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Math Department Newsletter, 2008

University of Dayton. Department of Mathematics

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MATHEMATICS DEPARTMENT NEWSLETTER

JUNE 2008



CHAIRPERSON'S MESSAGE

I remember eight years ago: **Tom Gantner** opened this message with something like, "This will be my last Message from the Chair." It's my turn now. I step down on June 30, 2008 and **Joe Mashburn** assumes these duties beginning July 1.

All in all, I have enjoyed my time as Chair; but now I look forward to returning to the ranks of regular faculty. The Chair does teach one course per term and so, I have not been completely removed from the classroom. But I have not been able to put energy into the classroom. Moreover, I have lost zest for some of the chair duties. For example, we have another large incoming class for the Fall of 2008. Staffing and finalizing the composite is still an unsolved problem. Unfortunately, I don't have the zest for it that I had a few years back. It's clear to me that this is a good time for transition, both for me and for the Department.

There are parts of the Chair position that I have really enjoyed. I really enjoy interacting with you alumni. The Schraut Memorial Lecture Endowment came into being shortly before I began my duties as Chair and I have enjoyed watching the Lecture Series take shape. In its current form we host the annual Math Events (and we thank **Aparna Higgins** and **Wiebke Diestelkamp** for the wonderful Events in recent years.) In even numbered years, the Schraut Lecture serves as the cornerstone for the Biennial Alumni Seminar and in odd numbered years, the Schraut Lecture serves as the plenary event for Undergraduate Mathematics Day. We have lots of fun with Math Events; the students enjoy it and honestly, students and faculty have benefited immensely. You alumni play a vital role to provide a wonderful resource and to contribute to professional and academic integrity of the Event. Selfishly, I have enjoyed it; professionally, I thank you sincerely.

This year, the winter meetings are in Washington D.C. during January 5-9, 2009. We had a good turnout at an alumni luncheon a few years back when we were in Baltimore. In anticipation of alumni interest and a good turnout, we intend to organize an alumni dinner this year. The mathematics meetings are held at the Marriott Wardman Park Hotel and Omni Shoreham Hotel. I'd be very pleased to take advice from locals on a good place to meet for a UD Department of Mathematics Alumni Dinner. I will be more aggressive to set this one up so we can all get it on our calendars. **Paul Campbell** (67) has suggested

that we get an announcement into the printed convention program. I will be more aggressive to make that happen this year as well.

Again, thank you very much for your interest in the goings on here. I hope you enjoy this year's Newsletter. By the way, the Department Newsletters (in recent years) can be found at <http://campus.udayton.edu/~mathdept/Newsletter.htm>.

Paul Eloe

THANKS!

Thank you again for your generous support. As you read through the undergraduate and graduate activities sections, you can read about the activities you have supported this past year. You have helped support Math Events, Integration Bee, the High School Mathematics Competition, and undergraduate student travel and graduate student travel. Your support is appreciated and we purposefully use it to support the educational experience at UD.

The University Development Office reports that the following people donated a total of \$12,845.00 to the Department of Mathematics during 2007:

Timothy P. Bahmer (91)
Kathleen Baier, (68)
Robert Behrend (80)
Wayne Beimesch (68)
Ronald Beisel (63)
Gregory Bishop (86)
David Bradley (71)
Martha Brown
Gregory Campbell (70)
Kennon Copeland (75)
Daniel DeBrosse
Rose Marie Deibel (77)
Franklin Demana (60)
Cheryl Edelmann (92)
Nicholas Elam (04)
Paul Eloe
Gina Fadayel (89)
Thomas Fitz
Jeffrey Galles (02)
Mary Grabowski (89)
Gerald Greene (02)
Marla Gross (90)
Michael Hartke (66)
James Heinrich (74)
Aparna Higgins
Terry Hoffman
Sharon Horvath (77)
Michael Howard (87)
Paul Judd (82)

Warren Leach (77)
Andrew Linegang (94)
Jeremiah Lynch (06)
Patrick MacVeigh (78)
Gary Marconi (66)
Robin McCraw (81)
David Meinhardt
Daniel Michael
George Morrison (82)
Charles Mott (61)
Richard Okenfuss
Lea Patrick (84)
Jane Pendergast (74)
Carol Pitzer (83)
Michael Pratt
Joyce Ray (74)
Timothy Rice (88)
Ralphael Riley (69)
Thomas Rolfes (61)
Nancy Ruprecht
Curtis Schultz (01)
Erin Schultz (01)
Richard Segers (50)
Jon Smith
Randall Smith (77)
William Sontag (85)
Robert Springer (77)
Michelle Taylor (78)
Susan Thompson (81)

Dunham showed the link in Euler's clever proof that that there are as many ways to write a whole number as the sum of distinct summands as there are ways to write it as the sum of (not necessarily distinct) odd summands.

Colleen Hoover (1991), of St. Mary's College in Indiana, delighted the crowd with the opening address of the day, entitled "Garden-variety Symmetry." She successfully introduced group theoretic ideas to the participants, focusing on the symmetric groups. She illustrated many of the mathematical ideas with photographs taken in her garden. Those examples and her easy-going style made her talk very accessible and entertaining for the participants, who were at different mathematical levels, ranging from high school to college students and faculty. Her presentation set the right tone for the entire day.

Of the thirty-four contributed papers, twenty-four were delivered by undergraduates, six by graduate students, and three talks were given by high school students, and only one contributed paper was by a college faculty member. The topics of the contributed talks varied greatly. Some undergraduates spoke about their own research projects on topics such as graph theory, elliptic curves, convergence of integrals, combinatorial games, bio-mathematics and financial mathematics. Some spoke on interesting problems related to topics that they had encountered either in a mathematics course or during their own reading.

