

Mathematics Alumni Newsletter



Autumn 2013

A Note From The Chair

Dear Friends of the Math Department,

We often hear on the news that the importance of sciences, technology, engineering and mathematics (so-called STEM disciplines) will continue to grow and that more students are choosing to work in these fields. While it is not clear how long the trend will last, we can certainly feel it here at the Math Department. Indeed, the number of our majors is approaching 100, there are 25 graduate students enrolled in our Master's and PhD programs, and there is much more demand for upper-divisional math courses than in the relatively recent past.



We are responding to this trend the best we can. We have hired 6 new faculty (you can read about them on page 2) and we are expanding our offering of activities that support the math curriculum.

The Math Center, coordinated by Prof. Arias, has been relocated to the newly remodeled Anderson Academic Commons, formerly Penrose Library, where it offers help to students of calculus and precalculus in a representative environment (see page 3). Dr. Sobieczky is starting a Math Club for undergraduates, with the inaugural meeting scheduled for October 25. Finally, Prof. Horn added a combinatorics seminar to our line-up of research seminars and colloquia.

Amidst all these changes we are of course not forgetting our alumni! I am looking forward to seeing many of you on November 16 when we will host the annual Alumni Hockey Night, this time combined with a farewell party for John Greene Hall (see below).

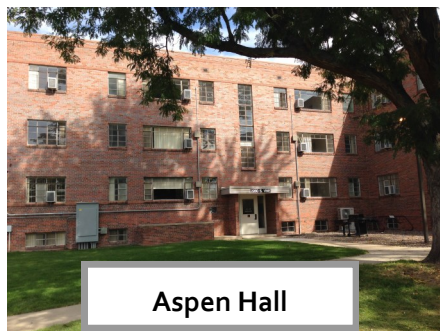
Petr Vojtěchovský

Goodbye John Greene Hall

John Greene Hall (JGH) has been the home of the Mathematics Department for several decades. Built in 1958 as a temporary building

(originally only with two stories), it has served generations of math majors and graduate students, most of you included. As of today, JGH is slated for demolition in December 2013 or early 2014. A new, larger building for the Daniel Felix Ritchie School of Engineering and Computer Science will be built on the footprint of JGH and, partially, on the surrounding parking lots. The parking lot immediately to the north of

JGH will become a park, stretching along Iliff Avenue from Boettcher Hall to the west around Olin Hall to the Newman Center for the Performing Arts in the east.

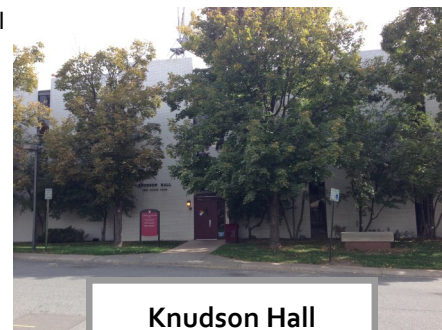


Aspen Hall

Unfortunately, the Math Department will not be housed in the new building. Instead we will first move for about two years to Aspen Hall, formerly a graduate student residence hall just south of Evans Chapel, and then to Knudson Hall, the current home of two engineering departments.

If you would like to see JGH one more time before it comes down, please consider attending the farewell party that we will organize in connection with the Alumni Hockey Night on November 16.

We would of course love to see you in our new locations, too. Please check the departmental website for up to date information concerning our present coordinates.



Knudson Hall

New Faculty for 2013-2014

We are extremely pleased to announce to our alumni that the 2013-2014 school year sees us welcoming a number of new faculty members into the fold. This includes three new tenure track faculty, one new lecturer, and two new post-docs.

Dr. Lori Alvin is a new post-doctoral scholar. She is originally from Wisconsin, where she completed her PhD in Mathematics in 2011 at the University of Wisconsin, Milwaukee. Her main area of research is topological dynamics including the study of adding machines and inverse limit spaces. Lori spent the past two years as an Assistant Professor at the University of West Florida and is already embracing the more comfortable Colorado climate.

Dr. Paul Horn joins the department this fall as an assistant professor. Paul earned his PhD from the University of California, San Diego in 2009, where he studied under the supervision of Fan Chung. After earning his PhD, he held postdoctoral positions at Emory University and Harvard University before joining the faculty of DU. Paul's research area is combinatorics and graph theory, where he is particularly interested in the use of probabilistic, spectral and geometric methods. Beyond mathematics, Paul enjoys spending time with his wife Maddy and newborn son Joseph. He is also an avid hiker and backpacker and beyond thrilled to be settling in the mountains of Colorado.

