



“The essence of mathematics is its freedom.” – Georg Cantor 1845-1918

NEWS FROM THE CHAIR

Perhaps the most scintillating news since the last newsletter is that the Department is on the schedule to receive new office facilities. We moved into 16 Colchester Avenue in 1982 and the entire faculty fit nicely in that space. There were some tight quarters, as some rooms were divided with burlap 90%-walls to provide spaces that were visually separated but certainly not private for conversations. The partition in Helen’s office is the last remaining partition although Mun still has a burlap 90%-wall. Since then we have filled Mansfield House, the top two floors of Pearl House and most of the second floor in Farrell Hall on the Trinity Campus.

The Department managed to stop the plan of Provost Knodell to put the occupants of 16 Colchester and Pearl House into the building purchased from Planned Parenthood. That space was too small and did nothing to bring us all together. The lack of contiguous space came to the attention of President Sullivan when Assistant Professor John Voight decided to leave UVM immediately after receiving tenure, partly because of the unlikelihood that the University would address our situation any time soon.

Since last spring, a plan to build appropriate lab facilities for Physics, Chemistry, and Psychology led to the plan to replace Angell Hall with a new lab complex and renovate Cook Building to house Physics, Chemistry, Psychology and Mathematics & Statistics. Architects have been contracted, discussion of needs has begun, and a tentative occupancy date for M&S has been set for fall 2018. Exciting!! (Will 16 Colchester Avenue (aka Henry Marcus Lord House) last five more years?)

A wonderful event took place in early November at the State House in Montpelier. Professor Mun Son, together with Governor Shumlin and the South Korean Ambassador from Boston, hosted a celebration for the Korean War veterans. There were about 300 people in attendance and Mun gave a seven-minute speech thanking the veterans and relating stories about how the American army saved him and his family and made it possible for Mun to have a great life at a great American university in a great place. Ask Mun for more details. It was truly amazing and Mun was the only reason this event took place. It was very, very appreciated by the veterans. Good job, Mun.

Encouraged by our new Dean, Luis Garcia, and by the prospect of moving into new quarters that will be the M&S home for decades, we have been considering our collective vision of how the Department will look in, say, 2025. This led to the sobering recognition that more than half of us will be beyond the usual retirement age by then (i.e., 66 or 67), so there will be a tremendous turnover in faculty and staff. While it is always difficult to say good-bye to daily colleagues, this represents a tremendous opportunity for the younger half to build the kind of department they want for the upper half of their careers – and to bring in a new cadre of talented people to carry mathematics and statistics into mid-century. Jim Bagrow has gotten this effort off to a strong start.

Enrollment in M&S classes continues to be strong: 6,540 in FY12-13, which is 6.9% of all student enrollments. This represents 30.3 students per section (SPS) in mathematics, 40.3 SPS in statistics, 33.2 SPS in M&S compared to 24.5 SPS for the entire university. M&S is a bargain!

I have said this many times, and I agree to being biased, but taken over all areas of contribution of the faculty and staff to the mission of the University, the Department of Mathematics and Statistics is the very best department: excellent teachers, excellent researchers, phenomenal contributors to service and outreach, and the kindest, nicest, friendliest, and most reasonable people anywhere. My heartfelt thank you to everyone for all you do day-to-day. Happy Holidays everyone!

Jim Burgmeier

On November 13, 2013, in honor of Korean War Veterans, **Mun Son** addressed an audience at the Vermont State Capitol, including Governor Peter Shumlin and the South Korean Ambassador from Boston. The following is an excerpt from Mun's speech which received a standing ovation.



"American soldiers like you veterans liberated my village before tragedy could befall my family. I want to express my profound appreciation for you and your sacrifices and for the American defense of S. Korea. As you may have noticed, the Korean War is not the "Forgotten War" anymore, but it is now a "War of Victory." Since you defended S. Korea and the free world, many historians are now reevaluating the Korean War, suggesting that it ultimately led to the collapse of communism in the late 1980's.

So What Did You Do?

Chris Danforth has been appointed to an endowed chair, the Flint Professorship in the College of Engineering and Mathematical Sciences. The press release can be found at:

<http://www.uvm.edu/~cems/mathstat/?Page=news&storyID=17295&category=mathstat>
<<http://www.uvm.edu/%7Ecems/mathstat/?Page=news&storyID=17295&category=mathstat>>

On Nov. 1, 2013, **Ken Golden** was nominated to be a co-recipient of the European Physical Society's Alfvén Prize for "outstanding contributions to plasma physics".