The presenters were invited to submit articles based on their presentations for refereed publication in electronic proceedings of this conference, which is now published as Volume 3 of the Electronic Proceedings of Undergraduate Mathematics Day (<http://academic.udayton.edu/EPUMD/>).

As on previous Undergraduate Mathematics Days, we provided free lodging for out-of-town students, we had a buffet-style luncheon and arranged the seating so that each table had a mix of faculty and students from institutions other than their own, and we built in plenty of opportunities during the day for socializing and networking while being fueled by snacks.

Wiebke Diestelkamp and **Aparna Higgins** had, once again, secured funding from various sources. They had written a proposal and were awarded a grant from the Mathematical Association of America through its NSF Regional Undergraduate Mathematics Conference program (NSF Grant DMS- 0536991). This year, for the first time, MathEvents was supported by the Dean of the College of Arts and Sciences at UD, Dr. Paul Benson. As in the last few years, the Mann Chair in the Sciences, the UD Women's Center, the UD Bookstore and the Department of Mathematics also supported us with generous donations. All expenses associated with the Schraut Lecture were borne by alumni donations to the Kenneth C. Schraut Fund, for which we remain very grateful to you, the alumni. The program, the abstracts, the Proceedings and other details of the conference can be found by clicking on the Undergraduate Mathematics Day 2007 link on the web page <http://academic.udayton.edu/MathEvents/>.

This was the fifth MathEvents that Wiebke and Aparna organized together. Except for 2006, they have worked every year since 2003 to establish an event that serves not only UD students who are interested in mathematics, but also draws many students and faculty from the region. Wiebke and Aparna will take a break from organizing these events for a while. They are grateful to have had this opportunity to serve the mathematical community. Wiebke and Aparna want to extend special thanks to Paul Eloë, who gave them the freedom and the funds to establish the tradition of MathEvents at UD.

INVITATION TO MATH EVENTS 2008 ON SATURDAY, NOVEMBER 1, 2008

You are invited to participate in *Math Events 2008*, which will take place on Saturday, November 1, 2008. This year's program will consist of the 9th *Annual Kenneth C. Schraut Lecture* and the 23rd *Biennial Alumni Seminar on Careers in Mathematics*. We are pleased to announce that **Dr. Robert Bolz** (66) will serve as this year's Schraut Lecturer. In addition to B.S. degrees in mathematics and education, earned at UD, Bob earned a master's degree in physics from Manhattan College and a Ph.D. in Philosophy with a focus on Science and the Foundation of Physics from Fordham University. He currently serves as a Vice President for the Lockheed Martin Corporation.

Planning has not yet begun for the Alumni Seminar. The organizing committee consists of **Paul Eloë** and **Pete Hovey**. We anticipate the format to be similar to the format of the 2006 seminar. In 2006, following registration and a buffet luncheon, the Schraut Lecture kicked off the Event. The Career Seminar followed opening with a very successful panel session in which each panelist spoke briefly to a diverse audience of students (high school, undergraduate, and graduate) and faculty, and then followed by the customary break-out sessions. You are invited to keep up with details, following Labor Day, at <http://academic.udayton.edu/MathEvents/>.

FACULTY UPDATE

Full Time Faculty

| | | |
|--------------------------|-----------------------|-------------------------|
| Atif Abueida, 2000 | Peter Hovey, 2001 | Maher Qumsiyeh, 2008 |
| Art Busch, 2006 | Muhammad Islam, 1985 | Youssef Raffoul, 1999 |
| Wiebke Diestelkamp, 1998 | Virginia Keen, 2007 | Paula Saintignon, 1983 |
| Shannon Driskell, 2003 | Becky Krakowski, 2000 | Gerry Shaughnessy, 1967 |
| Paul Eloë, 1980 | Ruihua Liu, 2004 | Les Steinlage, 1969 |
| Bob Gorton, 1969 | Joe Mashburn, 1981 | Laura Suzuki, 2008 |
| Aparna Higgins, 1984 | Shirley Ober, 1977 | Muhammad Usman, 2007 |

Part Time Faculty

| | | |
|-----------------------|--------------------|---------------------|
| Beth Buerschen, 2006 | Bob Flavin, 2008 | Scott Mitter, 2001 |
| Betsy Buschor, 2006 | Steve Fuchs, 2005 | Rusty Rizotte, 2007 |
| Cheryl Edelmann, 1999 | Joe Huelsman, 2003 | Sam Wright, 2007 |
| Robert Finnegan, 1985 | | |

Professors Emeriti

| | | |
|--------------------|----------------------|----------------|
| Stanley Back, 1998 | Jack McCloskey, 2001 | Ben Rice, 1998 |
|--------------------|----------------------|----------------|

Bill Friel, 1999
Tom Gantner, 2001
John Kauflin, 2006

Harry Mushenheim, 2006
Jerry Neff, 1999
Richard Peterson, 1998

Carroll Schleppe, 2001
Ralph Steinlage, 2001
Jerry Strange, 1999

FACULTY ACTIVITIES

Atif Abueida co-authored “Multidecomposition of λK_m into small cycles and claws,” Bulletin of the Institute of Combinatorics and its Applications, 49 (2007), 32-04, with **Theresa O’Neil** (05). He also wrote an article with **Dan Roberts** (07), “Uniform k -distant even trees are harmonious,” which has been accepted for publication by Utilitas Mathematica. He co-authored (with R. Gardner) a book chapter in the Theory of Polynomials and Applications, Recent Advances. Atif continues his work with in-service mathematics teachers as well. He was awarded his fourth Improving Teacher Quality (ITQ) grant through the Ohio Board of Regents. He took on **Paul Eloe** as a co-PI for this grant. Atif has been on sabbatical this year and has spent a good deal of time in the U.A.E.

