Departmental Highlights

Conference Presentations, Colloquia, and Seminars

Dr. Guihong Fan

- **Fan, G** Global Hopf bifurcation in a delayed model for ticks present to 2018 Joint Mathematics Meetings in San Diego, California, Jan. 10-13,"

Dr. Houbin Fang

- **Fang, H**. (5/2016) The Comparison of the Education System in China and the U.S., YangZhou Middle School, YangZhou, China.
- **Fang, H**. (5/2016) The Mathematics Education Majors in the U.S., West Anhui University, LuAn, China.

Dr. Tim Howard

- **Howard, T**., Gober, D., Shaw, K., Ticknor, C. (2017, July). CRAFT-STEM: Internships and STEM Camp to Recruit Pre-service Teachers, Mentoring and Community Building to Help with Their Preparation. Poster presented at the NSF Robert Noyce Teacher Scholarship Program Conference, Washington, D.C.
- Frazier, A., **Howard, T**.; Shaw, K.; and Ticknor, C., "Dismantling Deficit Thinking and Uprooting Fixed Mindsets Through Possible Selves: A Potential Theoretical Framework for Supporting Underrepresented Groups in STEM" (2017, March). Interdisciplinary STEM Teaching & Learning Conference. 23. (https://digitalcommons.georgiasouthern.edu/stem/2017/2017/23).
- **Howard, T**., Gober, D., Shaw, K., Ticknor, C. (2016, July). Revising Internships to Recruit More STEM Teachers, Examining the Influence of the Noyce Scholarship on Teaching Plans. Poster presented at the NSF Robert Noyce Teacher Scholarship Program Conference, Washington, D.C.
- **Howard, T**., Gober, D., Shaw, K., Ticknor, C. (2016, March). Use of Internship Experiences to Recruit Pre-service Math and Science Teachers. Paper presented at the annual meeting of the Southeastern Section of the Mathematical Association of America, Birmingham, Alabama.
- **Howard, T**., Gober, D., Shaw, K., Ticknor, C. (2016, March). Lessons Learned in an Internship Program to Recruit Pre-service Teachers. Paper presented at Interdisciplinary STEM Teaching & Learning Conference, Savannah, Georgia. http://digitalcommons.georgiasouthern.edu/stem/2016/2016/62.

Math Club

Join the Math Club this spring as they meet, traditionally one to two Thursdays a month, beginning March 1st, from 12:30 to 1:20 pm, in University Hall, room 201. Dr. Kristin Lilly will be presenting at this first meeting.

Topics are varied and require only an interest in mathematics. Presentations are accessible for all students, so feel free to join in!

Mathematics Department Unveils New Math Lab

The Math Department has designed an Active learning space intended to increase student engagement and success in mathematics.

Located in University Hall 250, the space has round tables and portable white-boards for group discussion and activity, a double projection system for easy viewing from any seat in the room, and a compliment of laptops for student use.

The space is in use starting this Spring 2018. Many interactive classes are being held in this room, and the department is looking forward to making great use of this space in increasing student outcomes!

COLUMBUS STATE UNIVERSITY

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COLUMBUS STATE UNIVERSITY

MATHEMATICS DEPARTMENT NEWSLETTER

2017 – 2018

Edited by: Liz McInnis Assisted by: Edie Salyer and Erik LeMay

Student Highlights and Achievements

Student Spotlight: Jonathan Parker

"Talk to someone on the other side of whatever goal you are trying to reach" – Jonathan Parker

If you've spent any time on the top floor of University Hall, the home of the Mathematics Department, chances are, you've spotted Jonathan Parker. Jonathan, a Post-Baccalaureate math student, is known for his "hallway office," pictured to the left.

But there is a lot more to Jonathan than his preference for completing school-work in hallways! Jonathan got his undergraduate degree at Kennesaw State in 2010, in Chemistry. After graduation, Jonathan spent about six years working in industry, in materials science laboratories, working with flame retardants and fibers for clothing and tires, then eventually at the Centers for Disease Control and Prevention in Atlanta. Family connections in Columbus brought him home, where he got into performing lab work for a physician. His interests in alternative health and nutrition, as well as functional movement began to lead him to research ideas.

Jonathan determined that he needed a deeper understanding of mathematics to support his research, which is why he's returned to school here at CSU, taking primarily statistics courses, along with Linear Algebra and other higher-level math courses. Eventually, he hopes to attend graduate school in mathematics and thermodynamics. His goal is to pursue research in thermodynamics as it relates to health. He is interested in studying how large-scale systems (like businesses and societies) can be improved and become more efficient when the health of individuals within the system is improved.