Ken Gross was honored by the Association of Mathematics Teachers of New England with their highest award, The Rev. Stanley J. Bezuska Lifetime Service Award for Teaching and Learning. The press release can be found at:

<http://www.uvm.edu/~cems/mathstat/?Page=news&storyID=17253&category=mathstat>
<<http://www.uvm.edu/%7Ecems/mathstat/?Page=news&storyID=17253&category=mathstat>>

Complex Made Easy

This year, two members of the Story Lab have had healthy babies. Peter Dodds placed in the top 50 in the world for his age group at the Sprint Triathlon World Championship in London. Among our research highlights for the year, one of our blog posts was viewed by more than 100,000 people, and Ellen Degeneres and Al Roker talked about our work on their respective TV shows. We're thrilled that James Bagrow has joined the department as an Assistant Professor.

Chris Danforth

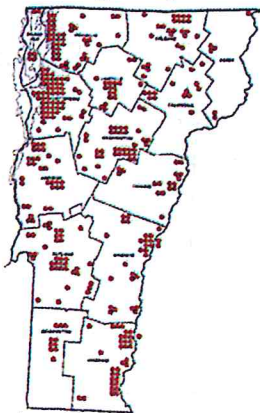
"Catherine Bliss, Morgan Frank, Chris Danforth and Peter Dodds had a paper accepted at the 2014 Joint AMS/MAA Math Meeting to be held in Baltimore, MD. Cathy will be presenting the paper in a Special session on: Big Data: Mathematical and Statistical Modeling, Tools, Services, and Training. She has also been awarded a travel grant from the American Mathematical Society and a UVM GSS mini-grant to attend the conference."

THE VERMONT MATHEMATICS INITIATIVE

For faculty and grad students who may not know much about the program, the Vermont Mathematics Initiative (VMI) is a content-focused professional development program for teachers. The VMI was founded in 1999 at the request of the Vermont Agency of Education to improve the teaching and learning of mathematics in the elementary grades across the state of Vermont. Originally designed for K-6 teachers, the VMI was found to be equally effective with middle school teachers, and from the beginning was structured as a K-8 program that enrolled both elementary and middle school teachers. This year we are expanding the VMI to also include high school teachers (see below).

There are many aspects of the VMI mission. First and foremost is the VMI Master's Degree, which is designed to train K-8 teachers to be school and district mathematics leaders. To date, VMI has graduated over 400 teachers who serve as mathematics leaders in 95% of the school districts in Vermont. The map below shows the distribution of VMI graduates across Vermont.

Over the years, the VMI has expanded its reach into the schools and districts of Vermont. One such means is through what we refer to as the *District and Regionally Based Implementation* component. This aspect of VMI is a 6-credit district or regionally based mathematics content experience initiated in 2006, and designed to reach all



teachers in the district or region. The curriculum includes the first two courses of the Master's Degree program: *Mathematics as a Second Language* and *Functions, Geometry, and Algebra I*. The learning and transfer to the classroom is sustained through mentoring and other meaningful experiences led by the district's VMI-trained teacher leaders.

Another component of VMI relates to Vermont's implementation of the national *Common Core State Standards for Mathematics* (CCSS-M). The CCSS-M is a new set of national curriculum standards for grades K-12. Vermont, along with all but five states, has adopted these Standards, and is required to implement the standards in all Vermont schools and districts. VMI personnel are now in their third year of statewide CCSS-M training for teams of teacher leaders and administrators. Training includes mathematics content, effective teaching of mathematics, and effective approaches to leadership. Each team will lead CCSS-M implementation in their school district. The vast majority of teacher leaders who comprise these teams are graduates of the VMI.

Still another component of VMI comes under the heading of *Outreach to Schools*: The VMI, as a statewide program specifically designed to support improved performance in mathematics, receives many requests from schools and districts for services that range from course development to lesson study to conducting a schoolwide needs assessment. Each year VMI personnel work directly with approximately 6-8 schools as time and schedules permit.

Finally, the most recent component of VMI, undertaken this year, is the expansion of the VMI Master's Degree curriculum from its current K-8 focus to the high school level. This expansion is funded primarily through a grant from the Vermont Agency of Education, which envisages the high school mathematics teacher leaders to be trained by VMI as having a major impact on the teaching and learning of mathematics across the high schools of Vermont. Julie Conrad, one of the state's most respected high school educators, has joined the VMI staff this year, and has primary responsibility for leading the high school expansion.

No article about VMI would be complete without recognizing the VMI faculty who led the Initiative for the better part of a decade – Judi Laird, Susan Ojala, and Bob Laird. The success of the VMI can be attributed directly to their talent, expertise, and dedication to the children of Vermont. All three are award winning teachers. While all three play significant roles in every aspect of VMI, each has a special area of program leadership. Susan is VMI's Lead Instructor and Bob is VMI's primary liaison with schools and districts. Judi is VMI's Executive Director. In a phrase, Judi does it all, overseeing all aspects of the program. Kathy Lamphier, who has also been with VMI for nearly a decade, is the VMI Program Coordinator. Kathy completed her VMI Master's Degree last year, and – along with Judi, Bob, and Susan – does mentoring of teachers enrolled in the program.