Dr. Andrew Linshaw joins the department as an assistant professor. He grew up in Boston and received his PhD in 2005 from Brandeis University. He arrived in Denver after postdoctoral positions at National University of Singapore, University of California, San Diego, Technical University of Darmstadt, and Brandeis University. His research interests are in representation theory, invariant theory, vertex algebras, and infinite-dimensional Lie algebras. Outside of mathematics he enjoys hiking, tennis, music, and painting.

Dr. Jose Mijares is a new post-doctoral scholar and he was born in Caracas and raised in Barlovento, Venezuela. He received his PhD in Mathematics from the Central University of Venezuela in 2007, and he also spent time at the University of Toronto, Canada conducting research for his doctoral degree. His supervisors were Carlos Di Prisco (Instituto Venezolano de Investigaciones Cientificas -IVIC - Venezuela) and Stevo Todorovic (University of Toronto, Canada). After completing his doctorate, he served as a Postdoctoral Researcher and Associate Researcher at IVIC (2008-2011) and was Associate Professor at the Central University of Venezuela and the Pontificia Universidad Javeriana, Bogotá, Colombia. His research interests are mainly Ramsey Theory, Set Theory, and Topological Dynamics.

Dr. Adriana Suarez comes to the department as a full-time lecturer. She graduated from Universidad de Oviedo (Spain) in 2012, doing several doctoral research stays at Florida Atlantic University from 2009. After graduation she spent a year at FAU as a Visiting Assistant Professor. Her research centers on cryptography and information security, in particular, probable security for key establishment protocols, identity-based cryptography, attribute-based cryptography, and cryptanalysis.

Dr. Mei Yin is a new tenure-track professor. During the 2013-2014 academic year she is on leave at Brown University as a Tamarkin Assistant Professor. She was born in Nanjing, China and obtained her BS in Information and Computing Science in 2006 at Nanjing University of Science and Technology. She received her PhD in Mathematics (with a Minor in Statistics) from the University of Arizona in August 2010. Dr. Yin then joined the faculty of the University of Texas at Austin as an R. H. Bing Fellow and held this position for three years. In 2011 she was awarded a National Science Foundation US Junior Oberwolfach Fellowship. More recently she received a 3-year research grant from the National Science Foundation to develop a quantitative theory of phase transitions in exponential random graph models. Her main research areas are probability and mathematical physics (with an emphasis on statistical physics). Specifically, she is interested in phase transitions, random graphs, lattice spin systems, cluster expansions, renormalization, and spectral theory. In addition to work, she is passionate about reading, swimming, hiking, music, and cooking.

We always like to get news about our alumni. Send us a paragraph or two and let us know what you have been doing. Send information to: Jason Myers, DU Math Dept., 2360 S. Gaylord, Denver, CO 80208 or email to: jason.myers@du.edu

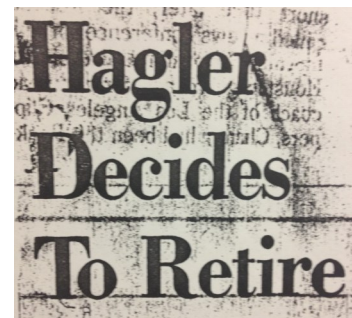
Quick Updates

Two professors in the Department successfully secured grants from the National Science Foundation in 2012/13. Prof. Dobrinen will continue her work on "Ramsey Theory, Set Theory, and Tukey Order," and Prof. Yin will study "Random Graphs: A Mathematical Physics Perspective." These are 3-year research grants worth about \$100,000 each.

Mark Greer defended his PhD thesis "Loops and their permutation groups" in June 2013, under the supervision of Prof. Kinyon. He accepted a tenure-track job in mathematics at the University of North Alabama. Congratulations, Dr. Greer!

After many years with the Department as a lecturer, Sharon Butz retired from teaching at DU in Spring 2013 and is considering a career in mentoring. Sharon was a tireless advocate for the Department and we will miss her.

