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The newsletter of the BSC mathematics and computer science department

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Editor: Shannon Lockard
Staff: Heidi Burgiel, Tom Moore

Letter From the Editor

We're very excited to be starting a new tradition in the math and computer science department, a newsletter containing current events and news about the department. Perhaps new isn't quite the right word; some of you may remember a short-lived newsletter started by our own Tom Moore 15 years ago. Hoping that our next issue will come out in less than 15 years, we plan on sending out an issue each semester to keep everyone up to date on what our faculty and alumni are doing.

This semester we are excited to have a new full-time faculty member joining us, Ju Zhou. John Maslanka, previously a part-time visiting lecturer, is teaching full-time this semester. You can read more about Ju and John in their bios below. Our other faculty members are very busy this semester, giving talks and publishing articles and books. We also hosted Dr. Jeff Weeks, a freelance mathematician, when he gave the Class of 1942 lecture on "The Shape of Space." Along with news of our faculty, we'll bring you up to date on one of our alumni, Larry Rhue. We hope you enjoy reading what we're up to this semester.

As one last note, you may notice that this issue of our newsletter has a very boring title. It's up to you to come up with a better one! We'll be running a "Name the Newsletter" contest before our next issue comes out. Submit your newsletter name to me at slockard@bridgew.edu and the winning name will be revealed in the spring newsletter. The person to submit the winning title will receive a food related reward yet to be determined by the newsletter staff. You may submit names anonymously, but the staff will then be forced to split your food reward among themselves!

Enjoy reading!

Shannon Lockard

New Faculty Profiles

Ju Zhou is our newest full-time faculty member. She was most recently at Penn State University at Worthington-Scranton. Her area of expertise is graph theory and its applications, with a dissertation entitled Cycles in Graph Theory and Matroid Theory. She obtained her PhD in Discrete Mathematics just this August at West Virginia University under the guidance of her adviser Dr. Hong-Jian Lai. She also has a Master's degree in Statistics and a Master's degree in Control Theory and Operations Research. One of the most impressive things to note is that Ju Zhou has already coauthored six publications in refereed journals, has three more accepted for publication and (as we go to press) has five more submitted for publication!

On the personal side, she is originally from Henan Province, mainland China. After she finished her Master's degree in Control Theory and Operations Research in China, she came to the United States in 2004 to pursue her PhD degree. She met her husband in graduate school and they got married in 2006. Besides mathematics, she likes outdoor activities, especially travelling. During the last four years, she has been to Florida (Miami Beach, Kennedy Space Center, and Disney World), Yellowstone Park, the Grand Canyon, San Diego (Sea World), Las Vegas, Washington DC, and New York.

John Maslanka has taken over the full-time slate of courses originally assigned to Zon-I Chang. John has been part-time with us for two years. His undergraduate degree at MIT was in Mathematics and Humanities and he followed that with an MA in Latin and Greek and then a PhD in Philosophy, both degrees at Boston College. His dissertation was on Martin Heidegger's understanding of the nature of language. His dissertation has proven very fruitful in his subsequent work with computer languages. From 1973 to the present John has taught Computer Science courses part-time at the Metropolitan College of Boston University. Also, he has a great deal of experience in the computer industry with employment at Hewlett-Packard, Compaq and Digital Equipment Corporation as a compiler engineer, as well as with GTE in their secure applications.

John also maintains a long-term project of writing an introductory textbook on C++, which he has presented to ten classes at Boston University. Since his arrival in the Math

and Computer Science department at BSC, John has also begun another writing project, which is an introductory text on Java programming. He is currently working through the first version of this project with his COMP 101 and COMP 102 classes. John has always insisted that his students achieve a thorough understanding of the basics of computer programming.

Publications

In May of this year A.K. Peters published ***The Symmetries of Things***, by Heidi Burgiel, John Conway and Chaim Goodman-Strauss. Yes, that is *our* Heidi Burgiel and *the* John Conway of Princeton University and Goodman-Strauss of the University of Arkansas. Originally envisioned as a 100 page pamphlet on "Patterns for Dummies", ***The Symmetries of Things*** grew over ten years into a 400 page comprehensive work on symmetry, finite groups, and William Thurston's orbifold notation.

Beautifully illustrated by mathematician Chaim Goodman-Strauss, the first section of the book remains true to its origins. These initial hundred pages contain a classification of repeating patterns in the plane and on the sphere. The proof is complete, but has been made more readable by stating the conclusion several chapters in advance of the more difficult lemmas.

The second section extends the work of the first section to colored patterns and tilings. It also includes a lengthy discussion of group theory, starting with examples rooted in the work of the first section and concluding with the most recent results on enumerating finite groups. The third and final section of the book concerns patterns in hyperbolic and higher dimensional spaces, including discussions of polyhedra and Archimedean tilings of various spaces.