Art Busch has co-authored at least four articles this year: (with D.E. Brown, and J.R. Lundgren) “Interval Tournaments,” Journal of Graph Theory, 56 (2007), 157-166; (with M. Ferrara and N. Kahl) “Generalizing D-graphs,” Discrete Applied mathematics, 155 (2007), 2487-2495; (with G. Isaac) “Recognizing bipartite tolerance graphs in linear time,” Lecture Notes in Computer Science; (with M. Jacobson) “On arc-traceable tournaments,” Journal of Combinatorial Mathematics and Combinatorial Computing, 63 (2007), 3-15.

Wiebke Diestelkamp has assumed duties as Co-Director of Ohio NExT and she is responsible for organizing the professional development workshops for new faculty in the Ohio Section.

Shannon Driskell co-authored (with J.M. Herrelko) “Using tiers to differentiate instruction on properties of two-dimensional shapes,” New England Mathematics Journal, 39 (2007), 36-44. She also co-authored book chapters that appeared in the Association for Mathematics Teacher Educators 5th Monograph and National Technology Leadership Initiative Monograph.

Stephanie Edwards has left the University of Dayton and is now on the faculty at Hope College in Holland, Michigan. We thank her again for her fine service to the University of Dayton. She can be reached at sedwards@hope.edu.

Paul Eloe co-authored (with F. Atici) “A transform method in discrete fractional calculus,” International journal of Difference equations, 2 (2007), 165-176, (with F. Atici) “Fractional q -calculus on a time scale,” Journal of Nonlinear Mathematical Physics, 14 (2007), 333-344, and (with J. Henderson) “Uniqueness implies existence and uniqueness conditions for nonlocal boundary value problems for n th order ordinary differential equations,” Journal of Mathematical Analysis and Application, 331 (2007), 240-247. His work on the Advisory Council of the Council of Graduate Schools for Professional

Science Masters (PSM) programs has led to a co-authored article, “Workshop 3: Professional Science Master’s Programs,” <http://associations.missouristate.edu/mags/documents/Proceedings2007.pdf>, 70-81.

Aparna Higgins continues serving as a national co-director for Project NExT. She delivered workshops focusing on undergraduate research at the Joint Mathematics Meetings in New Orleans, at the national meeting of the Long-term Undergraduate Research Experience in Mathematics at Coppin State University, at the MathFest in San Jose, and at a meeting of the Wisconsin Section NExT in Menomonie WI. Aparna gave colloquium talks to REU participants at Miami University and Valparaiso University. A highlight for Aparna was the “Communicating Mathematics” conference held in July in Duluth, MN, celebrating Joe Gallian’s contributions to mathematics. Aparna served on the Organizing Committee for the conference, and she gave an invited address on Gallian’s mathematical life, entitled “Communicating, Mathematics, Communicating Mathematics – Joe Gallian style.” Aparna’s article, “Undergraduate Research during the Academic Year,” and an article co-authored with Gallian entitled “Helping Students Present Their Research” appeared in the conference proceedings of Promoting Undergraduate Research in Mathematics, www.ams.org/employment/PURMproceedings.pdf. Aparna completed her term on the MAA Alder Awards Committee, set up to honor at most three mathematics faculty in the early stages of their career who have established themselves as excellent teachers. Aparna will be on sabbatical for the academic year 2008-09 and she and her family will be at the California State University Channel Islands.

Peter Hovey co-authored (with J. Knopp) “Estimating flaw size distributions from service inspection results,” which appeared in the Joint Council on Aging Aircraft. He continues his funded research with the Air Force Research Laboratory. Pete is celebrating his 25th Jubilee year this year which includes his years with UDRI and his years with the Department of Mathematics.

Muhammad Islam co-authored (with **Jeff Neugebauer** (06, 08)) “Qualitative properties of nonlinear Volterra integral equations,” *Electronic Journal of Qualitative Theory of Differential Equations*, 12(2008), 1-16, and (with **Youssef Raffoul**) “Periodic solutions of neutral nonlinear systems of differential equations with functional delay,” *Journal of Mathematical Analysis and Application*, 331 (2007), 1175-1186. Islam has been on sabbatical; he spent some time in Bangladesh where he delivered an invited address to the Bangladesh Mathematical Society at Dhaka University.

Virginia Keen has completed her first year at UD. She delivered the paper, “Penpals, Children’s Books, and Learning Mathematics,” at the 9th International Conference – Mathematics Education in a Global Society. The paper also appeared in the conference proceedings, http://math.unipa.it/~grim/21_projectt/21_charlotte_2007.htm.

Becky Krakowski continues to serve as co-PI on the continuing and growing “Life Science, Mathematics, and Physical Science Professional development Project for Grades 6-11 Teachers” grant funded by the Ohio Board of regents.

Ruihua Liu has served as the research advisor for graduating master's degree students, **Xiaoyan Ruan**, **Melissa Mattson**, and **Jinyang Sun**.

Joe Mashburn, who assumes the duties as Chair beginning July 1, was promoted to the rank of Professor. Joe published "A comparison of three topologies on ordered sets," *Topology Proceedings*, 31 (2007), 197-217 and "A spectral order for infinite dimensional quantum spaces: a preliminary report," *Electronic Notes in Theoretical Computer Science*, 173 (2007), 263-274.

Darren Parker has left the university and currently is on the faculty at Grand Valley State University at the Allendale campus. We thank him again for his fine service to the University of Dayton. He can be reached at parkerda@gvsu.edu.

