USF
UNIVERSITY OF SOUTH FLORIDA

Quaternion

Department of Mathematics Newsletter

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A NEW CHAIR

Ken Pothoven stepped down as Chair in August, 1994. He had been Chairman since 1984, when he succeeded Manoug Manougian. The Department got to employ its new Departmental Guidelines in electing a new Chair, and our new fearless leader is Richard Stark. Richard got his Ph.D. from the University of Wisconsin-Madison in 1975, and began his research career in logic and set theory; he has since moved to (biologically-motivated) distributed computing. He also visits the arctic (or mountainous facsimiles) annually--and we are not talking about the comfortable tourist packages here--and is interested in exploration.

CHAIRMAN'S COMMENTS

My friend, Athanassios Kartsatos, and I were in Kiev for a mathematics conference at the National Taras Schevchenko University with the largest Department of Mathematics I've ever seen. Well, the building was large, a bit larger than USF's library, but the remaining faculty consisted of only three or four professors. The building was built of marble and granite and had red parkayed oak floors throughout. The front was covered by enormous stone murals celebrating the glory of Soviet workers. Fountains fill its spacious plaza. The planners and designers of this building certainly must have had a high regard for mathematics!

Unfortunately, the Ukraine, as with other newly-independent members of the former Soviet Union, has fallen into hard times. The three or four professors actually in residence here (as opposed to the hundreds attending the conference) are said to have a monthly salary of about 2,000,000 kupons (equivalent to about $14). So few can afford the luxury of scholarly pursuits. The windows are cracked and dusty, wild flowers grow in the dry fountains, and labs in the biochemistry building are used to store paper boxes.

But these are smart people. Back at USF, a recent yearbook placed the Ukrainian literacy rate at 99%--higher than that of the US and most of western Europe. Books for sale in their marvelously civilized and efficient subway cover Hilbert space theory, nuclear engineering, social entropy, Japanese literature, etc. In a park in old Kiev, I found the Ukrainian Geographical Society housed in an elegant yellow, white and black seventeenth-century building. The park also contained some remarkable beautiful women. As a city, old Kiev is as elegant as Paris and was, at about 1000AD, much wealthier.

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DEPARTMENT NEWS

Richard Darling spent much of the Summer in Europe (in season!). In June, he went to the Université de Provence, in (southern) France. Then in July, he went to Great Britain, where he gave an invited talk at

the Warwick Symposium on Stochastic Analysis. Then he came back to the U. S. of A., where he joined **Yuncheng You** in organizing the new Industrial Mathematics Seminar (see accompanying article).

Last March, **Mourad Ismail** visited Texas A&M as part of their distinguished lecture `Frontiers of Mathematics' series. Then in June, he went to Toronto, where he co-organized a workshop on q-series at the Fields Institute.

Last May, **Athanassios Kartsatos** went to his old country, Greece, where he talked at the University of Ioannina. He then visited Jerusalem, where he gave an invited lecture at the First Joint AMS-Israel Mathematics Union meeting. Then he talked in the College of Judea and Samaria, and then gave another invited lecture at the Nonlinear Analysis Seminar of the Israel-Technion Institute of Technology. Later that summer, he gave an invited plenary lecture at the International Conference on Nonlinear Differential Equations at Kiev, in the Ukraine. He is now back, and is the Editor-in-Chief of a new journal, Abstract and Applied Analysis (more next issue).

This Fall, **Milé Krajcevski** joins us as an Instructor in a two-year appointment. He is from Macedonia (the southern tip of the former Yugoslavia), and got his Ph.D. in 1994 from SUNY, Binghamton, in combinatorics. His wife, **Natasa Jonoska**, is an Assistant Professor here. And in October, he gave a talk at the 1995 Albany Group Theory Conference.

Arunava Mukherjea co-authored a research monograph `Probability Measures on Semigroups: Convolution Products, Random Walks and Random Matrices'.

