



**The University of Dayton** \_\_\_\_\_ **1996**  
**Mathematics Department**  
**NEWSLETTER**

Editor's Note: In mid or late December, every alumna and alumnus of the mathematics department should have received a hard copy of this newsletter via the US Mail. If you did not receive your copy, please send your correct mailing address to the alumni office.

**CHAIRPERSON'S MESSAGE**

As I reviewed the past newsletters to prepare this edition, I realized that this is the 10th Department of Mathematics Newsletter. This year, we decided to move its publication date to the end of the fall semester, which seems to be easier than working around summer vacation plans. It may also be a more appropriate time of the year because of the long tradition of Dr. Schraut's annual Christmas letter. This month also marks the 40th anniversary of University of Dayton Research Institute, which has been a source of part-time jobs for many mathematics majors over the years. Moreover, according to William Dunham, writing in the MAA student magazine, *Math Horizons*, 1996 marks three other important anniversaries for the mathematics community: in 1896 the Prime Number Theorem was finally proved by Charles Jean de la Vallée Poussin and Jacques Hadamard; in 1796, Carl Friedrich Gauss, who was 18 at the time, discovered the construction of a regular 17-sided polygon using only straightedge and compass; and the first calculus textbook was published in 1696 by the Marquis de L'Hospital, who was tutored by Johann Bernoulli. We are just beginning to plan for the 18th Biennial Alumni Seminar on Employment Opportunities in the Mathematical Sciences to be held on the Saturday afternoon of March 8, 1997. We would invite you to come to meet with the students and socialize with one another. Looking to the future, we have invited the Ohio Section of the Mathematical Association of America to hold its 1999 spring meeting on campus, and we will try to host that meeting on the same weekend as the 19th Biennial Alumni Seminar; the Ohio Section meetings usually end around noon on Saturdays, so it will not conflict with the normal afternoon timing of the Biennial Seminar. It will give our returning alumni a chance to participate in the Section meeting, and it will allow some visiting students to discuss employment opportunities with our alumni.

In the 1989, 1991, and 1992 editions of this newsletter I talked about the plans for the construction of a building to connect Sherman and Wohlleben Halls. This on again, off again, project has apparently been shelved. However, long overdue piecemeal renovation is taking place in these two science buildings thanks in part to the entrepreneurial activities of the science

departments. Our new Macintosh computer classroom/ laboratory, which was partly paid for by a National Science Foundation (NSF) grant to Ralph Steinlage, is a very nice facility which is now regularly used by a variety of mathematics classes; we are now trying to have it designated as a centrally funded laboratory so that its equipment can be kept up to date with periodic computer upgrading. Currently, two biology research labs, one chemistry research lab, and one physics research lab are being renovated partly through another NSF grant; local funds have been committed to upgrade the infrastructure in Sherman Hall to make these renovations possible, and to prepare the building for eventual installation of a climate control system. Next summer, a third NSF grant will help to install a lab to support the environmental programs in biology and geology, and renovations of additional space in Sherman Hall will support the physics lab component of the new science sequence for liberal arts majors.

However, our largest challenge over the immediate future will not be related to bricks and mortar, but to people. At this time, all of our ranked faculty are tenured, and our most recent hire into a tenure-track position was in 1985. Over the next decade about half of our current faculty will retire, and so we will be steadily involved not only in the process of recruiting new faculty, but also in making fundamental decisions concerning the direction the department is to take into the next generation. In closing, and on behalf of the entire department, I would like to extend our wishes to you for a happy holiday season, and a successful 1997.

Tom Gantner

### **THANKS!**

We wish to acknowledge the alumni, friends and faculty who have designated gifts for use by the Department of Mathematics. These donations are greatly appreciated because they go into a special fund that exists outside of our normal operating budget, and they can often be used to leverage additional money for needed equipment and other projects. For example, we recently used this fund to provide our share of the cost of a high quality, full color projection panel for computer generated images, together with a compatible overhead projector. According to the University Advancement Office, the following people have made designated gifts to our department since July 1, 1995:

Paul Campbell (67)	Cheryl Cooley (93)
Paul Eloe	John Feck (91)
Tom Gantner (62)	Joan Giardina (70)
Robert Halsted (87)	Michael Hartke (66)
Aparna Higgins	William Huster (78)
Jane Pendergast (74)	Ted Renneker (94)
Ralph Steinlage (62)	Dorothy (Como) Hafertepen (81)

In addition, corporate gifts were received from the Arthur Anderson Foundation (for Ted Renneker), Chicago Title Trust (for Joan Giardina), Cytology Pathology Services (for Pieter Wiersema), the Eli Lilly Foundation (for William Huster), and Principal Mutual Life (for Paul Judd). Finally, Paul Campbell donated about 75 new mathematics books for our departmental library.