Youssef Raffoul continues to be very active in research. In addition to articles listed above, he authored or co-authored "Boundedness and exponential asymptotic stability in dynamical systems with applications to nonlinear differential equations with unbounded terms," *Advances in Dynamical Systems and Applications*, 2 (2007), 107-121, "Construction of Lyapunov functionals in functional differential equations with applications to exponential stability in Volterra integro-differential equations," *Australian Journal of Mathematical Analysis and Application*, 4 (2007), 1-13, "Positive periodic solutions in neutral nonlinear differential equations," *Electronic Journal of Qualitative Theory of Differential Equations*, 16 (2007), 1-10, (with **Eric R. Kaufmann** (91)) "Periodicity and stability in neutral nonlinear dynamic equations with functional delay on a time scale," *Electronic Journal of Differential Equations*, 2007 (2007), No. 27, 1-12, (with **Eric R. Kaufmann** (91)) "Stability in neutral nonlinear dynamic equations on a time scale with functional delay," *Dynamic Systems and Applications*, 16 (2007), 561-570, and (with X.Y. Liao) "Asymptotic behavior of positive solutions of second-order nonlinear difference systems," *Nonlinear Studies*, 14 (2007), 311-318.

Paula Saintignon is celebrating her Silver Jubilee year this year. She was employed by UDRI for one year and has now completed 24 years of service in the Department of Mathematics. She was selected as the 2007-2008 Outstanding Faculty Member in the Natural sciences; these awards are determined by the Student Government Association.

Gerald Shaughnessy serves on the Society of Actuary national committee that develops and maintains Acturay Exam P, International. **Paul Judd** (82), a faculty member at Drake University, chairs that committee, and **George Morrison** (82), serves on that committee as well.

Muhammad Usman has completed his first year at UD. He co-authored (with B. Zhang) "Forced oscillations of a class of nonlinear dispersive wave equations and their stability," *Journal of Systems Science & Complexity*, 20 (2007), 284-292.

ACTIVITIES OF UNDERGRADUATE STUDENTS

The **Math Club and Pi Mu Epsilon Chapter** of the University of Dayton (<http://campus.udayton.edu/~mathclub>) was very active this year. The officers were **Danielle Carleton** (Math Club President), **Nancy Buck** (PME President), **Megan Johns** (Vice-President), **David Aaby** (Secretary) and **Shelley Leber** (Treasurer). **Aparna Higgins** was the faculty advisor. The Math Club and Pi Mu Epsilon met together and regularly this year. We tried to have a mathematical component at each meeting, in addition to the pizza and occasional dessert that helped build community. **David Aaby** and **Erin Shafer**, who participated in an REU or other summer internships, spoke about their experiences. **Ginny Keen**, new faculty member, gave a talk of teaching counting to young children. Adam Parker, a faculty member from Wittenberg University, gave us an introduction to moduli spaces. **Ruth Hinde** (2005) dropped in to tell us about post-graduation service opportunities with the Marianists. UD faculty **Art Busch** and **Maher Qumsiyeh** filled a meeting demonstrating how to think about Putnam competition problems. UD faculty member **Youssef Raffoul** promoted the Mathematical Modeling Competition at a meeting. Math Club members provided tremendous help for Undergraduate Mathematics Day, both the day before by helping set up signs and tables and stuffing folders, and on the day itself by being moderators of sessions. Of course, we had the traditional Math Club picnic in the fall at Orchardly Park, and one meeting included watching an episode of "Numb3rs." In lieu of one meeting, Math Club members were encouraged to attend one of the showings of "Proof", a play staged by Math Club members, that weekend. Elections for officers for 2008-09 resulted in **Danielle Carleton** being re-elected President of the Math Club, **David Aaby** elected as PME President, **Megan Johns** re-elected as Vice-President, **Jennifer Diemunch** and **Meghan Miller** being co-Secretaries, and **Shelley Leber** being re-elected as Treasurer.

Math Club threw itself into organizing and hosting the **12th annual High School Mathematics Contest**. Math Club President, **Danielle Carleton**, wrote a proposal for funding from the Student Government and was awarded \$900. This was the first time that we have had a grant to help defray costs of the competition. Twenty-eight teams (of at most three students each) from local schools participated in the contest.

About 80 high school students participated. The six schools represented were: Carroll (12 teams), Kettering Fairmont (7 teams), Fairborn (4 teams), Miamisburg (3 teams), DECA (1 team), and Springfield North (1 team). The winners included teams from Fairborn, Miamisburg and Kettering Fairmont. UD students wrote the problems, with faculty members vetting the problems. Each competing team may attack one of three problems of varying difficulty in ten topics. Some of the high school teachers mentioned how much they appreciated the structure of the problems. They said that the "easy" problem could be done by their freshmen, yet the "hard" problems were hard enough to challenge their seniors. UD's **Ruihua Liu** gave a wonderful talk on financial mathematics. Details of the contest are at

<http://academic.udayton.edu/mathclub/MathContest08/>. **Danielle Carleton** and **Megan Johns** deserve special praise for doing most of the organizing of volunteers and classrooms, ordering pizza, getting the solutions graded quickly, and keeping things on time. They had help in the form of all other MathClub members, who staffed the registration table, handed out T-shirts, proctored the contest rooms, and graded the

solutions. The high school students enjoyed the competition. This annual fun academic event that makes UD look good to area high school students!

The sixty-seventh annual **William Lowell Putnam Competition** was held on the first Saturday of December. Fourteen students from UD participated in it. They are **Nick Armenoff, William Balbach, Danielle Carleton, Joshua Craven, Sarah Huggins, Nathan Frantz, Ali Hashemi, Matthew Magner, Charles Suer, Edward Timko, Joseph Vecchio, and Victor Velten** (UD's high scorer with 12 points). We are proud of all these students spending a valuable Saturday near exam week, working on very challenging mathematics problems.