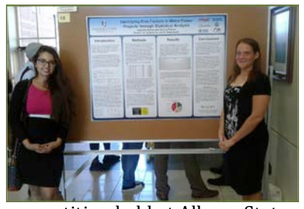
As a student here at Columbus State University, Jonathan has worked closely with Dr. Carlos Almada, Dr. Madhu Bhandary, Dr. Baiqiao Deng, Dr. Guihong Fan, and Dr. Eugen Ionascu, with whom he has submitted a problem to the *College Mathematics Journal* for publication. He is also acting as a Peer Leader in MATH 3155, Foundations for Advanced Mathematics in Spring of 2018.

Jonathan offered this advice for his fellow students: "Talk to individuals on the other side of whatever goal you are trying to reach – to know it is the goal you really want to attain." He offers this guidance as someone who has already completed a degree and spent time working in his field, an invaluable perspective for undergraduates to consider.

So, next time you find yourself in the Mathematics Department, look around for Jonathan. He'll be in a corner somewhere, working away!

Students Present at Research Symposium

Mathematics students Isabella Nunez and Selena Pierce (pictured right) successfully completed their PIC Math projects from Spring 2016, and presented their project at the *Fall 2017 Annual Regional Undergraduate Research Symposium*. Isabella and Selena placed second in the poster competition held at Albany State University on Friday, October 27, 2017.



Math Club Students Attend Summer Research Programs

In summer 2017, two math club members successfully joined REU summer programs:

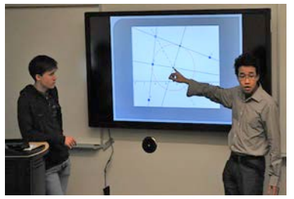
- *Michael Rohly* attended the Pulmonary and Critical Care Summer Internship at Johns Hopkins Medical School. He worked in the area of lung transplantation.
- *John Hetzel* joined the undergraduate research program in Algebra and Discrete Mathematics offered by Auburn University.

2017-2018 Robert Noyce Teacher Scholarship Recipients:

Kimberly Apple
Bianca Cardoso
Alexander Medina
Josh Tracy

Award Number 1136356

Students Invited to Present



Bao Do, John Hetzel (pictured left), and Samantha Sadler were invited to present their PIC Math project at the 2017 MAA MathFest conference in Chicago on July 29, 2017. The project had achieved an overall "Very Good" rating from the MAA PIC Math Judges.

Judges' comments called their project "impressive," with a "tremendous amount of subtlety and complexity" in their problem and solution.

Department Highlights

COLUMBUS STATE UNIVERSITY

Mr. Hassan Hassani Wins Faculty Award

Mr. Hassani, a Columbus State University faculty member since 1993, won the 2017 Faculty Service Award. Mr. Hassani was recognized for outstanding professional service to the univeristy and community. He began his time at CSU in the Department of Basic Studies, and has been part of the Math Department since 2015.

Mr. Hassani accepts his award from CSU President Dr. Chris Markwood, and Interim Provost, Dr. Tina Butcher.

Mr. Hassani celebrates with Dr. Melody Shoemaker and Dr. John Finley.

Dr. Houbin Fang and Math Department Chair Dr. Ben Kamau are pictured here on the first day of Spring 2018 classes. Dr. Fang starts every year off on the right foot, dressing in a tuxedo for the first day of spring semester classes. He bought a tuxedo for a ball in New Orleans years ago, and rarely has occasion to wear it in his everyday life. But he's found a way! Every January, Dr. Fang treats his students to his formal attire. "I'm happy, celebrating a new start" each year. He wants to share his excitement with his students as a way to introduce himself to them, and to make them feel as important to him as they are!

2017 Math Department Graduates

Kimberly Darlene Apple
Tommy Butler, Jr.
Breanna Holland
Mia King
Chelsea McCoy
Haley Pavlis
Selena Pierce
Victoria Shivers
Amber Terrell
Stephen Vance

Dr. I's Annual Newsletter Challenge!

Compute

$$\int_0^{\pi} \frac{x \cdot \sin(x)}{1 + (\cos(x))^4}\, dx$$

in terms of π and $\sqrt{2}$. E.I.

Check with Dr. Ionascu for the correct answer!

Welcome!

