L'Augarithms

Mathematics Colloquium Fall Lineup

Colloquia are typically held Wednesdays 3:40—4:40 in Oren 113. Immensely appealing refreshments are served.

Sept.	7	The Annual Department Meet & Greet
	21	Robert Miner, Ph.D.
Oct.	4	Katy Micek, Augsburg College
	19	Mike Weimerskirch, Augsburg College
Nov.	2	Austin Wagner, Megan Sutherland
→	16[1]	Sarah McKagan, McKagan Enterprises, Seattle
Dec.	7	Steve Kennedy and Deanna Haunsperger

[1]This week's Colloquium

Sam McKagan is a physics education research consultant on numerous projects, including modern physics laboratory development at Augsburg College, the Energy Project at Seattle Pacific University, and the Physics Education Technology Project at the University of Colorado. She is also the editor of the PER User's Guide (perusersguide.org),

Sam McKagan

a new web resource to help physics educators learn about the physics education research and how to apply it in their classrooms. Formerly a post-doc in the Physics Education Research Group at the University of Colorado, she focused on physics education research on modern physics and quantum mechanics. She has a PhD in physics from the University of Washington for research on Bose-Einstein Condensation.

Refreshment mode = On

Tidbits of the Week (TOTW) Answers next week

Did you know? **111,777** is 'the least integer not nameable in fewer than nineteen syllables.' But it seems to have been defined in eighteen syllables. This is an instance of the *Berry paradox*.

Which are the two-digit primes such that reversing their digits also produces a prime?

What is the smallest three-digit prime such that all other arrangements of its digits are also prime numbers?

What is the smallest integer greater than one that is equal to the sum of the cubes of its digits?

❖Submit TOTW answers/solutions to kaminsky@augsburg.edu, or under Ken's door at SCI 137E, or in the puzzles and problems box just outside of Su's office.

Problem of the week...

Abbie Mozzetti of White Bear Lake H. S. solved the palindromial POTW from vol. 25.02. **Brian Peterman** of Century College, and **Toni Ek** submitted solutions to the POTW from vol. 25.04. They found that 4/3 cubic feet of the tree had been chopped away by the lumberjack.

Here is a new POTW:

Call a parallelogram in the plane *integral* if all four of its corners lie at points whose coordinates are integers. Which integral parallelograms have an area which is also an integer?

(Recall that a parallelogram is a four-sided figure with opposite sides parallel.)

❖ Reprinted with permission from Bradley U's old 'POTW' page <http://hilltop.bradley.edu/%7Edelgado/potw/potw.html>

Puzzle of the week...

Regina Hopingardner's solution of the golden coin problem of volume 25.02 inadvertently went unmentioned. **Mathia Colwell** and **Wileam McHickershire** solved the PZOTW from volume 25.04. They found that the only valid five-letter English word in the puzzle was INPUT.

Here is a new PZOTW:

Lenny has a collection of birds and frogs. He wants to do a count of his animals, but he has to keep the lights out or his parents will know he's awake. So he counts heads and feet, counting 29 heads and 98 feet. How many birds and how many frogs does he have?

❖Submit POTW & POZTW solutions to kaminsky@augsburg. edu, or under Ken's door at SCI 137E, or in the puzzles and problems box just outside of Su's office.

Nobel laureate H. A. Hauptman dies

By WILLIAM GRIMES in NY Times
Published: October 24, 2011

Herbert A. Hauptman, a mathematician who shared the 1985 Nobel Prize in Chemistry with the chemist Jerome Karle for their development of revolutionary methods for determining the structure of molecules vital to life, died on October 23 in Buffalo, New York. He was 94. His death was confirmed by Jane F. Griffin, principal research scientist at the Hauptman-Woodward Medical Research Institute in Buffalo.
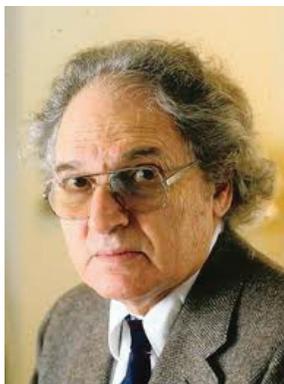
Dr. Hauptman and Dr. Karle's work had far-reaching impact in the manufacture of drugs for a variety of ailments.

