

UNDERGRADUATE MATHEMATICS SEMINAR

We hope you enjoyed the yesterday's (Thursday's) first seminar of the term. In an effort to make the seminar series attendable by the widest possible audience, seminars will not be fixed to any one particular day-of-week. Instead, some seminars will be Monday afternoons and others will be Tuesday afternoons. In general, you should consult either the newsletter, the signs that will be posted throughout Bailey Hall, or perhaps the Student Seminar webpage on the Math Department website: <http://www.math.union.edu/activities/seminars/student/welcome.html> to find the date, time, and location of the next seminar.

The next seminar of this term will be this coming **MONDAY, September 22nd**. Refreshments will be served at **4:15 in the Math Common Room**, Bailey 204, with the seminar beginning at **4:30 in Bailey 207**.

In the seminar, Union's own **Professor Jue Wang** will be delivering the following talk.

TITLE: Minimization Problem in Image Restoration

ABSTRACT: An important task in image processing is the restoration of the original image from the observed image, which is usually degraded due to imperfect image formation process. In many instances one has the feeling that relevant information is close to being recognizable, if only the image could be sharpened just a little. We will form the minimization problem, and use energy minimization and regularization techniques to obtain an estimate of the original point spread function and the original image given only the observation. We derive two coupled PDEs and solve the problem following alternating steepest descent steps.

Interesting Articles in Math Common Room Await your Reading: "The Freshman's Approach to Conway's Napkin Problem"

The Math Common Room (Bailey 204) is a wonderful room for math majors and minors to meet, relax, do homework, enjoy a cup of coffee, and, perhaps, flip through some of the mathematical magazines and journals to which the department subscribes.

In the summer June/July 2008 issue of The American Mathematical Monthly, commonly called "The Monthly," published by The Mathematical Association of America, is an interesting and very accessible article entitled "The Freshman's Approach to Conway's Napkin Problem," by Niklas Eriksen of the University of Gothenburg in Sweden.

The article opens by explaining the problem

under study as follows:

"Arriving at a conference dinner and sitting down at any free space at a round table, one is usually confronted with a serious problem: 'Should I pick the napkin on the right or on the left?' If this choice is made at random, some diners will probably have no napkin to choose from, both being taken from adjacent diners. What is the expected proportion of diners not getting a napkin?"

"This is a question posed by John Conway at a lunch at Bell Labs in 2001....To be more precise, we assume that all diners arrive at one time and find seats at random (that is, independently and with [continued on p2])

uniform distribution over the remaining seats). A diner whose napkin *par préférence* is taken immediately has a go at the other napkin.”

The author discusses results obtained by others that answer this and some more general questions using some fancy high-level math. However, this is not the purpose of the current article. Rather, [and without intending to insult freshmen]

“... We take the view of a freshman, knowing nothing of ... sophisticated mathematics, though being familiar with permutations and binomial coefficients. Using only elementary facts about these objects, we compute the expected number of napkinless diners for table size n and proportions of p and q of diners preferring the left and right napkin, respectively.”

Sound interesting? See if you can answer this problem and the several other variants that the author poses in the article! If this excites you, perhaps you can continue studying this and similar topics – maybe for fun, or even as a senior thesis.

Resources for Students

- Free tutoring! The Math Department offers a free tutoring service for students enrolled in its calculus courses through Math 115. The Calculus Help Center is open five nights a week, Sunday through Thursday, from 7:30pm to 10:00pm in the seminar room of Sorum House.
- Get a Job! It is not too early to begin thinking about *next* summer or life after graduation. Toward that end, you might want to visit the Becker Career Center (BCC) on campus and meet some of the people who would like to help you, or at

least visit their website www.union.edu/StudentLife/BeckerCareerCenter.

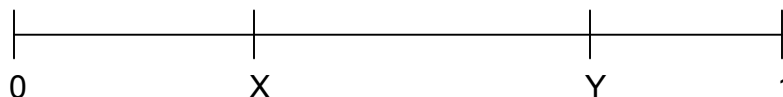
This newsletter will try to advertise opportunities, relayed by Becker, that might appeal to math majors, including

- Engineering Consortium Career Fair Columbia University will host its 5th annual Engineering Consortium Career Fair on Friday, October 24th. **While the title focuses on engineering, many of the companies in attendance are looking for strong Math and Science majors.** A Prep Session for this event will be held on **TUESDAY, September 30th in Butterfield 203.** Lunch will be provided! Contact Lindsay Ferguson in the BCC at ferqusol@union.edu for more information.

Problem of the Newsletter

Since the last PON was unleashed on you just three days ago, it is being reissued in this issue of the newsletter.

Here's a fun one, probab(istical)ly: Randomly pick two points, X and Y , in the unit interval $[0,1]$. What is the probability that the resulting three segments determined by these points can be used to form the sides of a triangle?



Solutions to this problem should be submitted to Professor Friedman by Noon on Thursday, September 25th, either by email (to friedmap@union.edu) or to his mailbox in the Math Department office on the second floor of Bailey Hall.