Quaternion

Department of Mathematics Newsletter

DEPARTMENT NEWS

Dr. R. Darling gave an invited lecture at Auburn University last November entitled "Martingales in manifolds." As Associate Director for the Institute for Constructive Mathematics, Dr. Darling conducted the primary research on hurricanes leading to what is predicted will be a state-of-the-art model to predict hurricane wind speeds. This research was instrumental in the receipt of a $100,000 gift from Florida Power and Light.

Dr. G. M. McColm gave a talk on posets at the Conference on Combinatorics Computation and Graph Theory in February at Baton Rouge.

Dr. A. Goodman presented a paper entitled "Uniformly Convex Functions" at the January meeting of the AMS in San Francisco.

Dr. A. Kartsatos has been invited to present a one hour talk at the Second Colloquium on Differential Equations in Plovdiv, Bulgaria. He has also been included in the editorial board of the Panamerican Journal of Mathematics.

Dr. R. Kent Nagle presented a talk entitled "Bounded Perturbations with Multiple Delays of Forced Harmonic Oscillators at Resonance" at the AMS meeting January 17 in San Francisco. He also participated in a panel discussion on "Mathematical Modeling" in St. Petersburg on March 1. On March 4 he gave a talk on "What is Mathematical Modeling and Why is Everyone Talking About It?" at the joint meeting of Pi Mu Epsilon and the Mathematics Club. During February and March Dr. Nagle lectured at four area high schools on Statistics and on Mathematics and Careers.

Dr. A. Rao presented an invited paper entitled "Stochastic Optimal Control under Boundary Constraints" at the AMS regional meeting on March 24.

Dr. R. Stark received an IBM grant to support the special session on "Mathematical Issues in Biologically Motivated Computation." He was a major speaker at the Ulam Mathematics Conference during April 3-5. He spoke on "Mathematical Approaches to Information Processing in Living Tissue."

Dr. Y. You gave an invited presentation on "Asymptotic Behavior of a Model for Elastic Suspended Cables" at the Ulam Mathematics Conference at West Palm Beach during April 3-5. He also received a grant from the USF Research and Creative Scholarship Grant program for the period December, 1990 - December, 1991. Dr. You also received the National Award on Natural Sciences of the People's Republic of China.

STUDENT NEWS

Two USF students, Jennifer Reed and Yuka Takahashi, have been awarded Mathematics Department Scholarships. The scholarships provide each recipient with $500 to use for educational expenses.

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

B.A. in Mathematics

Brian Arcuri, Lawrence Basel, Jr., Paul F. Hodges, CUM LAUDE; Kelly Minick, CUM LAUDE; Theresa Rutland-Wilson, Michael Wilks.

M.A. in Mathematics

Paul DesRoche, Richard Moscatello, Ray Ishak

CENTER FOR MATHEMATICAL SERVICES

This summer the Center for Mathematical Services will sponsor three summer programs for gifted secondary students on the Tampa campus. This is the twelfth year of the program "Mathematics and Engineering," directed by Dr. Joseph Liang. The other two programs "Biomedical and Life Sciences" and "Mathematics and

Science" will conduct their tenth and eighth summer programs, respectively.

In December 1990, during the Christmas break, an Open House was held with special invitations to alumni and secondary school teachers of the gifted. Teachers were asked to invite prospective students and their parents. The past programs were showcased with special "nostalgia" rooms set up for each program in which students could look at photograph albums and slides of past years. Faculty and graduate students who taught in the programs were there to greet alumni as well as to talk to the teachers, prospective students, and parents. Laboratories used in the summer were set up for demonstrations. The most unique event of the morning was the panel discussion held by five former alumni who spoke about how their summer experiences served them in their undergraduate and graduate level studies and in their careers. An alumni luncheon concluded the morning.

The lecture program "Mathematics in Today's World" is progressing well. A full report will be made in the fall issue of the Quaternion

INSTITUTE FOR CONSTRUCTIVE MATHEMATICS

When Florida Power & Light (FP&L) on the east coast of Florida needed an unbiased source to analyze prioritization procedures for its nuclear power plants at Turkey Point and St. Lucie, the Institute for Constructive Mathematics (ICM) at the University of South Florida was deemed equal to the task.

For the past two and a half years, ICM and FP&L have shared a mutually beneficial relationship which has now been recognized with a $100,000 gift to the Institute. "The gift represents a recognition for the high quality work we have done for FP&L in the past under contracts and grants," said ICM Director Ed Saff.

