

Goodσελλ Gazette

Carleton College
Northfield MN 55057

The newsletter for the Carleton mathematics and statistics community

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A Dizzy Walk through Monte Carlo

Alicia Johnson, who is a statistician at Macalester College will be at Carleton next Thursday, October 20, to present her research on Markov chains. The talk will be held in CMC 206 from 4-5 PM. Here is the abstract for her talk:

How likely is it that a dizzy person is able to stumble home or that a gambler avoids financial ruin? Given their starting positions and the likelihood of each successive step, we can model the dizzy person's and gambler's paths using simple Markov chains. Both are classic examples which can be extended to more general settings through Markov chain Monte Carlo (MCMC) methods. Specifically, MCMC uses computer simulation to explore otherwise intractable mathematical problems. In this talk, I will give an introduction to MCMC and discuss how it has revolutionized the field of statistics and its applications in biology, finance, and computer science (to name a few).

Interested in Grad School? Come Talk with Two Recent Math Alumni

Becky Patrias '10 and Rosemary Phelps '10, both currently working on graduate school in mathematics, will be on campus to talk about their grad school experiences from 3:30-4:00 on October 20 in CMC 206. Stop in with specific questions or just to hear about their first couple of years in graduate school. And stay after their talk for Alicia Johnson's (above) in the same room!

Alumni Mentorship Opportunities From the Career Center

Are you interested in going into a career related to mathematics, statistics and/or programming? Want to be mentored by an alum who is in the field? The Carleton Alumni Mentoring Program (C.A.M.P.), sponsored by the Career Center, will pair you with a potential mentor catered to your needs. You and your mentor will communicate throughout your senior year to help guide you through the post-Carleton transition.

For more information on the program, visit: <http://apps.carleton.edu/campus/career/initiatives/CAMP/> to read about the program, click the students' link to sign in. If you have any questions, or would like advice on how to present yourself to prospective mentors, please drop by the Career Center.

Environment America Internships and Fellowships for all Classes

Each year, Environment America hires college graduates to join their two-year Fellowship Program. They also hire current students for internships during our winter and spring terms. Applicants must submit their materials by October 31, and they can be found at: <http://www.environmentamerica.org/jobs/available-positions/fellowship-program>. Contact Michele Hesterberg '10 for info at mhesterberg@environmentminnesota.org.

AmeriCorps Seeks Math Tutors at Northfield High School (NHS)

Katie Windschitl, from the AmeriCorps Promise Fellows Program, is looking for volunteers for high school students in Northfield. She asks that you be available between 8:45 and 9:30 AM on a weekday of your choice besides Wednesday, and for one day of helping in the after-school Homework Help program, which runs from 2:45 to 4:30 PM on Mondays and Thursdays. If you're interested, email Katie directly at Katie.Windschitl@nfld.k12.mn.us.

ACT Center also seeks Math and Stats Tutors

The ACT office could use more volunteers who are able to tutor mathematics (including statistics). Would you like to get more involved in our local Northfield community? Please consider becoming a [math] tutor! If you are interested, please stop by the ACT center, or e-mail vangb or steidele so they can get you a tutor profile to provide us with your basic information.

Sigma Xi Poster Session Registration Deadline Extended

Registration has been extended until next Monday, October 17th, to allow for more students to participate. Register online at <http://serc.carleton.edu/cismi/students/register.html>. The poster session takes place on Wednesday, October 26, from 3:45 to 5:15 PM in Weitz 236.

As a reminder, CISMI/HHMI will again be covering the cost of poster printing at Carleton Print and Mail Services. When you bring the digital file of your poster to Print & Mail Services by October 19, tell them that it is for the Science and Math Poster Session and the proper account will be charged.

PROBLEMS OF THE WEEK

1. a) Note that if we tile the plane with black and white squares in a regular "checkerboard" pattern, then every square has an equal number (four) of black and of white neighbors, where two squares are considered neighbors if they are not the same but they do have at least one common point. If we try the analogous pattern of cubes in 3-space, it no longer works this way: every white cube has 14 black neighbors and only 12 white neighbors, and vice versa. Show that there is a different color pattern of black and white "grid" cubes in 3-space for which every cube does have exactly 13 neighbors of each color.

b) What happens in n -space for $n > 3$? Is it still possible to find a color pattern for a regular grid of "hypercubes" so that every hypercube, whether black or white, has an equal number of black and of white neighbors? If so, show why; if not, give an example of a specific n for which it is impossible.

2. Find a positive rational number a such that the (shortest) distance between the parabolas $y = x^2$ and $y = -(x - a)^2$ is also a rational number.

So it wasn't the weather, because it's been another quiet week. Solutions for the problems posed the first two weeks of this term (September 16 and 23) have been posted in the hallway outside CMC 217, so those problems have now "expired". Solutions to all later problems (including the new problems above) are still eagerly awaited in my box in the CMC. Enjoy midterm break! -Mark Krusemeyer

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