### **FACULTY UPDATE**

#### *Full Time Faculty*

Stan Back, 1959	Jack McCloskey, 1965
Paul Eloe, 1980	Harry Mushenheim, 1965
Bill Friel, 1963	Jerry Neff, 1990

Tom Gantner, 1966	Dick Peterson, 1957
Bob Gorton, 1969	Ben Rice, 1960
Aparna Higgins, 1984	Paula Saintignon, 1983
Muhammad Islam, 1985	Gerry Shaughnessy, 1967
John Kauflin, 1966	Joe Stander, SM, 1959
Joe Mashburn, 1981	Ralph Steinlage, 1966

*Part Time Faculty*

Eric Cheney, 1989	Shirley Ober, 1977
Bob Finnegan, 1985	Betty Schneider, 1989
Don Jurick, 1991	Les Steinlage, 1969
Karen Mickel, 1992	

## **ANNOUNCEMENTS**

1. We would like to extend a general invitation for you to attend the 18th Biennial Alumni Seminar on Employment Opportunities in the Mathematical Sciences which will be held on Saturday March 8, 1997. In an effort to increase the numbers of students at this event, we will advertise it in the senior mathematics classes in the area high schools. We hope that enough of you will return so that all career areas in the mathematical sciences are represented. Please let us know if you would like to receive additional information concerning the details of the program as it evolves: drop us a note by mail, call us at (937)-229-2511 (note the new area code for the Dayton area), FAX us at (937)-229-2566, or send us an e-mail.

2. The Mathematics Department now has its own home page on the World Wide Web. You can check us out at <http://www.udayton.edu/~mathdept>. In fact, we will post information concerning details of the above event on our home page.

## **SABBATICALS**

Jack McCloskey is on sabbatical leave during the current Fall of 1996 term. He is spending his time in developing the computer related component of a graduate statistics course on linear models that he will offer next semester.

Ralph Steinlage was on sabbatical leave during the Spring of 96. A good part of that time was spent at the Fuzzy Logic Laboratorium at the Johannes Kepler University in Linz, Austria.

## **VISITING PROFESSOR**

During the Winter term, 1996, Professor Alexander Yastrebov of Yaroslavl State Pedagogical University (Russia) visited the Department of Mathematics. Alexander is trained as a differential geometer; however, his interests have turned to mathematics education in the undergraduate curriculum. Alexander taught MTH 370, Introduction to Higher Geometry, to mathematics and mathematics education majors, finished his book, entitled "Teaching As A Model Of Research," was the primary speaker in seminar, delivered colloquia at Wright State University and Ohio State University, and delivered a presentation at the Ohio Section meeting of the MAA. This summer, UD student Carol Lijek studied at Yaroslavl State Pedagogical University and Alexander served as her mentor.

## **COLLOQUIUM**

Professor Nikolay V. Azbelev of Perm State Technical University (Russia) visited the department for several days and delivered a colloquium entitled, "Stability and Asymptotic Behaviour of Solutions of Equations with Aftereffect."

## **PUBLICATIONS**

Paul Eloë (with N. Kuprowicz and J. Petrykowski), "A generalization of concavity for finite differences", Computers and Mathematics with Applications

.....(with D. Reuster and G. Thiele), "Growth and propagation of acoustic waves of nonuniform sound speed within a plane-walled enclosure", Proceedings of the International ME '96 Congress & Exposition

.....(with K.M. Iftikharuddin, M.A. Karim and A.A.S. Awwal), "A magnetic field iterative technique for improving high frequency prediction methods", Applied Computational Electronics Society Journal

.....(with Johnny Henderson, et. al.), "Discretized amplitude-modulated phase-only filter", Optics and Laser Technology

.....(with Tarique Khan, MS 95), "Right focal boundary value problems with impulse effects", Dynamic Systems and Applications

.....(with Janet McKelvey), "Positive solutions and conjugate points for a class of linear functional differential equations", Boundary Value Problems For Functional Differential Equations

....."On the convergence of iterative solutions to the electric field equation", Applied Mathematical Letters

....."Inequalities based on a generalization of concavity", Proceedings of the American Mathematical Society

....."Singular nonlinear  $(n-1,1)$  conjugate boundary value problems", Georgian Math. Journal

....."Positive solutions for two-point boundary value problems", Dynamic Systems and Applications

....."Positive solutions for  $(n-1,1)$  conjugate boundary value problems", Nonlinear Analysis, T,M&A.