In early March, **Nancy Buck** directed "**Proof**" on campus. **Josh Craven** and **Sarah Huggins**, both mathematics majors, acted in the lead roles. Another mathematics major, **Charlie Suer** built the set, while Martha Muller, a middle school pre-service teacher who has a concentration in mathematics, also acted in the production.

A large group was inducted into Pi Mu Epsilon, the national mathematics honorary society. **Joe Mashburn** spoke at the induction banquet on E Unum Pluribus (not a misprint; ask Joe.) This year's inductees are:

| | | |
|---------------------------|------------------------|--------------------------|
| Nicholas Armenoff | William Balbach | Daniel Bellinski |
| Kelley Blake | Joshua Craven | Allyson Densinger |
| Jennifer Diemunsch | Joshua Galecki | Sarah Huggins |
| Shelley Leber | Jenita Levine | Matthew Magner |
| Brett Mershman | Ella Stone | Charles Suer |
| Michelle Timmerman | | |

A team of **Zack Martinsek** and **Ed Timko** competed in this year's **COMAP Mathematics Modeling Competition**. They generated and classified the difficulty level of Sudoku puzzles. They earned Honorable Mention in the international competition and they presented their work to the faculty in April.

THE STANDER SYMPOSIUM

The **Stander Symposium** is a very special event at UD. It opened on a Tuesday evening, April 8, 2008 and then spanned the entire next day. This year the keynote Address was delivered by Dr. Jody Olsen, Peace Corps Deputy Director. The Department of Mathematics provided its usual contributions, a morning session on How to Lie with Statistics (replacing a noontime session on Mathematics through Origami), the Integration Bee, and the pizza luncheon.

Several students participated in the Poster Session. Their names and poster titles are given below.

Jeff Neugebauer, *Qualitative Properties of Nonlinear Volterra Equations*; (page 111)

Edward J. Timko, *An Experiment to Measure the Effective Mass of an Electorn in AlGa_N/Ga_N Heterostrucutres*; (see p 91, note to self)

Jinyang Sun, *Developing a Simple Model for Estimating Percent Body Fat*; (see p 98)

Pete Hovey has been collaborating with Sudhindra Gadagkar and Philip Pfeiffer from the Department of Biology on a project entitled *Determining the statistical significance of observed frequencies of short DNA motifs in a genome*. Philip delivered a 60 minute presentation at the Symposium and a poster. Philip also presented the article at Undergraduate Math Days, and a paper appears in the Electronic Proceedings of Undergraduate Math Days.

115 students formed 43 teams and competed in this year's Integration Bee. **Art Busch** organized this year's Bee and served as host. First place went to the Red Team (**Tristan Butcher**), second place went to We used to work in Chicago in a Department Store (**David Aaby, Shelley Leber, and Josh Cain**), and third place went to Double Trouble (**Anna Henry and Meredith Cooper**).

AWARDS

The recipient of the 2008 Faculty Award for Excellence is **Edward Timko**. Ed was a double major: mathematics and physics. He wrote a Berry Scholars Thesis with Dr. Leno Pedrotti (Physics) entitled *Evaluation of the Gravitational-Electromagnetic Analogy for first Order Non-Linearities*. He presented his work to the university community at both the Honors Program Symposium in late February.

Multiple recipients were named for the 2008 Pi Mu Epsilon Award. These are **Charles Suer** and **Michelle Timmerman**. This is an award for excellence among second year students in mathematics.

The 2008 Brother Joseph W. Stander, S.M., Award of Excellence in Mathematics Education recipient is **Ashley Wilker**. This award for excellence goes to a graduating senior in the teacher licensure program with a principal teaching field in mathematics.

The 2008 Omar Williams Award of Excellence to the Outstanding Student in Broadcasting recipient is **Christopher Michael Hovey**, whose proud father is **Pete Hovey**.

ACTIVITIES OF GRADUATE STUDENTS

We had a banner year granting master's degrees. We currently offer three degrees, the long time MS in applied mathematics (MAS), the master's in financial mathematics (MFM), implemented in 2004, and the master's in mathematics education (MME), implemented in 2005. The very first graduates of the MME program are **Carol Parete** (08) and **Rusty Rizzotte** (08). Congratulations and thanks to **Shannon Driskell** and **Becky Krakowski** for getting this program off to a good start. On a more somber note, we wish Peter Lung, Department of Economics & Finance, all the best as he moves to a position at the University of Texas at Arlington. Peter has provided invaluable support to

the MFM program both in the curriculum and in the research. We wish him all the best; his new position sounds very exciting. We will miss him.

The internship is such a crucial part of the MFM program. It is currently a goal to require an internship as part of the MFM program. This summer, three of our students successfully obtained valuable internships: **Jinyang Sun** (ING, West Chester PA), **Locksley Todd** (Highland Consulting Associates, Cleveland, OH), and **Chuck Wai** (Hartford, Providence RI). **Fatima Bousso** (07) returned to UD in December and interviewed our students for an internship with ING.

Edward Akrofi-Addo (Aug 07) (Aug 07) earned the MFM degree. He worked with Albert Wang from the Department of Economics & Finance and **Paul Eloë** and he wrote a math clinic project on Strategic Trading when Paradigm Shifts.

Xiaoyan Ruan (Dec 07) earned the MFM degree. She worked with **Ruihua Liu** and she wrote a math clinic project on Volatility Study: Historical Volatility and Implied Volatility of S&P 500 and Commodities. Last summer, Xiaoyan accepted an offer to serve as an intern with Nationwide Financial in Columbus.

