



2015

## Bytes of $\pi$ , Spring 2015

Department of Mathematics, Bridgewater State University

Volume 5  
Number 1

---

### Recommended Citation

Department of Mathematics, Bridgewater State University. (2015). *Bytes of  $\pi$ , Spring 2015*. 5(1).  
Retrieved from: [http://vc.bridgew.edu/math\\_news/9](http://vc.bridgew.edu/math_news/9)

This item is available as part of Virtual Commons, the open-access institutional repository of Bridgewater State University, Bridgewater, Massachusetts.

# Bytes of $\pi$

Newsletter of the BSU mathematics department

Volume 5, No. 1: Spring 2015

Editors: Heidi Burgiel and Annela Kelly

---

## Letter From the Editors

---

The 2014-2015 academic year has been an eventful one. We weathered record breaking snowfall, created a new statistics minor, began the process of reviewing and revising requirements for other minors and our graduate program, and are working on restructuring our first year courses.

More students are using the Math Research room, with special treats on offer during final exams. We've scheduled lectures by Ruth Charney and Ira Gessel of Brandeis University, Heiko Todt of Stonehill College, and Thomas Koshy of Framingham State University. Seminars have been well attended (and catered!), our students are increasingly involved in math competitions and undergraduate research, and our faculty is active in many areas: conference presentations, undergraduate research, teacher professional development, math competitions, study abroad, public transit, and more! With a new hire coming to campus next year and more hires planned, this is an exciting time for our department.

---

## Kayla Javier Presents Research Poster at National Conference

---



In January, **Kayla Javier** traveled to San Antonio, Texas with mentor **Shannon Lockard** to share the results of her research on the Calkin-Wilf tree with hundreds of mathematicians at the Joint Mathematics Meetings.

---

## New Hire

---

**Stephen Flood** comes to us from the University of Connecticut. He received his Ph.D. from the University of Notre Dame in 2012 for his work on the interplay between combinatorics, computability, and mathematical logic.

---

## Math Kangaroo

---

Submitted by Polina Sabinin.

Math Kangaroo is an international mathematics olympiad for children in grades 1 – 12. **Polina Sabinin** is the State Coordinator for Math Kangaroo and coordinates 51 centers in the state. On March 19th, we welcomed almost 100 competitors here at BSU. A number of faculty and students helped with the event: **Jackie Anderson, Heidi Burgiel, Ward Heilman, Becky Metcalf, Ernie Czerwinski, Suzelle Fisher, Al Galante, Judy Kelliher, Linda Kelly, Tim Mitchell**, as well as **Chief Noda** and **John Santore**. **Brian Witzgal**, an elementary education and mathematics major volunteered as Assistant State Coordinator this year. We look forward to the next Math Kangaroo competition in March 2016.

---

## Upcoming Debate!

---

The **Better Theorem Debate** will take place at 3:30 PM on April 23, 2015 in room Conant 461.

Professor **Irina Seceleanu** will argue that the **Mean Value Theorem** is superior, while Professor **Ward Heilman** will argue in favor of the **Fundamental Theorem of Algebra** (algebraic closure of  $\mathbb{C}$ ). The Debate will be moderated by Dean **Art Goldstein**.

---

## Open Lab Night

---

In October, the Mathematics Department welcomed the local community to a night of **Fall Origami: Full of Folding Fun**. Dozens of kids of all ages folded their hearts out. They made pumpkins, leafs, bats, as well as a nice selection of polyhedra.

On April 24 we re-open our doors for Family STEM Night, hosting a workshop on **Unit Origami Cube and Star Building** for high school students and their parents.

---

## Games Teachers Play

---

Submitted by Polina Sabinin.



Games Teachers Play is a CASE outreach program in mathematics and mathematics education and is led by **Polina Sabinin**. This year Polina has lead four Games Teachers Play workshops for teachers in South East Massachusetts with one more remaining in May. The topics of the workshops were: Round and Round we Go (Reflection), Strategy and Problem Solving, Reasoning and Proof, Patterns all Around, and What are the Odds (Probability).

The Games Teachers Play games library has grown under the leadership of Polina Sabinin and with support from the Second Year Seminar Development Grant (awarded to Polina Sabinin) and other sources. The library now includes over 70 mathematical games that will challenge mathematicians of all ages. The Games library has inspired a group of math majors to form a Board Games Club with **Ward Heilman** as the faculty advisor.

