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University of Denver

# Mathematics Alumni Newsletter

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**This newsletter is published semiannually and your submissions are welcome.**

If you have an article, a picture, or information that might be of interest to other alumni and you would like to have it published in the newsletter, please send it to:

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Please include your name, mailing address, and email address so we can contact you.

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## A Note From The Chairs

This month's note was written (mostly) by a former chair of this department, Albert W. Recht, pictured below. Professor Recht was chair of the Department of Mathematics and Astronomy from 1943-44 and 1947-49. He was also the director of the Chamberlin Observatory at DU during the 1940s, 50s and early 1960s.



**Albert W. Recht**  
Chair, 1943-44, 1947-49

The excerpts below are quoted from his articles, *Let's Not Go Off the Deep End* (1958) and *Is Mathematics Out of This World?* (1952). They are particularly apt, and particularly timely, as DU is now thinking hard about issues of quantitative literacy for all undergraduate students. The thrust of the articles is the argument about what was called the New Math. Recht argues that teaching sets and Boolean Algebras to high school and beginning college students is not a benefit to a majority of students, and advocates what (in modern terminology) might be called "theme courses." It is interesting that these conflicts are still the focal points in today's discussions about quantitative literacy and its role in educating a complete person. There were strong disagreements about these different approaches then, as there are now.

(Continued on page 2)

## Math Department To Host Conference

On July 2 through July 9, 2005, the University of Denver Mathematics Department will host the Mile High Conference on Quasigroups, Loops, and Nonassociative Systems. The conference will focus on recent results in nonassociative mathematics, in particular in quasigroups and loops. Contributions from related areas (nonassociative algebras, Latin squares, computational systems for nonassociative mathematics) are welcome.

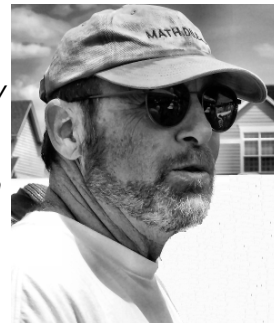
Invited speakers for the conference currently include Michael Aschbacher (Cal Tech, USA), Orin Chein (Temple U, USA), Patrick Dehornoy (U de Caen, France), Aleš Drápal (Charles U, Czech Republic), Michael Kinyon (Indiana U South Bend, USA), and William McCune (Argonne National Laboratory, USA). Based on the initial response, the conference promises to be one of the main events in nonassociative algebra for 2005.

The deadline for registration for the conference with accommodation on campus is April 30 and the deadline for registration without accommodation is May 31. The deadline for submission of abstracts is June 15. Local organizers for the conference are DU Mathematics Professors Nicholas Ormes and Petr Vojtechovský. For detailed information about the conference, please visit the conference Web site at [www.math.du.edu/milehigh](http://www.math.du.edu/milehigh).

## A Note From The Chairs (continued)

Professor Recht begins (in the 1958 paper) by talking about many mathematicians' inclination to teach abstract mathematics to general students. "Maybe we have an inferiority complex, and are running away from our real job, which is to bring up all people to their full potentialities with a more democratic kind of mathematics." He continues, "Often we teachers are walking examples of inability to apply our mathematics to real life situations. How much richer could mathematics be if we followed, for most students, the psychological order instead of the logical order – first the problem, then the mathematics. Better to present the application first, rather than merely the theory and manipulation with only a hazy notion of its application."

Here is a quote from the 1952 paper. "When we were teaching air crew mathematics during the war, I was interested in the response of students to this problem: 'The temperature is now  $7^{\circ}$  above zero; yesterday at this time the temperature was  $5^{\circ}$  below zero. How many degrees warmer is it today than it was yesterday?' Invariably students would give the correct answer,  $12^{\circ}$ . Yet when you asked them to subtract  $-5$  from  $7$  there was a great variety of answers, perhaps because they were trying to recall a rule about changing the sign (which sign?) and adding."



**Jim Hagler**  
Acting Chair

## Remembering Al Ritter

The Department was saddened to hear of the passing of Al Ritter, who was our colleague in the Department from 1959-1993. After his retirement, the University awarded him Emeritus status in recognition of his long and distinguished service to the Department and the University.

At the time he retired from DU, Al gave me (Jim Hagler) his copy of the first edition of Thomas' Calculus. I was and am very grateful for the gift and the generous spirit in which it was offered.