Fares Ghannam (Apr 08) earned the MAS degree. He worked with **Youssef Raffoul** and he wrote a math clinic project on Periodic Solutions in Nonlinear Neutral Difference Equations with Functional Delay.

Casey Klaus (Apr 08) earned the MFM degree. He worked with Peter Lung from the Department of Economics and Finance and he wrote a math clinic project on Volatility Trading on Special Events. Casey has a position as a Junior Trader with the Hanley Group in Chicago.

Melissa Mattson (Apr 08) earned the MFM degree. She worked with **Ruihua Liu** and she wrote a math clinic project on Valuing American Put Options with Regime Switching. Melissa has returned to Baltimore and currently has wedding plans.

Jeff Neugebauer (Apr 08) earned the MAS degree. He worked with **Muhammad Islam** and he wrote a math clinic project on Qualitative Properties of Nonlinear Volterra Integral Equations. This worked has appeared in the Electronic Journal of Qualitative Theory of Differential Equations, 12 (2208), 1-16. Jeff will begin a Ph.D. program in mathematics at Baylor University beginning this fall.

Lanre Oriowo (Apr 08) earned the MFM degree. She worked with Albert Wang of the Department of Economics & Finance and **Paul Eloë** and she wrote a math clinic project on Strategic Trading when Paradigm Shifts. You may note that several graduate students have worked on this problem. The numerical experiment is very sensitive to parameters and the problem has been conducive to continuing work. Lanre is currently looking for a teaching position.

Carol Parete (Apr 08) earned the MME degree. She worked with **Shannon Driskell** and **Becky Krakowski** and she wrote a math clinic project on The Association Between the Cognitive Level of the Instructor's Questions and Corresponding Student Responses – Implications for Improving Instruction. Carol teaches at Edison State Community College in Piqua.

Rusty Rizzotte (Apr 08) earned the MME degree. He worked with **Shannon Driskell** and he wrote a math clinic project on Using a Constructivist's Approach in Teaching Pre-service Elementary Teachers How to Teach Mathematics. Rusty teaches mathematics at Northmont High School and he is an adjunct faculty member for the Department of Mathematics.

Xiaobo Zeng (Apr 08) earned the MFM degree. He worked with Peter Hovey and he wrote a math clinic project on Pairs Trading and Co-integration. This research was motivated by collaboration with an investment research company.

PLANS OF RECENT GRADUATES

Nancy Buck will spend the summer in the Bay area before entering a graduate program in mathematics at the University of North Carolina at Greensboro.

Michael Gibson is commissioned in the United States Air Force.

Ed Timko will begin a Ph.D. program in physics this fall at the University of Indiana.

ALUMNI NEWS

Mel Kuhbander (56) dropped us a nice note following last year's Newsletter. Mel reports that he does get back to UD about once in every three years when members of the Common Bond have their reunion.

The September 2007 issue of AMSTANEWS carried the article "The Tale of a Biostatistician in the Federal Government" written by **Greg Campbell** (70). In that article, Greg gave a much appreciated plug for mathematics and the Department of Mathematics at UD.

Paul Judd (82) and his wife, Linda, live in Des Moines, and have four daughters, Emily, Ellen, Laura, and Grace. Paul is on the faculty in the Department of Statistics and Actuarial Science at Drake University. He received the 2007 Undergraduate Teacher of the Year in the School of Business. This award is determined by a vote of the students. Paul serves on committees of the Society of Actuaries to focus on education and examinations.

Gina Konkoly Hawk (84) lives with her family in Columbus. She recently wrote to remind us of the mighty QED softball team and to introduce us to her son, Greg, who at that time was looking at UD as a possible school to attend.

Rafe Donahue (87) recently left his position as Research Professor at Vanderbilt University to take a position as Associate Director for Statistics BioMimetic Therapeutics, Inc. in Franklin Tennessee.

Tom Bohman (91) married Jennifer Chianese on November 11, 2006, in Pittsburgh. He is currently an associate professor of mathematics at Carnegie Mellon University. Tom earned a Ph.D. at Rutgers University and completed post-doctorate work at MIT prior to accepting a position at Carnegie Mellon.

Joe Coyle (93) earned tenure at Monmouth University where he has been serving as co-chair of the Department of Mathematics.

Jodi Barnett Otto (94, 98) teaches mathematics at Centerville High School. She is also an adjunct teacher at Sinclair Community College.

Sara Miner More (96) announces the birth of her first son, Brendan Charles More, born on March 12th, weighing in at 7 lbs, 1 oz. She is on maternity leave from her Assistant Professor position at McDaniel College. In the fall, her husband Jesse (who is a chemistry faculty member at Loyola) will get paternity leave for a semester, so they have the next nine months of baby care mapped out. Sara is the daughter of retired physics faculty member, George Miner. She was an Honors thesis student of Dr. Higgins (Pebbling on line graphs) and she earned a PhD in CPS from University of California, San Diego.

Julie Wenning Niederhoff (99) completed a Ph.D. in business administration with a specialty in operations and manufacturing management. She is on the faculty in the School of management at Syracuse University.

Geoff Dietz (00) and his wife Amber have a second baby now. Born Sunday March 30, Rachel Violet Dietz "weighed in at 7lbs 11oz and 20.5in long (just a little bigger than her big brother Joseph when he was born 2 years ago)." Geoff reports that all are doing well. Geoff is an Assistant Professor in a tenure-track position at Gannon University.

Ryan Reinhart (00) serves as Assistant Director of Residence Life at Ashland University. In response to our call for lunch in San Diego in January, Ryan reports that he doesn't "exactly play with math-type people that much anymore", but he did find use for a Venn diagram recently.

