Fall 2016
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Mathematics & Statistics Newsletter

Old Dominion University

Message from the Department Chair:

Dr. Hideaki Kaneko

The department's research productivity continues to be very good. During the AY 15-16, the faculty published or have articles accepted for publication totaling 45 papers. The faculty gave 42 presentations at professional meetings. The department continues to maintain a ranking in the top 100 of all mathematics departments in the US in terms of federal R&D expenditures. For the fiscal year 2015, the total expenditure was $684,811. A similar figure for the fiscal year 2014 was $827,479. A drop in the total expenditure is caused by an overall reduction of the support from NASA, but the total expenditure of $684,811 still lies in the middle range of the total expenditures for the last 6 years which Is from $533,925 in 2011 to $827,479 in 2014. I'd like to thank all the faculty members who continue to excel in their research activities.

Currently 71 undergraduate students are majoring in mathematics at ODU's Norfolk campus, an increase of 2 from the fall of 2015. The department is generating an undergraduate FTE count of 1327 in the fall of 2016, this accounts for 28% of the total FTE generated by the College of Sciences. Graduate FTE for fall 2016 is 38 which is an increase of 9.32% from the previous year. We began online instruction in the fall of 2015 and developed seven online courses thus far: Math 101M, Math 200, Math 302, Math 316, Math 335, Stat 130M and Stat 330. An online version of Stat 405 is slated for development in spring 2017. Dr. Bogacki is serving as the coordinator of online instruction. I'd like to thank those who are engaged in online instruction.

One of the university's initiatives for development is an all effort related to Big Data Analytics. In this regards, I am happy to inform you that a new program – BS in Mathematics: Big Data Analytics Major - was recently approved. I believe that this program will provide a solid foundation to various other Big Data Analytics programs which are being proposed at the graduate level in our constituent departments.

We are off to a great start to AY 16-17. We are looking forward to more great things to come!

Inside this issue

Special points of interest

- SIAM Chapter Fundraiser
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Richard F. Barry Seminar Series:

Fang Hu led the RFB Colloquium series by arranging a number of prominent mathematicians to speak in the department. Among others, Dr. Bernard Cockburn of University of Minnesota and Dr. Boris Diskin of NIA presented their research. I believe that these colloquia have elevated the spirit of research in the department. The highlight of last year's colloquium was a visit by Dr. Cleve Moler. Dr. Moler is the original author of MATLAB and one of the founders of the MathWorks. He is currently chairman and chief scientist of the company, as well as a member of the National Academy of Engineering and past president of the Society for Industrial and Applied Mathematics. He spoke on the evolution of MATLAB over the last 30 years from a simple matrix calculator to a powerful technical computing environment. He concluded his talk with a discussion of current developments, including Parallel MATLAB for multicore and multicomputer systems. It was the largest crowd gathered to hear a RFB colloquium speaker as the CAVE auditorium was filled to its capacity.
(Shown in photograph Shawn Frazier, Dr. Moler and Dr. Hu.)

MATH IS SOMETIMES CALLED THE SCIENCE OF PATTERNS……..RONALD GRAHAM

Mathematics and Statistics Department Awards:

Awards: The following members of the department received COS teaching awards or recognition for dedicated service to the university.
Congratulations to all!

Dr. Przemyslaw Bogacki - University Professor
Ms. Corinne Wilson– COS Outstanding Teaching award/adjunct
Dr.. Andrea Jones - COS Outstanding Teaching Award/ Senior Lecturer
Dr. D. Glenn Lasseigne –COS Outstanding Undergraduate Advisor
Dr. Li-Shi Luo - Eminent Scholar

Promotions:

Dr. Andrea Jones was promoted to Senior Lecturer
Dr. Sookyung Joo, Associate Professor

Grants:

Rao Chaganty: (1) VA Dept. Environment Quality (2) EVMS
Norou Diawara: (1) VA DMV (2) US Dept. Transportation (3) American Diabetes Association (4) American Diabetes Association
Mark Dorrepaal: US Dept. Education
Fang Hu: NASA Langley
Sookyung Joo: (1) AWM (2) Simon Foundation
Li-Shi Luo: (1) DOE Jefferson Lab (2) NSF Travel support
Kayoung Park: (1) US Dept. Agriculture – Duke Univ. (2) ODU - JFRMP
Yan Peng: NSF
Ke Shi: ODU - SRF
Katherine Smith: (1) ONR (2) ODU – Faculty Innovator Grant
Bob Strozak: ODU – Faculty Innovator Grant
John Tweed: NASA Langley
Xiang Xu: (1) The 6th Ohio River Analysis mtg – Travel (2) The 15th New Mexico Analysis Workshop – Travel (3) NYU-Oxford Workshop on Mathematical Models of Defects and Patterns – Travel
Nail Yamaleev: NIA
Ruhai Zhou: NSF

