USF
UNIVERSITY OF SOUTH FLORIDA

Quaternion

Department of Mathematics Newsletter

Volume 9, Number 2 Spring 1993

CHAIRMAN'S COMMENTS

Recently a survey was distributed to alumni of the Mathematics Department as part of the assessment process for the re-accreditation evaluation of USF by the Southern Association of Colleges and Schools (SACS). The survey was sent to 97 B.A. alumni (mathematics majors) who graduated during the past five years and to 78 graduate alumni (M.A. and Ph.D. graduates in mathematics) from the past ten years. Twenty-eight of the B.A. alumni responded and twenty-nine graduate alumni responded.

The survey was designed in part to measure if the Department is meeting its goals and objectives in undergraduate and graduate instruction. Succinctly, the instructional goals are: (1) to offer effective undergraduate and graduate instruction; (2) to produce graduates who can formulate real-world problems in mathematical terms and solve them ; (3) to produce B.A.'s who are readily admitted to top graduate schools and sought after by employers; (4) to train graduate students to be both scholars and effective communicators of mathematics in academic and industrial environments; and (5) to produce Ph.D.'s who are eligible for employment at top academic institutions and industrial establishments.

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DEPARTMENT NEWS

Dr. K.M. Ramachandran attended the AMS Short Course Series on "Wavelets and Applications" on January 11-12, 1993, in San Antonio, Texas. He also presented a paper titled "Discrete Parameter Singular Control Problem With State Dependent Noise" at the Joint Mathematics Meetings, on January 13-16, 1993, in San Antonio, Texas.

Dr. A.W. Goodman has published two research papers entitled "On the Zeros of Polynomials and Some Related Functions" and "The Valence of Certain Sums". He has also published the fifth edition of his textbook entitled "Calculus With Analytic Geometry" with Mencorp Publishing Company.

Dr. W.E. Clark published the following papers, which appeared in 1992:

1. "Matching Subspaces to Complements in Finite Vector Spaces", *Bulletin of the Institute of Combinatorics and its Applications*, 6, 1992, pp. 33-38.

2. "Bounds on a Class of Partial Partitions of a Vector Space Over GF(2): A Graph Theoretical Approach", *Linear and Multilinear Algebra,* 32, 1992, pp. 225-235.

3. "Partial Partitions of Vector Spaces Arising From the Construction of Byte Error Control Codes", (with L. Dunning), *Ars Combinatoria*, 33, 1992, pp. 161-177.

4. "On the Complexity of Deadlock Free Programs on a Ring of Processors", (with **W.R. Stark** and **G.L. McColm**), *Journal of*

Parallel and Distributed Computing, 16, 1992, pp. 67-71.

5. "Sum-Free Sets in Vector Spaces Over GF(2)", (with **J.F. Pedersen**), *Journal of Combinatorics* (Series A), 61, 1992, pp. 222-229.

Dr. A. G. Kartsatos has been invited to give a lecture at the International Conference on Functional Differential Equations, Guangzhou, China, May 25-30, 1993. The conference is organized by the Mathematics Institute of the Chinese Academy of Sciences and the following seven universities: Anhui University, Fudan University, Hunan University, Northeast Normal University, Qingdao Ocean University, South China Normal University, Zhongshan University. Title of the lecture: "Compactness Methods in the Theory of Functional Differential Equations."

Dr. Kartsatos has also been invited to lecture at the International Conference on Optimal Control, Partial Differential Equations and Variational Inequalities, Athens, Ohio, March 25-27, 1993. The conference is organized by the Department of Mathematics of Ohio University. The title of the lecture is: "Further Results on the Controllability of Evolutions With Pre-Assigned Responses."

Additionally, Dr. Kartsatos has been asked to serve on the editorial board of the new journal: *Communications in Nonlinear Analysis*.

Dr. R.W.R. Darling was awarded a $5,000 grant from the Veteran's Administration in December 1992 for support of a part-time graduate research assistant for mathematical models in pharmacokinetics.

Dr. Darling has also accepted a visiting position at Aarhus University, Denmark for the Fall of 1993, during his sabbatical leave.

Dr. A. Mukherjea spent July 1-August 8, 1992, at the Åbo Academy University in Finland as a visiting scientist. His visit was sponsored by the Academy of Finland. During the month of August last year, he presented invited talks at the Universities of Jyväskylä and Helsinki in Finland and at the University of Oslo in Norway. During the month of December last year, he gave a series of lectures at the Winter School of Probability at Sambalpore University in India. Recently, he has been invited to co-organize the 1994 Conference on Probability Measures in Groups by the Mathematisches Forchungsinstitut Oberwolfach in Germany.