....."Positive solutions of three point boundary value problems", Communications On Applied Analysis

Aparna Higgins has an article entitled "What is the lowest position of the center of mass of a soda can" accepted for publication by PRIMUS.

Mohammed Islam (with Y A Fiagbedzi of KFUPM, Saudi Arabia) published "Periodic solutions and almost periodic solutions of non-linear integral equations" in Annals of Differential Equations II (1995) 255-259.

Joe Mashburn had a paper entitled "A note on reordering ordered topological spaces and the existence of continuous, strictly increasing functions" accepted for publication by the Topology Proceedings. He also became the conference and seminar editor for the Topology Atlas (<http://www.unipissing.ca/topology>).

Ben Rice (with Jerry Strange) Plane Trigonometry(7th Ed) Copyright Jan 1996

## **PROFESSIONAL MEETINGS AND SERVICE**

Bill Friel, Aparna Higgins, and Ralph Steinlage attended the Ohio Section MAA meeting at Denison University in October '96. Bill also attended the Section meeting at Akron University last April.

Bill Friel, Tom Gantner, Aparna Higgins and Ralph Steinlage attended the MAA short course on "Symmetry and Group Theory" held here last June and conducted by Doris Schattschneider of Moravian College.

Aparna Higgins was an invited panelist in April '96 at the Allegheny Mountain Section of MAA. The panel's question was "What are graduate schools looking for?"

Aparna Higgins gave the invited address "Pebbling, demonic graphs and military strategy" at St Louis University('95), at Cedarville College ('96), and at Wittenberg University('95). She also gave a talk to the Discrete Math Seminar at Wright State University entitled "Pebbling number of  $C5 \times C5$ ". Aparna also presented the following workshops: "But undergraduates can't do research, can they?" at the Allegheny Mountain Section of MAA('96) "Undergraduate Research: How to make it work", for Project NeXT for which she is a mentor. She also directed the Undergraduate Honors Thesis for Sara Miner, ('96), entitled "Pebbling on Line Graphs." Aparna serves on the College Promotions Committee, the University Honors Committee, and the Faculty Awards Committee, and on many national MAA committees including the Committee on Student Chapters of which she is the chairperson.

Mohammed Islam presented a 45-minute talk as an invited speaker at the World Congress of Non-linear Analysts, held in Athens, Greece, July '96.

Joe Mashburn gave an invited talk entitled "Pliable subsets of ordered topological spaces", at the Special Session in Set-theoretic Topology at the AMS meeting in Greensboro NC in November '95.

Harry Mushenheim attended the Oberlin College Differential Equations workshop in June '96.

Gerry Shaughnessy gave a talk on "Orthogonal Experimental Design Matrices with Application to Aircraft Engine Nacelle Fire Tests" at the JTCG/AS Vulnerability Reduction Subgroup Meeting with Industry in West Lebanon, NH in August '96.

## **UNDERGRADUATE ACTIVITIES**

Once again, the University of Dayton entry in the annual Mathematical Contest in Modeling finished with a ranking of Meritorious. This year's team consisted of three sophomores: Andy Hetzel ('98), Joe Huelsman ('98), and Jon Johnson ('98). They subsequently presented their work in a spring departmental seminar. Their report was entitled "Selection Schemes for Judging Essay Contests."

Stephen Hartke ('99), Andy Hetzel ('98), Carol Lijek ('97), Sara Miner ('96), Ryan Rinehart('98), and Sean Tunning ('96), attended the Ohio Section MAA meeting at Akron University last April. Andy, Carol & Sara gave talks in the Student Paper Session on "Selection Schemes for Judging Essay Contests", "Olympic Medal Winnings", and "Pebbling and Line Graphs" respectively. Sara Miner also gave a talk at the Pi Mu Epsilon meeting at Miami University in September 1995 and she received the Senior of the Year award.

Andrew Hetzel and Joe Huelsman were awarded the Sophomore of the Year last year. Andy also gave a talk in Seattle at the national PME/MAA Meeting in August '96.