Society for Industrial and Applied Mathematics and the Math/Stat Club

The Student Chapter of the Society for Industrial and Applied Mathematics (SIAM) and the Mathematics and Statistics Club jointly sponsored a Math Awareness Conference on Saturday, April 9, 2016. The chief organizers of the event were Michelle Pizzo, PhD candidate and President of the SIAM chapter, and R. Anthony Williams, PhD candidate and President of the Math/Stat Club. The conference was attended by 64 people from seven institutions in the region (ODU, Hampton University, the College of William and Mary, Virginia Commonwealth University, Norfolk State University, Regent University, and the University of Maryland – College Park), and one private company (Hunter Ingalls). There were three invited lectures by Dr. Gregory Smith (W&M), Dr. Carolyn Morgan (HU), and Dr. Richard Hammack (VCU); and ten 25-minute contributed talks in three breakout sessions.

NEVER DISCUSS INFINITY WITH A MATHEMAITICIAN YOU'LL NEVER HEAR THE END OF IT!

New Faculty:

Mrs. Janae Tull—Lecturer
Janae graduated Summa Cum Laude with degree in Secondary Math Education, Bachelor of Science from Southeastern University, FL. She subsequently enrolled in Wake Forest University where she received her MA degree in Mathematics at Wake Forest, she studied several topics that include 1st Order Optimization Problems, Inverse Problems, Numerical Linear Algebra, Probability Models, Real Analysis, Codes and Cryptography, Graph Theory, Combinatorial Analysis, Partial Differential Equations, Topology, and Abstract Algebra. She is proficient in Matlab, Sage, R, and LaTex.
Welcome, Janae

Ms. Katie Rafferty and Dr. Weidong Li -are also two faculty members helping us for the academic year 2016-2017. Katie received her BS and MS degrees in Statistics from ODU. She is teaching a number of Stat 130M classes for us. Weidong was a postdoc in the department for the last two years under supervision of Prof. Luo. Weidong is a 2011 graduate of Graduate University of the Chinese Academy of Sciences in 2011. He specializes in the area of Fluid Dynamics.

Mr. John Morgan Russell– Senior Lecturer-Morgan received his BS degree in Mathematics from Christopher Newport University and MS degree in Statistical Science from George Mason University. He taught a number of statistics courses at GMU before joining the department in the fall 2017. In addition to wide range of knowledge in statistics, he is proficient in numerous statistical software packages such as SAS, R and Minitab. He is also familiar with coding languages, Java, C++ and python with particular applications to cleaning and manipulating large data sets. He will be developing ONLINE version of Stat 405 in the spring of 2017.

Dr. Nail Yamaleev– Associate Professor- Nail received his Ph.D. in 1993 in Mathematical Modeling and Numerical Methods from Moscow Institute of Physics and Technology. From 1992 to 1997, he served as a Senior Research Scientist in the Department of Computational Mathematics at Russian Academy of Sciences. In 1997, he was appointed as Alexander von Humboldt Research Fellow. He came to the US in 1999 to join the research group at ICASE and subsequently moved to Computational Modeling and Simulation Branch of NASA Langley. Since 2003, he served as PI or Co-PI of grants whose total expenditure exceeds more than $7 million. His current research interests are adjoint-based optimization of unsteady turbulent flows, high-order entropy WENO spectral collocation method, grid adaptation based on direct error minimization and CFD analysis and adjoint-based optimization of flapping wing of micro air vehicles.

Student COS Awards

Michelle Pizzo– received the 2016 Philip R. Wohl Scholarship.

Josiah Emery– Top Applied Mathematics Student in the class of 2016

April Bossons– Top Statistics/ Biostatistics Student in the class of 2016.