Dr. V. Totik co-authored a book entitled "General Orthogonal Polynomials" which appeared in the *Encyclopedia of Mathematics* series (#43) of Cambridge University.

STUDENT NEWS

Since the last issue, the following degrees have been awarded:

B.A.. in Mathematics
Kristin Sue Bastian
Krysten Michelle Blair
Deborah E. Bradney
Kathy Jo Buhmeyer
Michelle Andrea Clark
Sherri Ann Cochran
David Glen Craddock
Linda Grace Dunlap
Sheila Anne McCall
Michael Heartsill Mock
Scott Nicholas
Thomas Eliott Ross
Karen Leisa Swetland
Yuka Takahashi
Jost Heinrich Thias
Dale Turoso
Kimberly Christine Yurcisin

M.A. in Mathematics
Kongji Huang
Guoqi Lu
Jifeng Ma
Robert Scott Moriarty
Bradley Dean Shapiro
Yanmu Zhou

Ph.D. in Mathematics
Richard W. Ruedemann
Kevin S. Schweiker

CENTER FOR MATHEMATICAL SERVICES

Again this summer the Center for Mathematical Services will conduct three programs for gifted secondary school students on the Tampa campus from June 17 through July 30. This will be the fourteenth year for such programs.

Again this year we will be a component of the Florida Department of Education's Summer Camp Programs in Mathematics, Science, and Computers. Drs. Liang and Nagle will be the mathematics instructors in the Mathematics and Engineering Program. Drs. Manougian and Rao will be the mathematics instructors in the Mathematics and Science Program. The instructors in the Biomedical and Life Science Program are Dr. Alvarez from Biology and Dr. Potter from Chemistry. The deadline for applying is May 17, 1993. For additional information, call The Center at (813) 974-4068.

SPRING COLLOQUIA

Wavelets, Singular Integrals and Boundary Value Problems on Non-Smooth Domains, presented by Mr. Marius Mitrea, Candidate, University of South Carolina.

On Generalizations of the deBruijn-Erdos Theorem, presented by Dr. Hunter S. Snevily, Candidate, California Institute of Technology.

Markov Chains in Graph Processes, presented by Dr. Stephen W. Suen, Candidate, Carnegie Mellon University.

Hilbert Spaces of Entire Functions and Orthogonal Polynomials, presented by Mr. Xian-Jin Li, Candidate, Purdue University.

Rational Approximation of Analytic Functions, presented by Dr. E.A. Rakhmanov, Candidate, Steklov Institute, Russia.

Some Coefficient Problems and the Exponentiation Approach, presented by Dr. A.Z. Grinshpan, Russian Academy of Sciences, Russia.

Best Approximation of Infinitely Differentiable Functions, presented by Dr. Michael Ganzburg, Candidate, Courant Institute of Mathematical Sciences.

Synchronizing Representations of Sofic Systems, presented by Ms. Natasa Jonoska, SUNY at Binghamton.

Curlicues, Gauss' Sums and Self-Similarity Features of Time-Dependent Schroedinger Equation, presented by Dr. Konstantin Oskolkov, Candidate, Queen's University, Ontario.

Block Schur Decomposition of a Matrix, presented by Mr. Purandar Sarmah, Candidate, University of Florida.

BKMPACK: A Computer Package for Conformal Mapping, presented by Dr. Michael Warby, Candidate, Brunel University, London.

Parallel Multilevel Iterative Methods, presented by Dr. Bi Roubolo Vona, Candidate, University of Texas at Austin.

Special Finite Element Methods for Arch Beam Models, presented by Dr. Zhimin Zhang, Candidate, Texas Technical University.

Application of Spectral Methods to a Cahn-Hillard Model of Phase Transitions, presented by Dr. Xiaohua Hu, Candidate, Georgia Institute of Technology.

A Hard Problem for a Simple Graph, presented by Robert Brigham, University of Central Florida.

Binary Block Codes for Correcting Asymmetric of Unidirectional Errors, presented by Gang Fang, Eindhoven University of Technology, The Netherlands.

Semilinear Equations and Applications, presented by P.E. Milojevic, New Jersey Institute of Technology.

Maximal Intersecting Families, presented by Aaron Meyerowitz, Florida Atlantic University.

Recent Advances in Differential Game Theory, L.D. Berkovitz, Purdue University.

honorary, in 1971 and served as its Advisor from 1974 'till 1977. He was selected for membership in Phi Kappa Phi Society, the scholastic honorary, in 1986 and is currently Chapter Secretary. He has been recognized for his work with students several times. He was selected to receive the University's Teaching Excellence Award in 1970, given the Natural Science Student Council Teaching Award in Mathematics in 1987, recognized as a 1988 Outstanding Undergraduate Teacher and selected by the Division of Student Affairs as the Outstanding Faculty Advisor in 1989.