In the Fall of 1994, during our hiatus, we got a new faculty member. **Evgueni A. Rakhmanov** got his Ph.D. from the Steklov Mathematics Institute, Moscow, in 1983, where he remained as a Senior Researcher until 1989. Then he moved to Moscow University, where he worked until he came here. He is interested in analysis, including approximation theory, and potential theory.

Ed Saff was appointed editor of the Cambridge University Press series Textbooks in Applied Mathematics. He also co-organized a special session on approximation theory at the joint AMS-Israel Mathematics conference in Jerusalem, and also talked at the University of Tel Aviv and at the Weitzman Institute last May. He is also a joint editor, with Rosihan M. Ali of the Universiti Sains Malaysia and Stephen Ruscheweyh of the Universität Wurzburg in Germany, of the proceedings of the second conference on Computational Methods and Function Theory, whose goal is to advance interactions in scientific computation, complex analysis and geometric function theory among researchers in the developed and developing world.

This past Fall **Masahico Saito** joined us as an Assistant Professor. He is from Japan, and got his Ph.D. in 1990 from the University of Texas at Austin. He is interested in topology and algebra (and knot theory and quantum groups).

Chris Tsokos was invited to the Aristotle University of Thessaloniki last May, where he gave a talk. Then he came back to the states, where he gave an invited talk at the International Conference on Dynamical Systems and Applications, in Atlanta. He was elected to the editorial boards of the "International Journal of Dynamic Systems and Applications", and the journal "Nonlinear World". And he received the University of Rhode Island "Distinguished Alumni Award for Excellence in Science and Technology", and a $1,000 scholarship in his name was established there.

Yuncheng You gave two invited lectures in the `Stochastic Evolution Equations as Dynamical Systems' workshop at the University of Warwick. He also gave an invited talk at the International Conference on Nonlinear Evolution Equations & Infinite Dimensional Dynamical Systems, in Shanghai. Then back in Charlotte, North Carolina, he gave an invited talk at the annual SIAM meeting. He and Richard Darling are organizing the new Industrial Mathematics Seminar (see accompanying article).

STUDENT NEWS

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

B.A.. in Mathematics

Gregory Matthew Anderson, Summer '94

May Ling Becker, Magna Cum Laude, Fall '94

James Bradford Birdsong, Spring '94

Wendy Beth Borderieux, Spring '94

Crystal Dawn Brandon, Cum Laude, Spring '95

Diana Jo Burkette, Cum Laude, Fall '94

David B. Cameron, Fall '94
Jose Rodriguez Cuevas, Spring '95
Kellie Lucille Duncan, Spring '95
Timothy C. Dysard, Fall '94
Ralph Roy Higginbotham, Summer '95
Quin Lee Higgins, Cum Laude, Spring '94
Tammy Marie Higson, Spring '95
Daniel Douglas Jelsovsky, Summa Cum Laude, Spring '94
Hyeong Ki Kim, Cum Laude, Fall '94
Lara Robin Liptak, Fall '94
Vitali Vladislavovich Makarov, Spring '94
Patricia A. Manderville, Spring '95
Cameron Earl Morrison, Spring '94
Jerome A. Napoli, Magna Cum Laude, Spring '94
Birant Keith Oestreich, Spring '95
Thomas Lawrence Reinke, Magna Cum Laude, Summer '95
Jeffery Alan Scholtz, Cum Laude, Spring '95
Deborah Devogel Serdynski, Spring '95
Mandie Linell Stagg, Summa Cum Laude, Spring '95
Rodd Richard Stephenson, INM, Spring '95
John Kristian Swanson, INM, Summer '94
Raymond Edward Wickline, Summer '95