The book combines the typesetting and organizational skills of Heidi Burgiel, the illustration and invention of Chaim Goodman-Strauss and the genius of John Horton Conway in a beautiful, readable and informative volume.

Abdul Sattar and Toby Lorenzen have had an article, “How to create an online internet course,” accepted for publication in the ACM SIGCSE magazine. This article is based on their development of two hybrid internet courses with one weekly meeting per week instead of the traditional two or three meetings. One course teaches how to use Microsoft Office and is a service course. The other teaches Computer Graphics to computer science majors. The internet materials are structured to use each of the three student learning styles: visual, auditory, and kinesthetic. The steps the authors used to create the internet materials with Adobe Captivate© are presented in the paper. Parts of a sample lecture are available for download from http://webhost.bridgew.edu/lorenzen/captivate.zip.

Events

Recent Events

Dr. Jeff Weeks, a freelance mathematician, gave the Class of 1942 Lecture on September 25. Dr. Weeks took his audience on an interactive, 3-d adventure as he delivered his lecture, "The Shape of Space." It was the first of a series of initiatives by the college aimed at encouraging interest in math and science education. It was also described by Uma Shama as the first in a series of colloquia spread among Wheaton, Stonehill and BSC for the 2008-2009 academic year.

Dr. Weeks asked rhetorically whether the universe we see on a clear night is, in fact, infinite, or whether this infinity might be an illusion. He then discussed the various theories on the matter.

Prerequisites for his lecture, said Dr. Weeks, were "curiosity and imagination." And with that, the former MacArthur Fellow and National Science Foundation Award recipient went on to engage his audience with games to demonstrate the nature of his quest into the true shape of the universe. The games and more are freely available at his website www.geometrygames.org.

The Class of 1942 lecture rotates among the departments of the Natural Sciences and Mathematics. The mathematics department previously hosted Dr. Greg Frederickson of Purdue University who spoke in the Fall of 2001 on the dissections of plane figures. (Story and photo by Karen Booth, Office of Institutional Communications.)

Faculty Seminars

Monday, September 22, 3-4 PM
Phil Scalisi, “The Mystery of Plimpton 322”

Wednesday, October 1, 3-4 PM
Heidi Burgiel, “Seeing Symmetries”

Wednesday, November 19, 3-4 PM
Toby Lorenzen, “An Internet Lesson on Creating Bezier Curves and Surfaces”

Upcoming Events On and Off Campus

Thursday, November 6, 4:30 PM
Shannon Lockard, "Random Vectors and Linear Dependence"
Stanger Hall, Stonehill College, Easton, MA

November 21-22
Annual Fall Meeting of the Northeastern Section of the MAA/NES
Bentley University, Waltham, MA
http://web.bentley.edu/empl/c/ncarter/nesmaaf08/index.html

Alumni News

Larry Rhue graduated from BSC in 1972 with a BA in Mathematics and minors in Physics and Secondary Education. He graduated Summa Cum Laude and received the Mathematics Award the year he graduated. He later returned to BSC to get his MS Ed in Secondary School Administration. In 1984, Larry received his Telecommunications Network Design Certification from the International Communications Association. He is now the Senior Vice President of Strategic Business Development for General Dynamics C4 Systems in Taunton, MA.

General Dynamics C4 Systems is a leading provider of communication systems, computing, and command and control software systems to the Department of Defense, Department of Homeland Security, and Federal Agencies. Larry's responsibilities include establishing strategic direction for the company within the its markets, determining investment positions in advanced technologies, research and development, corporate acquisitions, and the pursuit and winning of large multi-year contracts. The company's core technologies include complex, secure mobile networks and radios used by the military, information assurance solutions and devices, rugged computing, satellite control systems, and mission control software.

Larry has been married to Gay Ann Rhue for 36 years and they have three daughters. He would like to say "My mathematics education at BSC has served me well throughout my career from the early years of teaching mathematics, to a transition of developing software for communication network design algorithms. Overall my education has provided me the experience to present complex technologies and strategies to senior business and government decision makers."

Problems

Take a positive integer N base 10. Multiply the digits of N together; add the digits of N as well; add these answers. For example, 91: 9 + 10 = 19; 10: 0 + 1 = 01.
Find all numbers N for which these steps result in a number whose digits are the reversal of the digits of N.

Create the number 24 using only the following numbers once each: 3, 3, 7, 7. You may use only the following operations: +, -, *, /.

What comes next in this sequence: AAA B D EEEE FFF G HHH I J KKK

Call for Information

If you are an alumnus or alumna of the math and computer science department at BSC, we want to know how you're doing! Please send us some information about what you're doing now. We may publish it here!

We'll be publishing this newsletter each semester, so let us know what you want to see here. Please send any information about events, alumni, and faculty to Shannon Lockard (slockard@bridgew.edu). We look forward to hearing from you.