The following brief remembrance of Al was provided by Bill Dorn. "Al died on May 28, 2004. His middle name was Eugene,

and I suppose that is why his wife always referred to him as Gene. I have no idea how other family members addressed him. He had two children, Wayne and Carla, and several grandchildren.

Paul Myers told me that Al was the reason he switched his major from philosophy to mathematics, and Paul was one of our better students. Paul eventually earned his PhD in computer science as a student of Ron Prather and is now on the faculty at Trinity College in San Antonio, Texas. As I recall, Paul took a course called something like 'Higher Mathematics' from Al and was fascinated with both the course and Al."

## New Mathematics Courses

As reported in a previous newsletter, we have recently been able to add a number of new courses designed for non-math or science students at DU. Some of these courses have been developed through grants awarded under the Marsico Initiative, an effort made possible by a generous grant from donors Tom and Cydney Marsico. This grant is intended to support the development of more rigorous curricula, intensify student/faculty interaction, and enhance DU's academic environment. Science students typically begin their studies with calculus, and are thereby assured of seeing the beauty and power of mathematics. In fact, many of our majors begin in some other science and change to mathematics as a result of a good experience in calculus. But many non-science students also have excellent backgrounds and aptitudes in mathematics and these students are not exposed to 'real' mathematics in the lower-level foundations courses.

Two of the courses designed to address this situation, Patterns and Symmetry and Introduction to Cryptography, were taught in the 2003-4 academic year. Both proved to be popular and Cryptography is being taught again in this Winter Quarter by Professor Alvaro Arias. The Patterns and Symmetry class, under Professor Nic Ormes, was taught again this past fall. In this class, students studied the algebra and geometry of symmetry as it appears in patterns. Students also made extensive use of Geometer's Sketchpad computer software to experiment with and develop patterns.

In addition to these courses, we were able to teach two other new courses for non-math students in the past fall. Professor Petr Vojtechovský taught a course in Game Theory and Strategy. This class was based on elementary principles that could be understood with high school mathematics, yet it quickly led students to surprising and deep results. Several applications of game theory in economics, behavior sciences, and philosophy were discussed. In addition, the students designed, played, and analyzed simple games, applying the principles of game theory.

Another new course, the Mathematics of Voting, was offered this past fall quarter by Jim Hagler. (It was scheduled to coincide with the November election.) This theme class explored various applications of mathematics to social science. Most important of these was Arrow's Impossibility theorem, which says basically that no voting system which has more than one voter can simultaneously satisfy a specific collection of fairness criteria. The class also studied power indices in weighted voting systems and did enough probability to understand (at a basic level) polling, sampling, and sampling error.

## Annual Turkey Party

Our annual Turkey Party is a long-standing departmental tradition that marks the end of fall quarter with celebration and levity. This well attended event began as a Christmas party in 1972 and has always been held before faculty and students depart for the holiday break. Notable campus "celebrities" such as then-Chancellor Maurice Mitchell, Vice Chancellor for Academic Affairs Bill Key, Acting Dean of Arts and Sciences Bob Amme, and our own Ruth Hoffman played Santa, donning a white beard and red stocking cap, and distributing gifts to all. The first gift was a T-shirt with "74" in binary emblazoned on the back. Group photos were usually taken and are still here in the department.

As time passed, the party underwent a few transformations. Santa eventually evolved into a turkey, which seemed more appropriate for this mid-November activity although our photos indicate that a dinosaur joined us in 1987, Gumby visited in 1989 (see photo below), and a gorilla entertained us a couple times in the mid '90s. Door prize winners have been selected in a variety of creative ways in recent years. In 1999, the face of gift-giving changed. The faculty and staff voted to forego departmental gifts in favor of making a monetary contribution to the ALS Society in memory of Philip McNieland, who courageously fought the devastating effects of Lou Gehrig's disease as he completed his Master's degree the spring before. In subsequent years we made contributions to other important causes that were close to home including: Reading for the Blind and Dyslexic, the Mike Martin Scholarship, and Hospice of Metro Denver. The Turkey Party is highlighted with a "white-elephant" gift exchange. This exchange often includes some gifts that seem to recur year after year.

Our thanks to Bill Dorn for sharing his recollections of past years.



Jim Hagler admires his "white-elephant" gift while The Turkey looks on.

## Math Photos

The department has a number of photos that have been taken over the years at our holiday parties. At the left below is a photo taken in 1989. The other photo shows the math department faculty in 1890.