Michelle Franz Canfield (02) teaches mathematics at Riverside High School in Painesville Township near Cleveland. She earned an MA in mathematics in the summer of 2005 from John Carroll. She married just last summer.

Yang Wang (02) earned a Ph.D. in statistics from Pennsylvania State University. He currently works as a research statistician for Pfizer R&D in Groton & New London Connecticut.

Joseph Dib (02) and **Mariette Maroun** (03) happily announce the birth of their son, Joshua Joseph, born on May 19, 2008. Joseph earned a doctorate in mathematics from the University of Louisiana, Mariette earned a doctorate in mathematics from Baylor, and they are both faculty members in the Department of Mathematics at the University of Louisiana at Monroe.

Suzanne Dietz (04) is finishing her program in medical school at the University of Toledo, College of Medicine. She reports that while interviewing for a residency position at the University of Cincinnati, she was interviewed by Dr. Daniel Schauer (95). We assume that mathematics dominated the conversation.

Peri Shereen (04) completed the master's degree in International Peace and Conflict Resolution from American University. She has missed studying mathematics; she will begin a graduate program in mathematics at Cal State Long Beach this fall.

Ruth Hinde (05) now serves as Assistant Coordinator for the Marianist Volunteer Program. She works primarily out of St. Louis. She was in Dayton during the first week of October to participate in the Post-Graduate Volunteer Fair. She came by the department to say hi and also visited some classrooms. She recently married Michael Pera (07) in the UD Chapel.

Theresa (O'Neill) Kassman (05) married Drew Kassman (05) in August 2007. They live in Charlotte, NC and where Theresa is employed as an Acquisition Strategy Risk Analyst for Bank of America.

Jeremy Lynch (06) currently lives in Arlington, VA. He works for the US Census Bureau as a Survey Statistician.

Fatima Bousso (07) works as a Quantitative Derivative Strategist with ING Bank. She was on campus this past fall recruiting for an intern.

George Eckerd (07) works as a financial analyst for Blackrock Asset Management Company.

Patrick Johnson (07) has completed his first year of graduate school in physics at Washington University. This summer he is working at Los Alamos National Labs and is performing molecular dynamic simulations.

Obituaries

George Lang (66), 64, died on May 9, 2007 following a brief illness. George was professor of mathematics at Fairfield University. He received his BS in mathematics from Loyola University, his MS from the University of Dayton, and his PhD from Purdue University. He had been an MAA member since 1964. George regularly attended the alumni luncheons associated with the annual mathematics meetings; we missed him this year in San Diego.

Michael Sokol (92), 50, died as a result of a motorcycle accident on Merritt Island, Florida on March 24, 2006.

Senior Past-President of the University of Dayton Mathematics Club Dies at 86

Robert A. Stacy (Class of 42: Electrical Engineering) was the oldest living past-President of the University of Dayton's Mathematics Club until his recent death on June 22, 2007. Bob Stacy became the Mathematics Club's first Vice-President during his junior year at UD when the club was started by then Professor Kenneth Schraut. In his senior year, he became President of the Mathematics Club, and he and Dr. ("Doc") Schraut would become good friends during and after Bob's time at the University of Dayton.

During his junior year, Bob Stacy won the prize for best Mathematics presentation at the University of Cincinnati Mathematics symposium for a paper titled "A Solution of the Paradoxes of Zero by the Theory of Numbers". His prize was a copy of "Issac Newton", a book authored and signed by Louis Trenchard More, then head of Graduate Studies at the University of Cincinnati. As Professor Kenneth Schraut started a tradition of taking the Math Club President to the University of Cincinnati each year for its annual Math symposium, Bob Stacy got his first airplane ride with "Doc" Schraut aboard a DC-3 flying from Dayton to Lunken Airport in Covington.

Bob Stacy graduated from UD with honors in 1942, and would pass up an opportunity to work at General Electric for a commission in the US Army during World War II. After the war, his career would include Project Engineer for black & white TV design at the Crosley Company in Cincinnati; Staff Engineer and Manager of the Electro-Optics and Infrared Engineering Department at AVCO's Military Electronics Division in Cincinnati; and Head of the Electro-Optics Department at McDonnell Douglas in St. Louis.

Bob Stacy retired in 1986 and moved to Escondido, California, with his wife Delores. With the passing of UD's first Math Club President in 1992, he became the senior past-President of the club – a title which he held for 15 years. Bob Stacy was 86.

David C. Tsui (87), 41, of Centerville, OH passed away Sunday, August 5, 2007. He was an employee of GE Aviation, and he taught mathematics at the University of Dayton, Wright State University, and Sinclair Community College. He was an active member of the Miami Valley Bridge Club and Tau Beta Pi. David had been serving as an adjunct professor for the department of mathematics since the Fall term, 2004. Among many others, he is survived by his Mother, **Susan Tsui**, was a long time faculty member in the Roesch Library, his sister, **Lisa (Tsui) Diller** (90), and his brother-in-law, **David Diller** (90).

UD GET-TOGETHER AT THE MATH MEETINGS

We met for lunch in San Diego on Monday January 7. Those gathering included **Kristen Blenk Duncan** (99), **Bob Lewand** (66), **Susan Miller Thompson** (81). Bob, a Professor

at Goucher College, regularly attends the annual meetings and he is a regular at our get-togethers. Susan, a Professor and former Chair at Otterbein College, was at the front end of a sabbatical. Following the meeting, her plans included renting a car and spending some time in California. Kristen is on the faculty at San Diego State University. She surprised us as she was the only one amongst us who actually attended the UD-Pitt basketball game in December at the UD Arena. She said it was great. Others attending the meetings who could not attend the luncheon included **Bob Buck** (69), **Joseph Dib** (2002), **David Gebhard** (91), **Stephen Hartke** (99), and **Mariette Maroun** (2003). We truly missed **George Lang** (66), a regular at these luncheons, who passed away in April 2006. A brief obituary appears above for George. We observed a moment of silence for George at the luncheon.