"They have concerns, including nuclear licensing questions and compliance with the Nuclear Regulatory Commission, and they wanted an independent and objective organization to look at their prioritization schemes for plant modifications," he added.

Saff said the nature of mathematical computations lends itself to objective research. "Mathematics is a wonderful subject in the sense that it can be applied in many different directions."

ICM is currently creating a "statistical frequency hazard model for hurricane wind speed and surge elevations at the Turkey Point and St. Lucie Power Plant sites," for FP&L. "Such information is a major concern with the construction of nuclear power plants--especially in Florida," Saff said. "Obviously, these plants must withstand what we would call extreme natural hazards."

"We were approached because of our objectivity and made rather astonishing progress," he continued. "We worked with meteorologists and put together what I think will be regarded as a state-of-the-art model in terms of predicting hurricane wind speeds."

Saff said the applications of the study are very broad, if not global, because builders of almost any major construction along any coastline would want to consider the damage and possibility of high winds and waves.

"What are the probabilities in the next 100 years of having wind speeds exceeding 140 knots? We've come up with answers, or probabilities, to very valid questions."

Saff said that Richard Darling, Associate Director for ICM has conducted the primary research for the hurricane study and added that the next part of the study will be dealing with surge or wave forces involved in hurricane storms. ICM is an interdisciplinary research center, whose active personnel include a psychologist and an oceanographer as well as several mathematicians.,

ICM has worked with a number of private companies since its organization several years ago. The Institute has received several grants from the National Science Foundation, the Florida High Technology Council and Martin-Marietta.

US-USSR JOINT WORKSHOP IN APPROXIMATION THEORY

A joint workshop organized by the Euler International Mathematical Institute of the Soviet Academy of Sciences and the Institute for Constructive Mathematics at the University of South Florida will be held May 13-26, 1991. The seminar will be held at the Euler Institute in Leningrad and will focus on the two mathematical areas of complex analysis and mathematical physics, with special emphasis on the approximation theoretic methods appropriate to these areas. The main goal of the workshop is to foster direct cooperation between distinguished US and Soviet mathematicians that should lead to several joint projects on topics of common interest. The Soviet Academy of Sciences has agreed to fully support 15 US participants while they are in the Soviet Union. The proceedings of the workshop will be published by Springer-Verlag and distributed internationally.

A.M.S. SECTIONAL MEETING

The Department of Mathematics successfully hosted, during March 22-23, the Southeastern Sectional Meeting of A.M.S. More than 240 mathematicians attended the

conference. Several of our faculty members had organized Special Sessions and/or were invited speakers. Some of the highlights are given below.

The special session on "Mathematical issues in biologically motivated computing" aimed at bringing together ideas from biology, computer science, physics, and mathematics to understand complex natural and computer systems. The session was organized by Richard Stark and John Pedersen, together with Edwin Clark, Joseph Liang, and Greg McColm, and sponsored twelve speakers who discussed applications of genetic algorithms, neural nets, artificial life, and other models of machine learning and evolution.

Kent Nagle and Mary Parrott organized and hosted a special session on "Nonlinear Boundary Value Problems."

The special session "Operator Methods for Control Problems" was organized by Dr. Yuncheng You. Fourteen speakers, including the most leading experts in the area of systems and control governed by PDE's participated in the session and gave their presentations on a broad spectrum of topics, followed by very active discussions.

A special session on Approximation Theory was organized by Drs. Saff and Shekhtman, and a session on Probability, Algebra and Topological Structures was organized by Drs. Oliver and Mukherjea.

ALUMNI NEWS

Frank Cacciatore (M.A. 1978) has been employed for the past four years by the Houston Astros Baseball Club as a manager in the club's farm system. He has managed and coached at Auburn, NY, Asheville, NC, and Tucson, AZ,. Frank has been married for 15

years and has a daughter, Alice Christine.

Ed Burck (M.A. 1982) received an M. S. degree in Computer Science from Johns Hopkins University in 1985. He is employed by Space Applications Corporation.

Amy Drew (M.S. 1984) is employed as a systems engineer with Computer Sciences Corporation. She is working on a project dealing with science data decoding for space telescopes. She and husband Bill have four children and reside in the Washington, DC area.

Jan Mazur (M.A. 1985) is the Mathematics Department Head at Bloomingdale Senior High School.

Margaret Martinek (M.A. 1986) recently graduated from Stetson University College of Law and has completed the Florida Bar Exam.

Denise Schrimser (M.A.) is currently a Consulting Manager with Andersen Consulting.