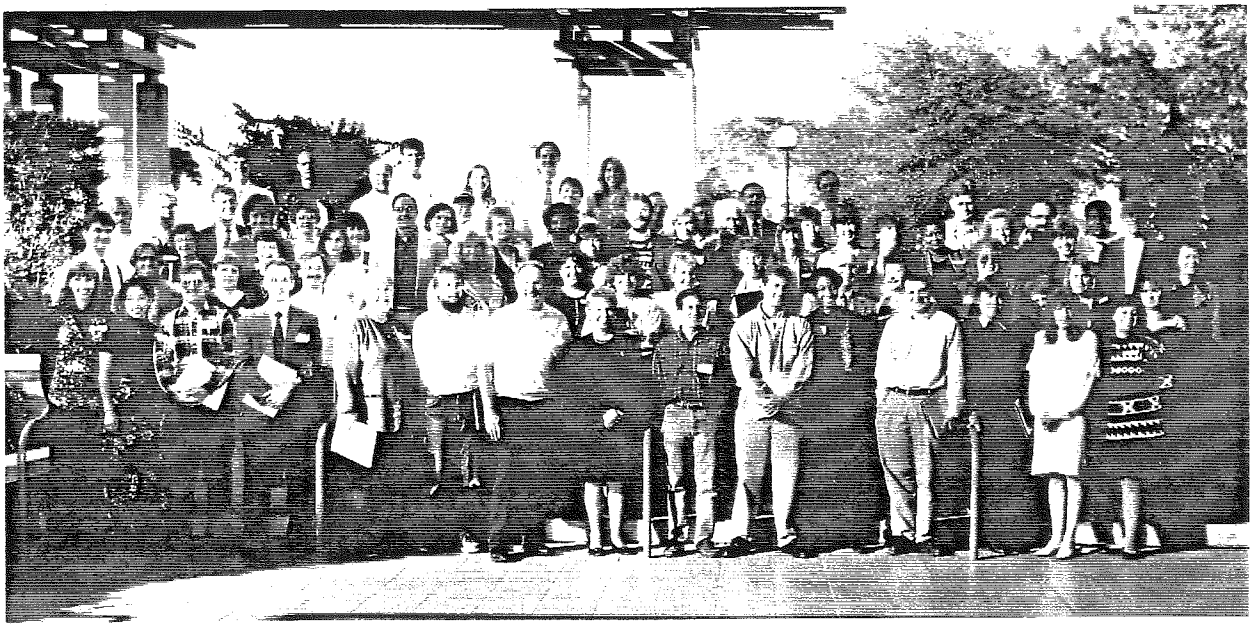
M.A. in Mathematics
Alex Ambrioso, Spring '95
Zouhua Ding, Summer '95
Charles Dion, Summer '95
Sonya Golden, Spring '95
Anatolli Grinshpan, Spring '95
Bing Li, Summer '95
Kimberly Rice, Spring '95
Henry Roberts, Summer '95
Yan Wang, Spring '95

Ph.D. in Mathematics
Jun Cao, Fall '94
Xiaoping Liu, Fall '94
Guoqi Lu, Summer '95
Igor Pritsker, Summer '95
Margret Yoder, Summer '95
Yanmu Zhao, Summer '95

MAA NEWS

This year's Suncoast Regional Meeting of the Florida Section of the MAA was held in the Communication and Information Sciences Building on the Tampa Campus of USF on December 1, 1995. The planning committee consisted of Professors Gregory McColm, Kenneth Pothoven and Fredric Zerla. Seventeen presentations were given to the approximately 100 participants by mathematics teachers from middle school level to graduate school as well as by two students. Participants from USF and their presentations included: Dr. W. Edwin Clark, "The Domination Number of a Graph"; Dr. Mourad Ismail, "Exponential Functions and Linear Operators?"; Gregory McColm, "Reality, Fiction, and Probability"; Dr. Denisse R. Thompson (Math-Ed), "What Does it Mean to Understand the Concept of a Variable?"; and Charles Lindsey (Ft. Myers Campus), "The Mathematical Contest in Modeling". The participants were welcomed to campus by Professor Mark Stewart, Chair of the Department of Geology. The meeting closed with a dinner attended by about 50 participants at Francesco's at the Club, the restaurant in the Marshall Center. (See group photo below.)