He served as Assistant Chairman of the Department of Mathematics from 1969 'till 1972, when he became Acting Chairman of the Department, serving in this capacity 'till 1974. He then became Undergraduate Advisor until 1981. Again, in 1985, he became Undergraduate Advisor, a position he still holds.

To foster a long-standing interest, he began a history of mathematics course in 1979. This endeavor now includes the undergraduate Early History of Mathematics course and the graduate History of Modern Mathematics. Dr. Zerla considers the development of these to be his hobby.

His work to improve education in mathematics extends beyond USF. He began the student participation in the annual meetings of the Florida Section of the MAA in 1977. He was Program Chair in 1984-85, planning the meeting at Rollins College in Winter Park. In 1987-88, he served as President of the Florida Section. He continues to work with the Florida Section, this year completing a three-year term as a member of its Awards Committee. He helped establish the Suncoast Regional Meetings for the Florida Section. As coordinator of these, he provides a needed continuity as these meetings move from one institution to another annually. Last December, the seventeenth Suncoast Meeting was held at Florida College in Temple Terrace.

He works with area middle and high schools, frequently speaking to student and teacher groups, conducting classes and workshops. He helped the Hillsborough County teachers by arranging to have the Hillsborough County Math Bowl competitions held on campus in 1978. They have been held at USF, usually at the University Center, twice a year ever since.

His involvement with the University has included membership in many councils and committees over the years. He helped to begin the Faculty Senate in 1972, established its mode of elections, and served as its first Secretary. He has held many offices in the Faculty Senate, including that of Speaker of the Faculty Senate in 1978-79. He is currently helping with the University Self-Study for the Southern Association of Colleges and Schools in the Student Development Committee, surveying advising and student organizations within the colleges and departments in the University. He is also the Treasurer of the USF Chapter of the United Faculty of Florida, the faculty union.

CHAIRMAN'S COMMENTS

(Continued from Page 1)

No survey by itself can measure completely how well the Department is meeting these goals. Nor can any firm conclusions be drawn from this one initial survey. Yet some of the results are interesting.

Of the B.A. respondents, on a scale of 1 to 10, 82% of the respondents rated the effectiveness of their mathematics instruction at USF at 7 or above. 50% gave a rating of 7 or above when asked if they made **direct** use of their knowledge and skills gained as a mathematics major. 80% gave a rating of 7 or better when asked if they felt they received quality mathematics instruction at USF. 85% indicated with a rating of 6 or better that their mathematics instruction was a "positive experience". 36% of the respondents had attended graduate school after receiving their B.A. degree from USF.

Twenty M.A. alumni and nine Ph.D. alumni surveys were completed. Of the graduate alumni, 85% gave a rating of 7 or above when rating the effectiveness of the graduate instruction at USF. 70% of the M.A. alumni and 89% of the Ph.D. alumni responded with a rating of 7 of above when asked if they made direct use in their employment of their knowledge and skills gained as a mathematics graduate student. 89% of the Ph.D. alumni are currently employed at four-year colleges and universities. 97% of the respondents stated that they had received a quality graduate education (rating of 6 or better) at USF.

The results of the survey will be more fully scrutinized by the Department to determine how it can more fully meet its goals and objectives.

additional information, call The Center at (813) 974-4068.

The Center's "Lectures on Mathematics in Today's World" Program is doing well. To schedule a lecture, call Maureen Kearse at (813) 974-4068.

INSTITUTE FOR CONSTRUCTIVE MATHEMATICS

The new report, "Complex Linear Models for Hurricane Wind Fields", by Dr. R.W.R. Darling, gives specific numerical formulas for constructing the wind fields of Hurricanes 1949 #2, Betsy 1965, and David 1979, off the coast of Florida. These formulas allow the Institute for Constructive Mathematics Hydrodynamic Circulation Program to calculate storm surges for these hurricanes. The same kind of formulas can be used to specify the wind fields for hypothetical hurricanes.

STUDENT CLUBS

The Florida Epsilon Chapter of Pi Mu Epsilon and the USF Student Chapter of the MAA again met jointly this year. In October, we relaxed at a post mid-term "Problems & Puzzles" session. The first November meeting featured a student speaker. Lindi Browne, a BA/MA student, discussed "The Euler Summation Formula". Later in November, Dr. Laurence Clarke, Associate Professor of Radiology in Physics and Engineering and Director of the Center for Engineering and Medical Image Analysis (CEMIA) at the Moffitt Research Center, gave an "Update on Computer Image Techniques in Medical Imaging". In December, we relaxed at a pre-final exams "Mathematical Games Party".