Peter Arvantes (M.A. 1987) is a Mathematics Instructor at Rockland Community College. He is a member of the Faculty Senate and is active in the N.Y. Association of Two-Year Colleges.

Carol A. Schenek (B.A. 1988) is an Assistant Administrator and Director of the Special Education Program at the Community Christian School in Seminole, Florida.

Kan Liu (M.A. 1989) is a Graduate Teaching Associate at the Ohio State University.

Zhengyuan Guan (Ph.D. 1990) is presently employed at the University of Wisconsin--Eau Claire.

SUNCOAST REGIONAL MEETING

The University of South Florida hosted the Annual Suncoast Regional Meeting of the Florida

Section, MAA, on December 7, 1990. Dr. Kenneth Pothoven, Department Chairman, welcomed ninety-one mathematics teachers and practitioners from Florida's West Coast to the afternoon conference. The Conference was organized by Drs. Fredric Zerla and Gregory McColm, aided by representatives from Hillsborough Community College and the Hillsborough County School System.

MAA NEWS

The twenty-fourth Annual Meeting of the Florida Section of the Mathematical Association of America was held at Eckerd College in St. Petersburg on March 1 and 2. Those attending from USF included Dr. Kenneth Pothoven, who participated in the Meeting of College Chairs, Dr. Fredric Zerla, who presided at the Student Paper Session, and Dr. Kent Nagle. Dr. Pothoven moderated a panel discussion on "Teaching Mathematical Modelling" at which Dr. Nagle told of his innovative course on modelling at USF. Dr. Zerla moderated a panel discussion on "The Content of Commonly Numbered Courses."

STUDENT CLUBS

The Florida Epsilon Chapter of Pi Mu Epsilon and the USF Student Chapter of the MAA met jointly again this year. At the first meeting, Tina Tremmel, President of Pi Mu Epsilon, spoke on "Pythagoras: His Theology and His Number Theory." The second meeting featured Dr. Fredric Zerla, advisor to both clubs, on "Transformational Geometry: Problems with Euclid's Fourth Axiom." The third meeting introduced Dr. Yuncheng You, new to the Department of Mathematics, to our members in a talk on, "Paradoxes in Four-Dimensional Spacetime." The fourth meeting featured Dr. Don Lichtenberg of Mathematics Education on "All About Parabolas." The fifth meeting had no speaker, but was a

mathematics problem solving session. Dr. A. W. Goodman presented the sixth meeting on "Monochromatic Triangles in a Complete Two-Color Graph." Just before the invasion of Iraq, Dr. Richard Stark discussed, "A Logician's View of the Politics of War." The eighth meeting was devoted to relaxation as Dr. John Pedersen introduced, "The Oriental Game of 'Go' - Rules, Strategy, Patterns -." At our ninth meeting, Dr. Kent Nagle told of his new class in "What is Mathematical Modelling and Why is Everyone Talking About It"? Michael Nadler, President of the Student Chapter, addressed the tenth meeting on, "The Evolution of the Function Concept: A Brief Survey." The year closed with the speaker who began it when Tina Tremmel, this time as the Outstanding Scholar of Pi Mu Epsilon, spoke on "Chaos, Fractals and Newton." The clubs again sponsored the Hillsborough County Math Bowl Competitions on December 18 and April 24. Over 200 teachers and students participated at each bowl. To provide a more social atmosphere for the clubs, they jointly sponsored an overnight picnic-camping trip to Camp Keystone on April 6 & 7. The year closed with the Annual Pi Mu Epsilon Induction Banquet at which 16 new members were welcomed into the Honorary. The featured speaker was Dr. Roy Weatherford of the Department of Philosophy who discussed the philosophical question, "What is a Number?"

SUMMER COURSE OFFERINGS AT USF

The following courses will be offered during the summer of 1991 that may be of special interest to high school mathematics teachers:

Session A   May 6 - June 21

MAA 4212	Advanced Calculus II	MTWR	12:00-1:50
MAE 5875	Abstract Algebra for Teachers	MW	6:00-8:50
MAS 4301	Elem. Abstract Algebra	MWF	4:00-5:50
MTG 4212	Geometry	MTWR	4:00-5:50

Session B   June 24 - August 9

MAD 3100	Discrete Mathematics	MWF	12:00-1:50
MAS 5215	Number Theory	MW	6:00-8:50
MHF 5405	History of Mathematics	TR	6:00-8:50

Session C   May 6 - July 12

| MAT 5932 | Mathematical Modeling for Teachers | MW | 6:00-8:50 |

USF

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