

## UNDERGRADUATE MATH SEMINAR

The next seminar will back in its usual location, Bailey 207.

**DATE:** **Thursday, October 10**

**Time &** **12:30 pm** – Refreshments

**Location:** **1:00 pm** – Seminar in **BAILEY 207**



Professor Roger Hoerl

In this week's seminar, **Professor Roger Hoerl**, the Department of Mathematics at Union College's statistician, will be delivering the following talk:

### Title: The Intersection of Science, Engineering, and Statistics

**Abstract:** In essence, science expands our understanding of the fundamental workings of the natural world. Engineering, on the other hand, takes our knowledge of the natural world and attempts to apply it in some way that benefits society. Real engineering applications typically venture beyond the boundaries of our scientific knowledge, resulting in uncertainty, and some degree of "trial and error". Google's experiences with self-driving cars would be an obvious example. At its best, statistics accelerates science and engineering by efficiently filling in the gaps in our scientific theory using empirical data. This seminar will illustrate these concepts using a case study from the author's previous experience as a statistical intern at the DuPont Company.

## Putnam Exam/Competition Preparation Underway

The William Lowell Putnam Mathematical Competition is the most famous (infamous?) math competition for undergraduate college and university students. The "exam" is given in two three-hour sessions. In each session, students have six proof-type problems to attack. The problems range in difficulty from challenging to really-hard. But one thing they have in common, they are fun to try!

This year's contest will be Saturday, December 7. **Professors Ehssan Khanmohamadi** and **Jetjaroen Klangwang** are holding training sessions to help students learn some Putnam problem-solving methods on Friday afternoons. Even if you are not interested in taking the actual exam, stop by for this wonderful extracurricular math activity.



The PEP squad getting ready for this year's Putnam Exam.

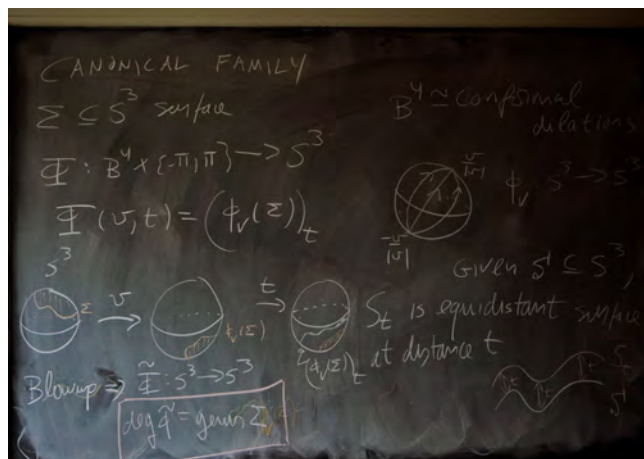
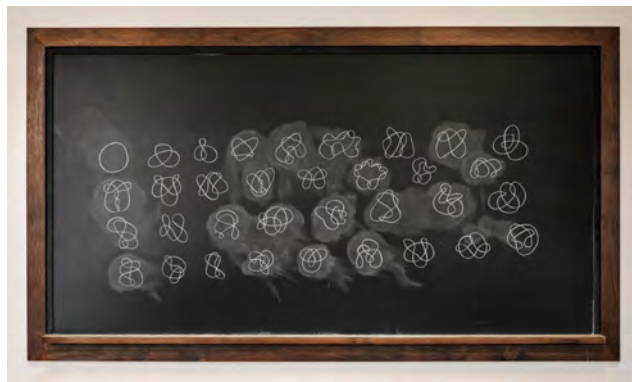
**The next Putnam Exam Preparation Squad session is  
Friday, October 11, 5:00pm in Bailey 106.  
Join the fun!**

## Math as Art? What's on your Chalkboard?

Math is beautiful. Not just in the abstract, but in its visualization. And not just visualization via computer imagery, but in good old-fashioned chalk meets board style. That is a theme in a new book, *Do Not Erase*, by Jessica Wynne to be published this fall by Princeton University Press, which contains photos of mathematicians' chalkboards.

In a September 24, 2019 article, "When Theory Meets Chalk, Dust Flies," in the *New York Times*, written by Dennis Overbye, several of Wynne's photos were published, including the two pictured here.

From the article: "For the last year, Jessica Wynne, a photographer and professor at the Fashion Institute of Technology in New York, has been photographing mathematicians' blackboards, finding art in the swirling gangs of symbols sketched in the heat of imagination, argument and speculation." He quotes her: "I am attracted to the timeless beauty and physicality of the mathematicians' chalkboard, and to their higher aspiration to uncover the truth and solve a problem. Their imagination guides them and they see images first, not words. They see pictures before meaning." "I am also fascinated by the process of working on the chalkboard. Despite technological advances, and the creation of computers, this is how the masters choose to work."



Top board: Sahar Khan, Columbia University.  
Bottom board: Andre Neves, Institute of Advanced Study, Princeton University.

## Join the Math Club!

**Next meeting: Friday, October 11, 1:00pm in Bailey 204**

### Problem of the Newsletter – October 7, 2019

**Last week's problem:** Unfortunately, no correct solutions were submitted to last week's problem. However, a solution to this problem has been posted at the newsletter sites around Bailey Hall.

**This week's problem:** Let's play with complex numbers! For this week's problem,

Let  $z = \frac{1+i}{\sqrt{2}}$ . What is

$$\left( z^{1^2} + z^{2^2} + z^{3^2} + \cdots + z^{12^2} \right) \cdot \left( \frac{1}{z^{1^2}} + \frac{1}{z^{2^2}} + \frac{1}{z^{3^2}} + \cdots + \frac{1}{z^{12^2}} \right)?$$

**Professor Friedman** ([friedmap@union.edu](mailto:friedmap@union.edu)) will accept solutions until noon on Friday, October 11.