@math.fsu.edu.**

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Thank You!