Next January, the Winter meetings are in Washington D. C. A number of you who are interested in the annual luncheons live in the Baltimore/D.C. area. We will be better organized with a social this year. We anticipate that we will schedule for an evening get together and we will find a place that can hold a group as big as two dozen. The meetings will be held at the Marriott Wardman Park Hotel and Omni Shoreham Hotel. We will gladly accept recommendations from locals for a gathering place. Please send your recommendations to paul.eloe@notes.udayton.edu.

In appreciation of Paul Eloë's service as our Chair

Paul Eloë has been the Chair of the Department of Mathematics for eight years. The faculty showed their appreciation of Paul by throwing a party for him at the end of the school year. This article is an adaptation of the remarks that Aparna Higgins made at the party, listing Paul's accomplishments as Chair.

There are many reasons to be thankful for the leadership Paul provided our department. He became skilled at both having a vision and implementing it. Eight years ago, when Paul ran for the office of Chair, I asked him why he wanted to chair the department. He thought for just a moment before saying, "Hiring." Around 2000, we had a spate of retirements, with five senior faculty retiring. Since then, we have hired eleven faculty members, and eight of those are still with us. Paul has been extremely supportive of new faculty, not only in providing adequate funds for travel to conferences and teaching aids, but also in working with new faculty in their areas of research, thereby providing a sounding board for new faculty members' ideas and mitigating the lack of colleagues in particular areas of research.

Paul has left a deliberate legacy of his Chairship – the Master in Financial Mathematics (MFM) program. Paul was granted a \$50,000 Sloan Foundation grant to look into creating the MFM program. The program has had about ten graduates in the three or four years that it has been in existence. There are many worthy applications each year for the few spots that we have for graduate scholarships. Paul has been appointed to serve on the Council of Graduate Schools for Professional Science Master's Programs.

Paul Eloë has made Mathematics Education a respected area in our department. He created a job description for “Outreach Mathematician,” in which were spelled out the duties of a faculty member whose primary teaching and mentoring responsibilities would be with pre-service and in-service teachers. We now have three Mathematics Education faculty positions. The Master in Mathematics Education (MME) program is in place, and its first graduates earned their degrees this year. Paul has been supportive of faculty applying for Ohio Board of Regents grants, and he was instrumental in getting the Middle Childhood Mathematics curriculum in place. Our pre-service middle school teachers who wish to concentrate in mathematics take seven mathematics courses now.

In the matter of extra-curricular activities for undergraduates, Paul has embraced innovative ideas and has funded them. A notable addition to undergraduate activities is MathEvents. Each fall, the Schraut Lecture anchors either Undergraduate Mathematics Day or the Biennial Alumni Seminar. These events have garnered regional attention. True to his love of sharing written mathematics, Paul founded the Electronic Proceedings of Undergraduate Mathematics Day. He works hard with the students who submit articles, getting them to not merely write up their results, but to edit and re-write them so that they make an interesting contribution to the mathematics literature. Paul has continued supporting the students’ involvement in the Putnam Competition, the Mathematical Contest in Modeling and in Pi Mu Epsilon and our Math Club. He encouraged the Integration Bee as an annual event tied in with the Stander Symposium. Paul’s support is very hands-on. He is always willing to help in any way that the organizers request – whether moving tables and chairs or coaching student moderators of contributed paper sessions. Paul provides a very personal touch at the Stander Symposium by visiting every poster presented by our mathematics majors.

As alums of our department, you are aware of how much Paul has reached out to you. He edits the annual newsletter (with the exception of this particular article!), he seeks to put your donations to good use, he works with you to advise our current majors and to put internships in place, and he organizes get-togethers at the national meetings.

On campus, Paul worked hard to ensure that the Department of Mathematics is represented on various key committees. He served on the university’s Academic Senate and the College’s Academic Affairs Committee, and continually provided names of mathematics faculty for positions on other committees. A believer in name recognition, Paul did his best to nominate qualified faculty from our department for awards both on-campus and off-campus.

A very recent accomplishment of Paul was to get our Department Secretary position upgraded to that of “Senior Administrative Assistant.”

The achievements listed above may lead us to believe that a Chair spends her/his time simply taking care of the department. Well, let’s see now. In the eight years of being Chair, Paul published thirty-eight research papers and one chapter in a book, he won the College’s Award for Outstanding Research, he gave twenty-two invited talks and he served on various editorial boards, even taking on five new editorial board assignments!

Paul made several sacrifices in serving as our Chair. For example, each semester he taught courses that were the last pick of the rest of the faculty. One of Paul's biggest burdens was the QRC – Quantitative Reasoning Competency – one of the University's requirements which could not be implemented efficiently. He kept the faculty shielded from the bureaucracy surrounding the QRC, and worked successfully to free the department from the task of implementing this University requirement.

We will miss a lot about Paul when he joins us as “regular” faculty soon. We will miss his crazy email messages with references to sports that some of us could never figure out. We will miss the first department meeting of the school year in which new faculty seem to get further and further agitated as Paul spews out TLAs (three-letter acronyms) such as QRC, MFM, MME without explanations, or refers to the “three-week shuffle.” But most of all, we will miss his compassion. Paul made it easy for us to approach him – if only to share a story of what happened today, or to ask for a change in schedule, or to talk about a sick child. He showed great flexibility when we asked for it, doing as much as he could to help us so that we, the faculty, could perform our professional duties well.

Thank you, Paul, and welcome back to being “just” faculty.