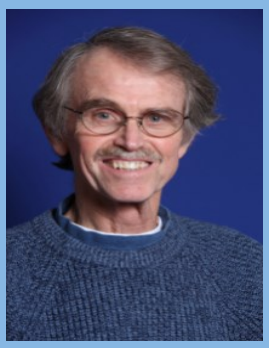
Katelin Jones– Top Mathematics for Secondary School Teachers Student in the class of 2016.

New Graduate Students:

Nhan Bui
Hui Hui Lin
D.S.K. Gamage
P. Liyanaarachchi
A. Alharbi
Katelin Jones
Mark Ledbetter
K. Gierz

Featured Faculty:

Dr. John Kroll: John received his PhD in Engineering & Applied Science from Yale University in 1973. He worked at NOVA Oceanographic Laboratory in Dani FL and taught at MIT before joining the Department in 1976 as Associate Professor. He served as Principle Investigator at the Center for Coastal Physical Oceanography from 1991 to 2000. He became the Chief Departmental Advisor in 2003 and helped the department in this capacity until 2013. He published approximately twenty research articles in the area of the fluid dynamics.



Featured Faculty:

Ms. Sue Doviak: From 1980 to 1988 Sue served as an instructor In the Dept. of Economics at ODU. She joined the Dept. of Mathematics & Statistics in 1988 and subsequently promoted to Senior Lecturer in 2009. Sue has been active in various work with many campus groups to provide remedial instructional in mathematics.
This includes a number of courses taught to incoming Engineering Management students. She served on a number of grants to increase content knowledge in mathematics and sciences for in service teachers Recently Sue developed a ONLINE Version of Math 335-Number Systems and Discrete Math. This course is now being offered every Semester.

Rays, Waves and Scattering: Topics in Classical Mathematical Physics

Writing this book has been a labor of love (mostly!) over a period of about eight years. It represents a tapestry made from many 'threads' in my academic career to this point. The book has five parts, each of which includes relevant mathematical background for its topic; these are (i) rays (physical and mathematical description), (ii) waves (acoustic, atmospheric, elastic, electromagnetic, surface gravity and internal gravity), (iii) classical scattering (including planetary 'scattering'), (iv) semi classical scattering (including a discussion of the WKB approximation), and (v) advanced topics (including material on potential scattering, via the time-independent Schrodinger equation). It is scheduled to be published in summer 2017 in the Princeton Series in Applied Mathematics. Part of the flyleaf 'blurb' describes it as follows:

"*This one-of-a-kind book presents many of the mathematical concepts, structures, and techniques used in the study of rays, waves, and scattering. Panoramic in scope, it includes discussions of how ocean waves are refracted around islands and underwater ridges, how seismic waves are refracted in the earth's interior, how atmospheric waves are scattered by mountains and ridges, how the scattering of light waves produces the blue sky, and meteorological phenomena such as rainbows and coronas.*

Rays, Waves, and Scattering is a valuable resource for practitioners, graduate students, and advanced undergraduates in applied mathematics, theoretical physics, and engineering. Bridging the gap between advanced treatments of the subject written for specialists and less mathematical books aimed at beginners, this unique mathematical compendium features problems and exercises throughout that are geared to various levels of sophistication, covering everything from Ptolemy's theorem to Fresnel integrals (as well as more technical material), and several informative appendixes".

This is the type of book that I would love to have read as a graduate student and therefore it is an intensely personal one. I have long been enthralled by the unifying nature of mathematics in its ability to describe many of the patterns we see all around us. This book is for anyone fascinated by the mathematical connections existing in the union of ray, wave and scattering problems and indeed for those who seek an introduction to some of the methods of applied mathematics and mathematical physics.

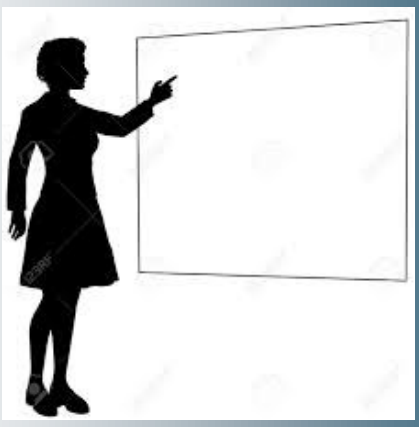
Dr. John Adam

SIAM meeting in Boston:

On July 10th, five mathematics graduate students traveled to Boston, Massachusetts to attend and represent the ODU Department of Mathematics and Statistics at the 2016 Society for Applied and Industrial Mathematics (SIAM) Annual Meeting held jointly with the SIAM Conference on the Life Sciences. The conference was held from Monday, July 11th to Friday, July 15th.
The attendees included:

Michelle Pizzo	ODU SIAM Chapter President, AY 2015/2016
Anthony Williams	ODU Mathematics/Statistics Club President, AY 2015/2016
Ashlee Edwards	ODU SIAM Chapter President, AY 2013/2014
Richard Kitt	ODU SIAM Chapter Vice President, AY 2015/2016
Abdullah Farhat	ODU SIAM Chapter Treasurer, AY 2015/2016

Each student gained valuable academic and professional experience during their time at the conference between attending various lectures and mini-symposiums, attending nightly networking sessions, and attending the career fair. Michelle, Anthony, Ashlee, and Abdullah elected Richard to represent ODU at the Student Days events so he could network with other students around the world and prep for his upcoming year (AY 2016/2017) serving as the new ODU SIAM Chapter President. By representing ODU, he gained valuable insight about leading our chapter.



"It is the mark of a truly intelligent person to be moved by statistics"…….. George Bernard Shaw

SIAM Continued:

On our first day at the conference, Michelle gave a presentation entitled "Approach to Model Acoustic Wave Scattering Using Time Domain Boundary Integral Equations." Everybody showed up to support Michelle as she spoke about her Ph.D. research. A few days later, we then got to support another one of our own, Dr. Ruhai Zhou, when he also gave a presentation on his research. It was wonderful seeing so much ODU involvement at the conference. We only hope that in years to come, the involvement continues to grow.

As a group, one of our most memorable events was walking along Boston's Freedom Trail. It was amazing being able to not only spend a week immersed in mathematics and network with both student and professionals around the globe, but also to be able to broaden our historical understanding of Boston, Massachusetts.

Individually, we each had our own unique experiences.

Statement from Anthony – "The SIAM Annual Meeting in Boston was the first big conference that I had ever been to. I was surprised at the number of talks and sessions that were running concurrently, but this provided a plethora of interesting talks to attend. The networking sessions and career fairs were very helpful in gaining insight to what future job opportunities could be. Also, it was amazing to see that both Cleve Moler of Matlab and Stephen Wolfram of Mathematica were at the conference and speaking to people. I hope to attend and participate in future SIAM conferences."

Statement from Ashlee – "Attending the 2016 Annual SIAM Meeting was a thoroughly exciting experience. It was an honor to represent ODU. There were several very good and interesting talks, not to mention plenty of networking opportunities. In particular, talking with Dr. Bourama Toni form Virginia State University was indeed a pleasure. I was not able to attend his talk last spring here at ODU, but meeting him at the Conference was certainly beneficial. I hope we can invite him to campus again (maybe as featured speaker for OUR Annual Math Awareness Conference... hint, hint). I believe it is important for us, the students, who wish to pursue a career outside of academia to attend a conference where we are able to see the many applications of what we study and gain exposure to what may be in store for us. I am grateful for the support from the department and definitely aim to attend (and present) next year."

Richard F. Barry Seminars Fall 2016

Sept. 8: Yuesheng Xu, Sun Yat-sen
Sept. 29: Hiro Nishikawa, NIA
Oct. 6: Abbas Fakhari, U. Notre Dame
Oct. 24: David K.Lynch,Thule Scientific
Nov. 3 : Shari Davis, ODU
Nov. 10: Balint Joo, Jefferson Lab
Nov. 17:Yanzhao Cao, Auburn U.
Dec. 8: Hongtao Chen, Xiamen U.

Anyone who has suggestions for the fall and Spring seminar speakers, contact Fang Hu -fhu@odu.edu

SIAM Chapter/ Math/Stat Fundraiser

Under the leadership of Michelle Pizzo and R. Anthony Williams, the Student SIAM Chapter and the Math/Stat Club held a fundraiser, selling T-shirts and polo shirts imprinted with the ODU and department logo. They raised a total of $2,040 as of this time. From these funds, they awarded undergraduate scholarships of $250 each, based on academic merit and financial need.

One scholarship was awarded in Fall 2015, and two were awarded in Spring 2016. There remain enough funds to support 5 additional scholarships in the future. In addition, there are 93 shirts of various sizes left to be sold.

Mathematical & Statistical Department

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