"I don't think there's a single pharmaceutical that's been developed in the last 30 years that hasn't been studied using derivations of what Dr. Hauptman and his colleagues won the Nobel Prize for," Eaton Lattman, chief executive of the Hauptman-Woodward institute, told The Associated Press.

Dr. Hauptman began collaborating with Dr. Karle, a classmate from City College, at the Naval Research Laboratory in Washington after World War II. They turned their attention to X-ray crystallography, a means of deducing the three-dimensional structure of a molecule by analyzing how a crystal form of the molecule scatters a beam of X-rays aimed at it. The scattering pattern is recorded as points of light on X-ray film. The method had limitations, however: researchers could do no more than draw inferences of a molecule's structure, to be verified by further investigation.

Dr. Hauptman and Dr. Karle took the guesswork out of the problem. Using probability theory to interpret the light patterns on X-ray film, they calculated the angles at which the X-ray beams were deflected as they passed near the electrons surrounding the nucleus of an atom. They then came up with equations that translated this information into maps that pinpointed the location of individual atoms.

Their main ideas were first published in the early 1950s but were poorly understood and made few converts for at least 15 years. They are now used by crystallographers throughout the world to study thousands of molecules whose structures were previously inaccessible. The methods were particularly useful for researchers working with hormones, antibiotics and vitamins.

With a clear picture of the structure of hormones and other biological molecules, researchers better understood the chemistry of the body and of drugs used to treat various illnesses. For example, once they understood the structure of enkephalins, pain-control substances found naturally in the body, they were able to make progress in developing new pain-killing drugs.

(For the full obituary, go to http://www.nytimes.com/2011/10/25/us/herbert-a-hauptman-nobel-winning-mathematician-dies-at-94.html)

Attention graduating seniors!

There is a new actuarial science program at the University of Wisconsin-Madison that may be of interest to graduating seniors in *mathematics*. The Capstone Certificate in Actuarial Science is a tailored series of courses that strategically prepares students for an actuarial career. The Capstone Certificate has a relatively short time to completion (9 months) and courses directly prepare students to pass the actuarial credentialing exams. The ideal candidate for the program has little to no actuarial knowledge, but a strong mathematical background. This program could be useful for some Augsburg students graduating in May who would like to supplement their math degree with applied training in actuarial science.

The Actuarial Science program in the Wisconsin School of Business is one of a select few programs in North America to be designated as a Center of Actuarial Excellence by the Society of Actuaries. Their actuarial graduates enjoy both the highest starting salary and also, highest placement rates of any major in the business school. For more information see the flyer with information about the program on Ken's door, or ask Ken

Contact information for anyone interested in the program is on the flyer.

Internships abound

There is a list of dozens of available internships posted on Jody Sorensen's door (Sci 137C)—Los Alamos National Labs, Raytheon, Aerospace Corporation, Prudential, National Security Agency, to name but a small sample.

Stressed out? Try this proven stress diet

BREAKFAST:	1 poached egg
	1 slice dry whole wheat toast
	1/2 grapefruit
	8 oz. skim milk
LUNCH:	4 oz. lean broiled chicken
	1 cup steamed zucchini
	1 cup herb tea
	1 oreo cookie
MID AFTERNOON SNACK:	rest of package of oreo cookies
	1 quart rocky road ice cream
	1 jar fudge
	2 doughnuts
DINNER:	rest of bag of doughnuts
	1 large pizza with the works
	1 large pitcher of beer
	3 Milky Way bars
	1 cheesecake eaten directly from freezer