The Spring Semester began with the traditional USF Student Chapter of the MAA Presidential Address by Roberta Schweitzer who discussed "The Strange Story of PERFECT and Perfectly Useless Numbers". In February, Dr. Richard Darling, Graduate Advisor, showed a video, "Not Knot", followed by his discussion of "Adventures in Hyperbolic Space". Later in February, Pi Mu Epsilon Member Jamie McGauhey told of her researches into "Dynamics for the College Student". The March meeting looked into the future as Daniel Van Hoose, Assistant Director for Career Development, USF Career Resource Center, discussed Careers for Math Majors".

The clubs are again sponsoring the Hillsborough County Math Bowl Competitions. That of December 15 drew over 200 students and teachers to the University Center from 14 county high schools. The next Math Bowl will be held on April 12. The Florida Epsilon Chapter of Pi Mu Epsilon is pleased to announce that its Outstanding Scholar Award winner is BA/MA student Lindi Michelle Browne. Lindi will be recognized for her accomplishments at the Pi Mu Epsilon Banquet on April 23, at which 17 new members will be inducted into the Honorary.

ALUMNI NEWS

Terry Blakney (M.A. 1991) is currently a Mathematics Instructor at Pennsylvania State University in Erie. He was engaged last November, and the wedding is planned for June 1994.

Deborah M. Fuschetti (Ph.D. 1984) is currently the Dean of Academic Affairs at Webber College in Lakeland, a position she has held since 1986.

FACULTY PROFILE

Dr. Fredric Zerla was born in 1937 and raised in Ohio. He graduated from the College of Steubenville, now the Franciscan University of Steubenville, with a B.A. in Mathematics and a minor in Education. His high school teaching certificate from the State of Ohio is still valid, although never used. He received the M.S. in Mathematics from Florida State University, then joined the Mathematics Faculty at the University of South Florida in 1963 while writing his doctoral dissertation. During the 1966-1967 school year, he received the Ph.D. from Florida State University, married Helga Mertz Storms and acquired a family of four children; Kurt, Heidi, Christine and Michele. Later, two children were born; Eric, now a student at the USF College of Medicine, and Astrid, who is graduating this year from USF with a B.A. in Humanities. Completing the family are four grandchildren.

While at Florida State University, Dr. Zerla was president of Pi Mu Epsilon, the Mathematics Honor Society. When he came to USF, he began the USF chapter of this honorary, only the second national honor society chartered at USF. He has been its Faculty Correspondent since its inception. He helped to establish and maintain the USF Student Chapter of the Mathematical Association of America in 1988, serving as its Advisor. He was invited to join the USF Circle of Omicron Delta Kappa Society, the leadership

Orthogonal Polynomials on Several Variables, Product Formulas and Hypergroups, presented by Alan Schwartz, University of Missouri-St. Louis.

Asymptotic Flatness of a Nonsingular n-point Motion of a Brownian Flow of Homeomorphisms, presented by D. Kannan, University of Georgia.

NOTICE

SUMMER 1993 MATH COURSES AT USF

The Math Department at USF is offering the following courses that may be of particular interest to teachers.

Summer A

Cr.	Ref.#	Course No.	Title	Days	Time	Place
3	0478	MAS 4201	Elem. Abst. Alg.	MWF	02:00-04:15	CHE 202
4	0493	MTG 4212	Geometry	TR	06:00-10:00	CHE 104

Summer B

Cr.	Ref.#	Course No.	Title	Days	Time	Place
3	0474	MAD 3100	Discrete Math.	MWF	11:00-01:15	PHY 118
3	1884	MAE 5875	Abst. Alg. for Teachers	MWF	02:00-04:15	PHY 130
3	1842	MAS 5215	Number Theory	MW	06:00-09:30	PHY 130
3	0492	MHF 5405	Hist. of Mod. Math.	TR	06:00-09:30	CHE 104

REQUEST FOR ALUMNI INFORMATION

The Quaternion invites all alumni to provide us with information about your activities since leaving USF. We would like to pass this information on to our readers in the next issue. Please complete the following form and mail to:

Chair, Department of Mathematics
University of South Florida
4202 East Fowler Avenue, PHY 114
Tampa, Florida 33620-5700

Name: _____ Degree/Year: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Current Position: _____

Firm or Institution: _____

Personal News: _____

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