

## UNDERGRADUATE MATHEMATICS SEMINAR

The next seminar of the term will be:

**DATE:** **MONDAY, May 2<sup>nd</sup>**

**Time &** **4:15pm** – Refreshments in the Math Common Room, **Bailey 204**

**Location:** **4:30pm** – Seminar in **Bailey 207**

In this seminar, the Union College Math Department's own **Professor Julius Barbanel** will present the following talk:

### **TITLE: Doubling the Cube: How it was done by the ancient Greeks**

**ABSTRACT:** According to legend, the people in the ancient Greek city of Delos were suffering from a terrible plague. Relief was sought from the oracle at Delphi. Delos had a cubical altar that was used in religious ceremonies. The oracle told the people of Delos that they could rid themselves of the plague if they constructed a new cubical altar having double the volume.

How would one do this? ("Double the length of a side" is certainly the wrong answer!) Some of the most brilliant ancient Greek mathematicians worked on this problem. We present two solutions. One is a mechanical procedure by Eratosthenes (276-194BC) involving moving triangles. The other is by Archytas (428-350BC) and involves a three-dimensional construction in which a certain point is determined as the intersection of three surfaces of revolution.



### **Math Club Event: Meet the Majors**

The Math Club will be holding a "Meet the Majors" event directly after the math seminar on **Monday, May 2** from **5:30-6:30pm**. It will include short talks from juniors and seniors about their post-graduate plans, their thesis experiences, various internship opportunities, and the general logistics of completing a math major. Following will be an informal question and answer session and then a *pizza dinner* provided by the Math Department! It will be a great opportunity for underclass math majors and minors, as well as those considering these possibilities, to meet your fellow math students and to get your general questions answered by the people who are completing the major themselves.

### **My HRUMC Experience, by Keilah Creedon '14**

When I told my friends that I was voluntarily waking up at 7am on a Saturday to go to an all-day math conference, they questioned my sanity in believing that it would be a day filled with fun and not torture. As I returned home that day I was glad to find my predictions were right, and that it was a great day filled with what we all love, math. The 18<sup>th</sup> annual Hudson River Undergraduate Mathematics Conference was held on April 16, at our neighbor-school Skidmore College. After a nice little drive to Saratoga, we all piled out of the van, took a fantastic group pic [see last week's math newsletter], and headed inside for breakfast and registration.

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After breakfast, we all headed in different directions to attend a variety of presentations given primarily by students who had done some research in a specific field. The topics ranged from analysis and statistics, to applied mathematics, to geometry, game theory, number theory, and a variety of other interesting math topics. I was proud of our very own **Courtney Phillips** who broke the ice and presented her work in lattices first thing in our section. Three other brave students from Union presented their work later in the day as well, namely **Andrea Marois** and **Long Xie** and their work in game theory, and **Wei Yu** with his study of marriage and course registration in applied mathematics. **Professor Zwicker** also gave a very interesting talk about game theory and voting. They all did great and represented Union well! Hopefully, we'll be hearing more from them at Steinmetz.

After a fantastic morning of student presentations, we all attended the Key Note Speaker address by Carl Pomerance from Dartmouth College. The talk was titled *Order and Chaos*. He began by asking questions with card decks and how many perfect shuffles it takes to get the deck back to its starting position. He found that a deck of 52 cards takes 8 perfect shuffles to get back to its starting position, where as a deck of 54 cards takes 52 perfect shuffles to return back to its original position. Using this analogy, Pomerance showed that in mathematics, a small change in the input could lead to a huge change the output, which he defined as chaos. The talk was super interesting, and was a good reminder for me that the small details do count!

Once Pomerance's talk was over, we all piled in to Skidmore's dining hall for a delicious lunch. Everyone from Union gave it a big thumbs-up. Nice and full, we continued our day with two more series of student presentations which were all very original and well executed. My favorite talk was titled *Mathematics and Art* and was given by a girl who is an art major with some interest in math. Her main interest was in representing infinity through art. She used some digital images to create tunnels which looked as though they never ended. It was really neat to visualize some of the abstract in mathematics.

After all of the talks were over, we left Skidmore's campus, tired, but content and from what I heard everyone had really enjoyed their experiences that day. We finished the day off with a great dinner in Schenectady and headed back to Union. Along with really enjoying the interesting math talks presented, I met some new math major friends, and got some great ideas for my Scholars Research Project. If you did not get a chance to go this year, I would definitely recommend going next year. It was a great experience!

## Job Opportunity

Math Schuler Scholar Coach, AmeriCorps Math Scholar Coaches work one-on-one in an educational setting with Scholars and families and they usually become a role model/mentor for the Scholars. They will have an opportunity to help create much of the educational programming that they and future coaches will be delivering to the students. They will also coordinate Scholar outings (e.g. theatre, opera, museums, picnics, etc.) and assist the Schuler Family Foundation (SFF) staff with administrative functions. Applicants must have a strong interest in math or science education, education reform, social services, youth development, social justice or a related field. Interested students may view additional details and application information through Union's eRecruiting, or by contacting **Rochelle Caruso** in the Becker Career Center.

## Problem of the Newsletter: April 29, 2011

Congratulations to **Union Math Club's Problem Solving Group** members **Becca Robinson** and **Erin Whitney** for correctly solving last week's problem. Their solution has been posted on the bulletin boards around Bailey Hall.

**This week's problem:** Determine the value of the sum  $\sum_{n=1}^{\infty} \frac{n^2}{2^n}$

If you are interested in sharing your thoughts on this problem, stop by the Math Common Room (Bailey 204) on **Tuesday** during **common lunch** and join the **Math Club's** nascent **Problem Solving Group**.

**Professor Friedman** will accept solutions to this problem until noon Thursday, May 5<sup>th</sup>. Email your solution ([friedmap@union.edu](mailto:friedmap@union.edu)), or put it in his mailbox in the Math Department's office on the second floor of Bailey.