Math Department Faculty and Students - 1989



Math Department Faculty - 1890

We have found many group photos from the years 1974 through 2000. These have been scanned and are posted on the math department Web site. You can view them by going to [www.math.du.edu](http://www.math.du.edu). From there click on either People or Departmental Life on the menu at the top of the page. Then click on Dept Photographs in the menu along the left side of the page.

Among these photos are three photos for which we don't know the year. If you can identify the year any of these photos was taken, please send an e-mail to [lbeights@du.edu](mailto:lbeights@du.edu) and let us know.

## Tea At The Greene

Our tradition of Friday afternoon tea continues. These afternoon teas were begun by Prof. Astrid An Heuf, who was a member of the math faculty from 1998 to 2002. Astrid contributed to every phase of Departmental life with a typically Australian can-do attitude that ingratiated her to all concerned. A conscientious and well-liked instructor, she was a particularly effective mentor to our young women. When Astrid took a position at the University of New South Wales commencing in January 2002 we were sad to see her go. Nevertheless, we were happy for her because the location in Sydney allows her to be much closer to her family and UNSW has well-established research groups in her areas of interest.



Photo courtesy of the Brown Palace Hotel

One of the ways we remember Astrid is by carrying on the teas. This is an opportunity for faculty, staff, and students to gather in a relaxed atmosphere at the end of the week. In the past, a number of alumni have dropped in to share tea and their memories of DU and the math department with us.

We would be pleased to have you join us for tea on a Friday afternoon at 3:00 in the John Greene Hall lounge. Although no advance notice is required, you might want to contact Liane Beights at (303) 871-3344 to confirm that tea hasn't been postponed due to a conflicting event. We'll look forward to seeing you there.

## Math Puzzler

In the previous puzzler, you were asked to consider a game in which 15 dots are placed in a line as represented here. ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

Playing alternately, two players put a cross on any vacant dot. The winner is the first player to complete 3 adjacent crosses anywhere along the line (the crosses do not all have to be made by the winning player). The questions asked were whether either the first or second player could adopt a strategy that would guarantee a win and what would that strategy be.

**Solution:** Correct solutions were submitted by alumni David Gwynn (BA, 1973) and Patrick Bahls (BS, 1996 and MS, 1999). Both solutions are similar. We are reprinting Patrick's solution because it is a bit shorter.

"The first person has a strategy to win. She must cross the middle dot first, and thereafter "mirror" the second person's play by crossing off the mirror image of the second person's play, across the middle dot. Until, of course, the second person is silly enough to place a cross either next to or two dots away from any other cross; in this case, the first person forms the winning triad. Unfortunately for player number two, this situation must eventually arise. This strategy works simply because any safe move for player two corresponds to a safe move for player one.

Obviously this gives a strategy for any odd number of dots, too."

### And for our next puzzler ...

Suppose Player A has  $n+1$  coins while Player B has  $n$  coins. Both players toss all of their coins simultaneously and observe the number that come up heads. Assuming all of the coins are fair, what is the probability that A obtains more heads than B?

Send answers to [sbutz@math.du.edu](mailto:sbutz@math.du.edu).



## And In Conclusion

*Grandmothering has reintroduced me to the magic of Dr. Seuss. With the good Doctor in mind, I humbly offer this poem which is meant to somewhat simulate the meter of The Cat in the Hat. It depicts what I think makes our department a great one.*

- Liane Beights, Assistant to the Chair

We're a small department, I used to say,  
Without thinking about why I said it that way.

Just four-or-so years ago we were seven that taught,  
But now we are ten. That's three more that we got.

And there are the TAs, eleven at least.  
(They bring wonderful things to our Turkey Day feast!)

And the work-studies, too. We can't forget them.  
Where would we be without Kelli and Kim?

There are fifteen in all – too many to name,  
We work them and work them, and love them all just the same.

And our students! Oh my! They come through the door.  
From freshman to seniors there's more than a score.

And graduate students, there's over a dozen.  
We welcome all math lovers. Do you have a cousin?

So is it true that we're small? NO! It is NOT!  
Just take a good look at all the great people we've got!

*We always like to hear from our alumni. Send us a paragraph or two and let us know what you have been doing. Send information to: Don Oppliger, DU Math Dept., 2360 S. Gaylord, Denver, CO 80208. or email to: [dopplige@du.edu](mailto:dopplige@du.edu)*