---

## **Faculty at the Joint Mathematics Meetings**

---

Seven BSU faculty traveled to San Antonio, Texas in January 2015 to participate in the national Joint Mathematics Meetings.

**Irina Seceleanu** presented “Mentoring an Undergraduate Research Project: A Mathematical Model of Glacier Retreat” and collaborated with **Rebecca Metcalf** in presenting “Creating a Pathway for Transfer: A Partnership between Two-year and Four-year Public Institutions in Massachusetts”. **Shannon Lockard** presented “Mentoring Student Mentors”, and **Polina Sabinin** gave a talk on “Games Teachers Play: Games as the vehicle for bringing deep mathematical thinking into PreK -- 12 classrooms”. **Heidi Burgiel** spoke on “Motivating Math with Unit Origami”, **Annela Kelly** gave talks titled “Systems of Equations as Matrices and Hill Cipher” and “Games as a Learning Tool in Mathematics”. In addition, **Ward Heilman** attended the MAA minicourse on Public- and Private-key Cryptography and gave talks titled “Jack and the Beanstalk, Flintstone and Color Geometries: Teaching Finite Geometries in a course for Secondary Education Mathematics Students” and “Cranks, Rotors, Rods, Algorithms, Quilts and Computations: designing and building encryption devices and methods in a Cryptology course”.

---

## **Abramson Colloquium and Pi Mu Epsilon Induction**

---

**Ira Gessel** of Brandeis University will give the Abramson Colloquium on “Systems of Numeration” on Sunday, April 19th following the induction of 19 students into the Massachusetts Gamma Chapter of the mathematics honor society Pi Mu Epsilon.

---

## Math Chats

---

Professor **Vignon Oussa** is organizing our department's spring Math Chats, to take place at 3:30 PM on Thursday, April 30 in Conant 461. Undergraduate students interested in presenting a talk or poster at this event should contact Professor Oussa or Professor Ward Heilman.

---

## Publications, Grants, & Awards

---

**Polina Sabinin** was chosen as the new Teaching Fellow in the Office of Teaching and Learning for the next 3 academic years.

**Irina Seceleanu** has been awarded the BSU Presidential Award for Distinguished Teaching.

**Vignon Oussa** has been awarded the BSU Class of 1950 Distinguished Faculty Research Award and also a CARS Course Reassignment Grant.

**Heidi Burgiel** has been awarded a CARS Faculty & Librarian Research Grant.

At the Northeast Passenger Transportation Association conference the Federal Transit Administration presented two awards for "Best Software Innovation" to Bridgewater State University's GeoGraphics Laboratory, which is led by **Uma Shama**.

**Mahmoud El-Hashash** has published a paper titled "On Walsh-Fourier Bispectral Analysis" in the *Proceedings of The 2014 International Conference on Advances in Big Data Analytics*.

**Phil Scalisi** delivered a departmental seminar on "The History of Crystallography" on November 3. In his role as a mineralogist, he has published a chapter titled "Apatites of the Alps" in the beautifully illustrated book *Apatite: The Great Pretender* and coordinated a loan of meteorites from Harvard and equipment from the Massachusetts Air and Space Museum, on display on the second floor of the Conant Science Center.

---

## Student News

---

Six of our students have been accepted to the Summer 2015 ATP program; congratulations to these students and to their mentors!

**Terrence Kelleher**, with mentor **Shannon Lockard**;

**Christopher McDonald** and **Arianna Zikos**, with mentor **Vignon Oussa**;

**Guillermo Ortiz**, with mentor **Irina Seceleanu**;

**Nicholas Pasciuto**, with mentor **Ward Heilman**; and

**Emanuel Zanzerkia**, with mentor **Kevin Rion**.

We have a new Facebook group: **Bridgewater Elementary Mathematics** (<https://www.facebook.com/groups/BSUEIEdMath/>). Please join if you are interested in Mathematics Education at the Elementary level.



Students **Caroline Dundas, Kayla Javier, Daniel Pandolfo, Melanie Tummino, Terrence Kelleher** and **Nariel Monteiro** competed at the Ninth Annual NES/MAA Collegiate Mathematics Competition in New Haven, CT on November 21, 2014.