Ken Gross

Contests

The Putnam Competition was held Saturday, December 7, 2013 in the Department of Mathematics & Statistics Conference Room, (Lord House), 16 Colchester Ave., Burlington, VT. The exams began at 10:00 a.m. to 1:00 p.m., and the afternoon session was from 3:00 p.m. to 6:00 p.m. Lunch at the India House was provided by the Math Department.

The Vermont Northwest Regional **MATHCOUNTS** Competition is taking place on UVM's campus on Saturday, February 8, 2014. The competition will be held in the Rowell Building complex, culminating with the always exciting Countdown Round in the Carpenter Auditorium.

If you are unfamiliar with MATHCOUNTS, it is a national competition open to middle school students (6th, 7th and 8th grade). It was started in 1983 by the National Society of Professional Engineers as a way to encourage mathematical and scientific literacy in middle level students. More information can be found on the MathCounts website: <http://mathcounts.org/>.

The Fifty-Sixth Annual **High School Prize Examination in Mathematics** was given on March 13, 2013. This examination is sponsored by the Department of Mathematics and Statistics at the University of Vermont.

A Best-in-School Award is presented to the student(s) who submitted the best paper(s) from each school and Certificates of Merit are awarded to all students who placed in the top ten percent.

The Address in honor of the students was given by Josh Bongard, Professor in Computer Science. For his research in robotics, President Barack Obama announced Bongard as one of 94 winners of the Presidentail Early Career Award for Scientists and Engineers.

Kinky Math

Lindsay Van Leir, Brandon Tries, Tom McAndrew, Shauna Simeone, Amelia Rose, Peter Froncek, Eric Clark, and Joe Cyr competed at Trivia Night at Nectar's downtown one evening mid-semester. Their team name, as an homage to measure theory, a course which most of us were taking at the time, was the "Lebesgue Dominatrix". We did anywhere from OK to horrible on most rounds of the game, but we (somehow) won the history round. Looking back, it was probably thanks to Peter's working knowledge of eastern European history. The grand prize was a traditional style Harpoon IPA pint glass. Since it was a team effort, no one wanted to take it for themselves. We agreed to let the glass live at Shauna's house where we can admire it from time to time!

Lindsay Van Leir



Movin' On Up

Jeff Buzas was promoted to full professor.

Peter Dodds was promoted to full professor.

Abigail Crocker's title will change from Lecturer to Research Assistant Professor as of January 2014

Sabbaticals

Fall 2013: Dan Archdeacon

Fall 2013 & Spring 14: David Dummit

Spring 2014: Jeff Dinitz, Tony Julianelle

Jonathan Sands is planning to spend a half sabbatical in Spring 2015 at the University of North Carolina at Greensboro. His host will be Brett Tangedal, a former postdoc in our department.

Condolences

Jonathan and Peggy Sands went to Florida to celebrate the life of Peggy's father who died Nov. 23, 2013.

Meghan Kelly's grandmother passed away on November 20th.

On the Lighter Side

The Annual Dept. Picnic was held on September 8, 2013. The grills were manned by Chefs James W. Burgmeier and Jack Lawlor, who skillfully flipped burgers and roasted the dogs! A variety of pasta and fruit salads, and yummy delicious desserts were graciously provided by faculty, emeriti, grad students, and staff.



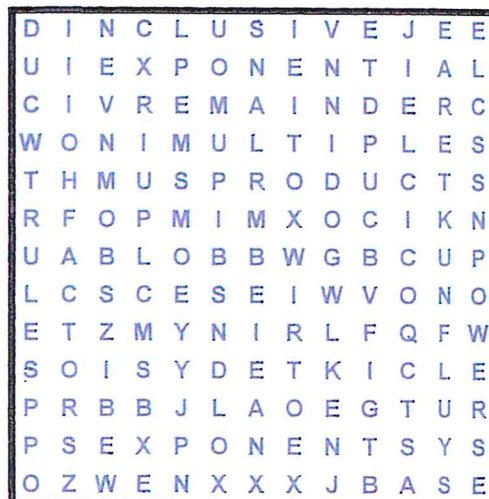
Math/Stat hike was Saturday, October 12, 2013.



Did you notice our unique tree is missing from the front of 16 Colchester? This tree had seen many wild residents over the years, squirrels, birds, and this past spring, a litter of feral black kittens. After several failed attempts to feed them or remove them, one of our math grad students spent a weekend afternoon coaxing the felines from their hideaway. Good homes were found for each kitten.

Unfortunately, our tree did not survive the "mess" they left behind. The tree rotted from within and quickly died. Courtesy of Esther Johansson and Leslie/Sixie Chen, you can take a look at the two lovely paintings of our building and the old tree in the department conference room.

Easy Math Word Search



BASE
COMPOSITE
DIVISIBILITY
EXPONENTIAL
EXPONENTS
FACTORS
GCF
INCLUSIVE
LCM
MULTIPLES
NUMBER
POWER
PRIME
PRODUCT
REMAINDER
RULES
WHOLE