### **GRADUATE ACTIVITIES**

Three students, Nick Kuprowicz, Suresh Maryala, and Janet McKelvey, obtained Master of Science degrees in applied mathematics. Nick, under the supervision of Paul Elie and Professor John Petrykowski, Mechanical and Aerospace Engineering Department, studied "Growth and propagation of acoustic waves of nonuniform sound speed within a plane-walled enclosure" for his mathematics clinic project. Nick will present this paper at the 1996 International Mechanical Engineering Congress and Exposition in Atlanta in November, 1996. The paper has been accepted to appear in the Proceedings of the Congress. Nick is currently a graduate student in the Dayton Area Graduate Studies Institute (DAGSI). DAGSI is a partnership between the high technology programs at University of Dayton, Wright State University and the Air Force Institute of Technology. Suresh wrote a tracking program in Foxpro for his mathematics clinic project. This program will be invaluable to the department as we track students through the calculus sequence, or majors through the mathematics program. Suresh is employed as a systems analyst with Reynolds and Reynolds and is pursuing a Ph.D. in computer science at Wright State University. Janet studied "A generalization of concavity to higher order differential inequalities;" this work was incorporated into a joint paper with Paul Elie entitled "Positive solutions of three point boundary value problems" and will appear in the refereed journal, Communications On Applied Nonlinear Analysis. Janet is currently employed by the Defense Supply Center in Columbus, Ohio.

### **SENIOR PLANS**

Amy Askins (BS 96) plans to go to Chicago to be an actress.

Tereza Buzdon (BA 95) took a teaching position at Fairmont High School in Kettering.

Matthew Cordonnier (BS 96) had several interviews for high school teaching.

Amie Gill (BA 96) plans to do substitute teaching in the Akron area before looking for a more permanent teaching position.

Brian Hettrich (BS 96) began working last May as an actuarial analyst with Cincinnati Financial Ins Co.

Melissa Humeston (BS 96) accepted a position doing statistical analysis for American Express in Pittsburgh.

Julie McCarthy (BA 95) took a teaching position at Fairborn High School.

Erich Morman (BA 96) is enrolled in the MBA program here at UD.

Daniel Parker (BS 96) plans to complete the requirements for a teaching certificate in Florida, and then find a teaching position at the secondary level.

Traci Riley (BS 96) hoped to find work in the a museum in the Cincinnati area.

Nancy Slicker (BS 96) plans to do a year of volunteer work before going into high school teaching.

Sean Tunning (BS 96) will pursue an MS in Statistics at the University of Cincinnati.

Elaine Tuschong (BS 95) is an analyst for Anderson Consulting in Cincinnati.

Julie VanSchaik (BS 96) planned to be a management trainee at 5th/3rd in Cincinnati.

#### **ALUMNI ACTIVITIES**

A portion of the following information was obtained from the U.D. Quarterly.

William Chewning S.M. (BS 44) teaches chemistry and administers the guest house at St. Mary's University in San Antonio, TX.

James Flynn (BS 47) obtained a doctorate in American history in 1993 from Northern Illinois University and resides with his wife, Anne, in Wheaton, IL.

Joe Diestel (BS 64) co-authored the monograph, *Absolutely Summing Operators*, with Hans Jarchow and Andrew Tonge (Cambridge University Press, 1995).

Robert Papajcik (BS 64) is vice president of sales and marketing for Auto-Valve in Dayton.

Lester Steinlage (BS 65) has retired after 30 years of teaching high school mathematics. He teaches part-time in the mathematics department at UD.

Michael Peters (BS 68) is employed by Blue Cross - Blue Shield of North Carolina and resides in Durham, NC.

Brother Gary Eck, S.M. (BA 69) teaches physics and mathematics at Kellenberg Memorial High School in Uniondale, NY.

Greg Campbell (BS 70) recently made a career change from the National Institutes of Health to the position Director of Biostatistics at the Center for Devices and Radiological Health in the Food and Drug Administration.

Frank Lad (BS 70) recently published the book, *Operational Subjective Statistical Methods* (John Wiley and Sons, Inc., 1996).

Daniel Riehle (BS 70) is employed by NCR and lives with his family in West Harrison, IN.

Christine Mitchell (BA 72) is a professor at Georgia Tech.

Rick Schoen (BS 72) has published three recent monographs, *Lectures on Differential Geometry*, with S. -T. Yau (International Press, 1994), *Geometries in Interaction*, with Y. Eliashberg, V. Milman, and L. Polterovich (Springer, 1995), and *Lectures on Geometric Variational Problems*, with S. Nishikawa (Springer, 1996).