Twelve of our students are excited to attend the Central Connecticut State University mathematics competition on April 25, 2015 in New Britain, CT: **Yaqin Sun, Terrence Kelleher, Guillermo Ortiz, Brian Witzgall, Christopher McDonald, Arianna Zikos, Benjamin Buzzee, Nina Culver, Nicholas Fonseca, Patrick Holton, Kayla Javier, and Anthony Pratti.**

Double major **Nariel Monteiro** has been awarded the James Fitzgerald Memorial Scholarship in Mathematics, the Professor T. Leonard Kelly Memorial Award in Chemistry, and the Dr. George A. Weygand Scholarship for future science teachers. Nariel has been accepted into a PhD in Math Program at Tufts with a teaching assistantship and stipend.

Double major **Aly Aly** won the Professor T. Leonard Kelly Memorial Award in Physics.

**Ben Buzzee** has been accepted to a PhD program in Statistics at Iowa State with a teaching assistantship and stipend.

**Yaqin Sun** has been accepted into a decision science program with a concentration in statistics at Drexel University and has been awarded a graduate assistantship.

**Berlinda Batista**, a junior math major, has been accepted to the Woods Hole Partnership Education Program for this summer.



**Shellie Johnson** applied to present the poster “How long is a game of Parcheesi?” at the Student Arts & Research Symposium (StARS) at BSU on Monday, April 27th.

**Terry Mullen** is speaking on “The Application of Frames to Signal Processing” at the National Conference on Undergraduate Research on Friday, April 17th in Spokane, WA and has applied to speak on “An analysis of numerical methods on a traffic model” at the Student Arts & Research Symposium (StARS) at BSU on Monday, April 27th.

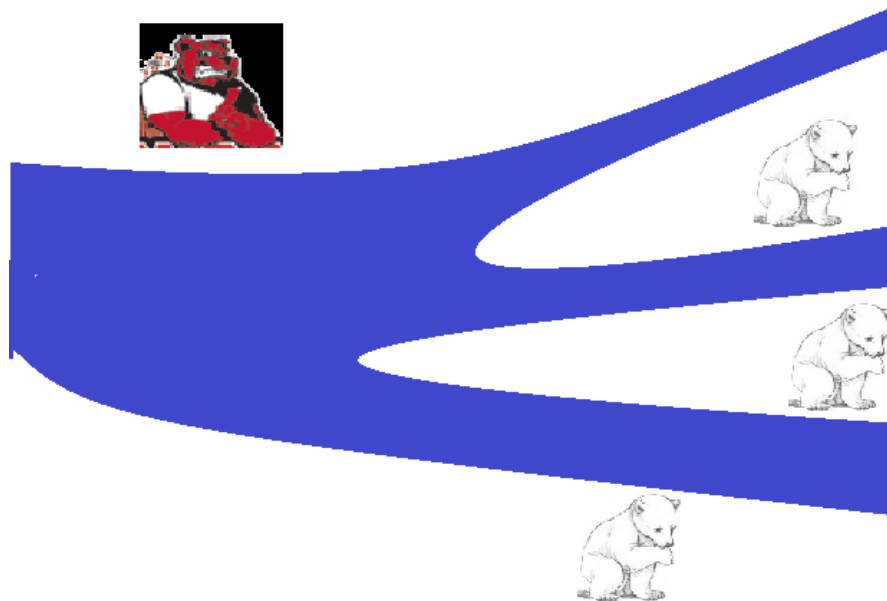
**Kassaundra Przelomski** will present a poster on “Analysis and dynamics of a laser model” at the 21st Annual Undergraduate Research Conference on Friday, April 24th at University of Massachusetts Amherst.

---

## Problem Bears!

---

Melting snow has stranded three bear cubs on an island. The mother bear must cross three streams to feed all her cubs; each stream crossing brings her to one bear cub. Naturally, she wants to give the same amount of fish to each cub with none left over at the end. Each time she crosses a stream she catches more fish, and doubles the number of fish she is carrying. How many fish should she start with to give each cub an equal number of fish and have no fish left over at the end?



Find all possible solutions to help the mother bear plan!

---

To respond to an article in this newsletter or report your news, please email Heidi Burgiel ([hburgiel@bridgew.edu](mailto:hburgiel@bridgew.edu)) or Annela Kelly ([a3kelly@bridgew.edu](mailto:a3kelly@bridgew.edu)). We look forward to hearing from you!