New Math Department Faculty

Dr. Kristin Lilly

Dr. Lilly joined the Department of Mathematics at Columbus State University in the Fall of 2017. She earned her Doctorate in Statistics from Auburn University.

Congratulations!

Recent Promotions

Dr. Nehal Shukla

Dr. Shukla was awarded tenure and promoted to Associate Professor in the Spring of 2017. She has been a full-time faculty member at Columbus State University since 2012.

Dr. Houbin Fang

Dr. Fang was promoted to Associate Professor in Spring of 2018. He has been a faculty member at Columbus State University since 2013. His specialty is Math Education.

Dr. Guihong Fan

Dr. Fan was awarded tenure and promoted to Associate Professor in the Spring of 2018. She has been part of the Math Department since 2013. She works primarily with the mathematics of biological systems.

Dr. Brian Muse

Dr. Muse was appointed as Associate Chair of the Mathematics Department at Columbus State University in the Summer of 2017. Dr. Muse's interests lie in the field of discrete mathematics.

Departmental Highlights

Recent Faculty Publications

Guihong Fan

Fan G, Huff R, Muir J, Nektalova Z, Kruchowsky J, Kepler JL, Wang H, Marshall PA, Solis FJ, 2017. Bifurcations and limit cycles in cystosolic yeast calcium. 2017 Nov 2. pii: S0025-5564(17)30070-6. doi: 10.1016/j.mbs.2017.11.001

Houbin Fang

Fang, H., Herron, S., Zhou, Q., Hartsell, T., & Mohn, R. (2016). The effects of simplified schema-based instruction on elementary students' mathematical word problem solving performance. The Journal of Math Education.

Tim Howard

Ticknor, C. S., Gober, D., **Howard, T.**, Shaw, K., & Mathis, L. A. (2017). The Influence of the CSU Robert Noyce Teacher Scholarship Program on Undergraduates' Teaching Plans. *Georgia Educational Researcher*, *14*(1), 69.

Eugen Ionascu

Bisecting binomial coefficients, with T. Martinsen and P. St˘anic˘a, Discrete Applied Mathematics, 227(2017), pp. 70-83

Gaussian Integers and Unit Fractions, with K. Bradford, Acta Math. Univ. Comenianae, LXXXVI (2017), pp. 127-141

New parametrization of A2 + B2 + C 2 = 3D2 and Lagrange's four-square theorem, An. S¸tiint¸. Univ. Al. I. Cuza Ia¸si. Mat. (N.S.), vol. 62(3) (2016), pp. 823-833

(1) Solution to Problem 1084, with John Zacharias, The College Math. J., 48(4) (2017), p. 297
(2) Proposed Problem 1099, with K. Apple, The College Math. J., 48(2) (2017), p. 139
(3) Proposed Problem 11946, Amer. Math. Monthly, 123(10) (2016), p. 1050
(4) Proposed Problem 1088,The College Math. J., 47
(5) (2016), p. 369 (5) Proposed Problem 4002, with K. Apple, Crux Mathematicorum with Mathematical Mayhem, 42(1) (2016)
(6) Proposed Problem 1085, The College Math. J., 47(4) (2016), p. 301
(7) Solution to Problem 1055, The College Math. J., 3 (2016), pp. 226-227

Nehal Shukla

Shukla, Nehal with Shah N. and Yeolekar B., (Jan. 2016) "SEI-model for Social Messages" Journal of Basic and Applied Research, Vol.14 (2), 81-89

Recent Grants Awarded

Dr. Fang

- **Linking Multiple Representations** (2017, PI) $44,760 Funded by Improving Teacher Quality State Grant Proposal -- Title II, Part A, No Child Left Behind Act
- **Developing Algebra Readiness** (2016, PI) $46,606 funded by the *No Child Left Behind" Title II Part a Higher Education IMPROVING TEACHER QUALITY Higher Education grant.*

Dr. Howard

- $42,943 award (PI), "Connecting Mathematical Representations." Improving Teacher Quality Program (2017). **Howard, T. (PI)**, Denise Peppers, Kenneth Jones, and Nancy Mims.
- $51,920 award (PI), "Developing Conceptual Understanding of High School Mathematics." Improving Teacher Quality Program (2016). **Howard, T. (PI),** Denise Peppers, Mary Beth Hendricks, Kenneth Jones, and Nancy Mims.

Dr. Shukla & Dr. Fan

- "We solve it" QEP grant worth $1300 awarded to Math 3556 (Preparation for Industrial careers in Mathematical Sciences) (2016-2017) for the PIC Math course.