Prof. Hagler also decided to retire in Spring 2013, but he remains active as a professor emeritus. If he lets us, we will tell you more about his career at DU in the next issue.



Alumni Notes

The Math Department continues to benefit greatly from the generosity of our alumni. Recently, the Department received a sizeable book donation from Sharon Worley on behalf of her brother Shelby Worley, a math department graduate. His collection consisted of more than 500 volumes of advanced monographs in math and physics. The university library added about 2/3 of these books to DU's permanent collection, and the remaining books were distributed among our students and faculty. Thank you, Sharon and Shelby!

We love hearing from our alumni and received the following update from Robert Fathauer, who graduated with a double major in math and physics in 1982. He went on to earn a PhD in electrical engineering from Cornell in 1987. According to Robert, "After working for several years as a researcher at NASA's Jet Propulsion Laboratory, I started my own business (Tessellations) creating mathematical art and puzzles. Over time the emphasis of the business has shifted more toward math education, with manipulatives, classroom posters, and books. My company website is www.tessellations.com. I've become very involved in the math-and-art community and coordinate two exhibits of mathematical art each year for the Joint Mathematics Meetings and the Bridges Conference. In February 2013, I led a workshop at the National Museum of Mathematics in New York based on my new book, "Designing and Building Tessellated Polyhedra". My art pages are at www.robertfathauer.com."

The Math Center Reborn

The renovation of the DU library, now the Anderson Academic Commons, brought with it a whole new Math Center. The Center is a place where DU students can receive free, drop-in assistance in calculus and pre-calculus courses.

As the picture at right shows, one of the highlights of the new Math Center is a series of mathematical art pieces created by our very own Stan Gudder. The library purchased two of Stan's pieces, and he was kind enough to loan several more for the Center's use. Feel free to stop by the next time you're on campus to see how great the new space is.



Did you know that this newsletter may be read online at www.math.du.edu? Just check the Alumni page!

Want to go green? If you would prefer to receive an email notification when each edition is published rather than a printed copy, please let us know by sending an email to jason.myers@du.edu.

Sports Corner

Alumni Hockey Night Recap

Once again our alumni gathered in the halls of John Greene Hall in anticipation of our annual hockey night. We had a large turnout on Saturday, February 23rd when our Denver Pioneers hosted rival University of North Dakota. Going into the game DU was ranked #10 nationally, and UND was ranked at #6. Unfortunately, the game itself proved to be a lopsided affair with UND scoring early and often en route to a 6-1 victory over the home team. Nevertheless, a good time was had by all and we look forward to hosting another game this season.

Lacrosse Game Recap

Given the success of hockey night, we wanted to try something new this past spring and host an alumni event in better weather. On a sunny Saturday in late April at DU's Barton Stadium, the men's lacrosse team hosted the University of Michigan, which proved to be just the ticket. Entering the game DU was ranked #5/#4 (depending on the poll) and earned a convincing victory over the unranked Wolverines, coming out on top 12-4. We hope to be able to host another lacrosse game in the future!

Changes for hockey night this year!

This year we're moving our alumni hockey night earlier in the season. We have reserved a block of tickets for the game against Western Michigan on Saturday, November 16th so please plan accordingly. An electronic copy of our flyer is available on our alumni webpage (see below). Keep an eye out for more information about this year's game!

<http://www.du.edu/nsm/departments/mathematics/students/alumni.html>



Math Puzzler



Solution to the previous puzzler:

It is possible to do this by just counting all 64 possibilities for the pair of subsets A,B, but there is a clever solution as well. The event "A is a subset of B" is the intersection of the events "it is not the case that i is in A and also not in B" for $i = 1,2,3$. These events are independent, and it's easy to see that each has probability $3/4$. Therefore, the event "A is a subset of B" has probability $(3/4) \cdot (3/4) \cdot (3/4) = 27/64$.

The probability that A and B are disjoint is (surprisingly) exactly the same! The easiest way to see this is to notice that "A and B are disjoint" is equivalent to "A is a subset of B^c "! So, the probability that A and B are disjoint is equal to the probability that A is a subset of B^c . Since A and B^c are still randomly chosen subsets of $\{1,2,3\}$, this probability is still equal to $27/64$.

New puzzler: Is it possible to partition a square into triangles so that every triangle is acute?

Send your puzzler answers to Ronnie Pavlov at Ronnie.pavlov@du.edu.