Michael Infanger (BS 77) is a geologist for the New Jersey Department of Environmental Protection in Trenton, NJ.

Harry Petty III (BS 77) is vice president of NEC Technologies' Advanced Media Division and resides with his family in Chicago.

Teresa Trimbach Dean (BS 79) and her husband, James, announce the birth of their fourth child, Amy. The family lives in Hamilton, OH.

Jonathan Baniak (BS 81) is employed by Lockheed Martin in Gaithersburg, MD. Jonathan remains very active in athletics and in the church. Recently while he was visiting UD, Jonathan delivered two colloquia talks, one for the students, and one for the faculty.

Dorothy Como Hafertepen (BS 81) is a system analyst for Cincinnati Bell Information Systems.

Paul Judd (BA 82) is a senior actuarial associate at the Principal Financial Group in Des Moines, IA.

Thomas Filloon (BS 83) is a statistician with Proctor & Gamble in Cincinnati, OH.

Sean Donahue (BS 84) has finished his training in pediatric and neuro-ophthalmology. Sean is an assistant professor in ophthalmology at Vanderbilt University, in Knoxville, TN.

Anne (Schmid) Wiles (BA 85) is the mother of three children, lives in Centerville, OH with her husband, Jim, and she is a member of the Society of Actuaries exam committee. Anne recently gave a talk to the members of the Mathematics Club.

Edward Sisolak (BS 85) completed the Maryknoll Mission Association of the Faithful orientation and has been assigned to work in Thailand.

Greg Bishop (BS 86) resigned his academic position at Mount St. Joseph College in Cincinnati and is currently employed as a software engineer for PyroTechnix in Cincinnati, OH.

Eric Cheney (BS 87) teaches mathematics for the Centerville OH City Schools and teaches part-time for UD.

Rafe Donahue (BS 87) relocated to Raleigh N.C. where he is a statistician with GlaxoWellcome. Rafe loves to be reached at [rafedonahue@glaxo.com](mailto:rafedonahue@glaxo.com).

Youssef Raffoul (BS 87) obtained a Ph.D. in mathematics from Southern Illinois University and has accepted a faculty position with Tougaloo College in Jackson, MS. Youssef visited the University of Dayton in March and presented the colloquium Periodic solutions of nonlinear difference equations.

Lisa Niehenke (BS 89) married Thomas Harrington Jr. (MBA 94) and resides in Kettering, OH.

David Diller (BS 90) obtained a Ph.D. from Northwestern University and currently lives in the Seattle area. Recently, Dave visited the University of Dayton and presented a colloquium to the department.

Tom Bohman (BS 91) obtained a Ph.D. in mathematics from Rutgers University and has been awarded a postdoctoral grant from the National Science Foundation.

John Giorgio (formerly George) (BS 91) married Amy Wortmann on May 27, 1995. He has completed a master's degree in counseling and has relocated to Mississippi. He has changed his name to Giorgio, his grandfather's original surname.



Eric Kaufmann (MS 91) has accepted a faculty position with the University of Arkansas in Little Rock.

Chikako Mese (BS 91) obtained a Ph.D. from Stanford University and has accepted the position of Duseman Assistant Professor at the University of Southern California. Chik completed her work at Stanford under the supervision of Rick Schoen (BS 72).

Lori Claude (BS 92) teaches mathematics at William Monroe high school in Standardsville, VA.

Julie Gaskeen (BA 92) married Colin McHugh (BS CHM/CRJ 93) in August, 1995.

Kristen Toft (BA 92) has obtained a master s degree in mathematics from Washington University. She is continuing her study as a Ph.D. candidate.

Eric Castleman (BS 94) is working as a quality control engineer at Center Manufacturing in Grand Rapids, MI.

Peter Vlahutin (BS 94) obtained a master's degree in historical theology from St. Louis University. Peter teaches religion and is a campus minister at Chaminade College Preparatory School in St. Louis, MO.

Griselle Bello (BA 95) is a contract negotiator for the Department of Defense at Wright-Patterson Air Force Base.

Steve Goodman (BS 95) resigned his position with Nationwide in Columbus and is currently a Ph.D. candidate in the Department of Statistics at Ohio State University. Steve was awarded a fellowship to pursue his study.

Tarique Khan (MS '95) is a Programmer/Analyst for Professional Examination Service in New York City.

Joanne Kubicek (BS 95) married Daniel Roth and resides in Lafayette, IN. where she is a teaching assistant in mathematics at Purdue University.