The Annual Meeting of the Florida Section of the Mathematical Association of America will be held at the Corporate Headquarters of Florida Power in St. Petersburg on March 1 and 2, 1996. This is the first time this meeting has not been held at an academic



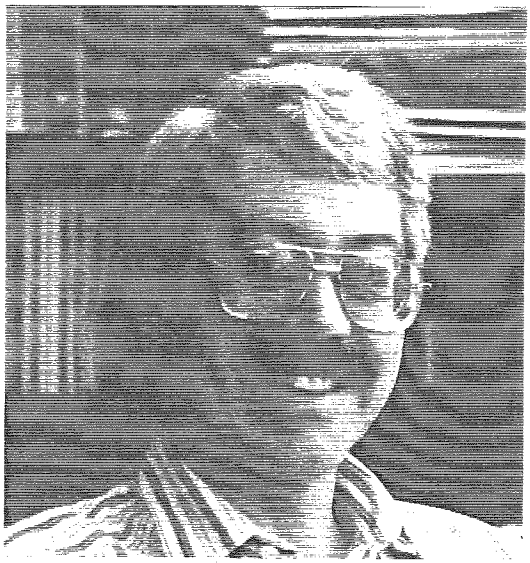
institution and represents a new interest in cooperation between business and education. Several members of the Mathematics Faculty from USF plan to present talks and otherwise participate.

CENTER FOR MATHEMATICAL SERVICES

The staff and participants in the Center for Mathematical Services were saddened last year by the loss of the Center's long-time director Prof. R. Kent Nagle. The new director is Prof. Kenneth L. Pothoven who worked closely with Dr. Nagle both on summer programs and the lecture program. He brings a great deal of expertise to the Center and we are glad to have him as the new Center director.

INSTITUTE FOR CONSTRUCTIVE MATHEMATICS

Congratulations are in order to the editorial staff of the journal, "Constructive Approximation". The Science Citation Index recently published a ranking of 124 journals devoted to pure mathematics with respect to their impact factor, a measurement of how often articles in a journal are referred to by other authors. CA ranked 7th in their list. Prof. Ed Saff is one of two Editors-in-Chief of this journal and also is Managing Editor. The journal is published by Springer-Verlag and distributed internationally. It has been based at the ICM since its inception in 1984.



FACULTY PROFILE (In Memoriam)

On October 20, 1994, the Mathematics Department lost an outstanding colleague and friend. It was on that day that Dr. R. Kent Nagle succumbed to the cancer that had racked his body. He was 47 years old at the time of his death.

He has indeed been missed since his passing. Gone, but not forgotten, are his many contributions to the Department and the community. These contributions included his conscientious teaching of university students of all levels from freshman to doctoral, his dedicated service to the mathematical community by his directorship of the Center for Mathematical Services and all that that entailed, his caring attitude toward students and their progress in learning, his wise insight on many departmental and university committees, and his faithful friendship to many. There was no question that he loved what he did and it showed.

Dr. Nagle came to the University of South Florida in 1976. He received his B.S. degree in Mathematics from the University of Michigan in 1968 and his M.A. degree in 1969. Drafted into the Army in 1969, he spent two years as an applied mathematician at Aberdeen Proving Grounds. There he used time series analysis to study vibration data obtained from tests on tanks. He returned to the University of Michigan and received his Ph. D. in 1975. He taught as a lecturer at the University of Michigan-Dearborn from 1972 until graduation in 1975, after which he became an Assistant Professor there before coming to USF.

Dr. Nagle's mathematical interests were primarily in the areas of nonlinear differential equations and nonlinear functional analysis. He supervised two successful Ph. D. students in these areas. He has also co-authored textbooks in differential equations which have been widely-used and are highly-regarded for their excellent presentations of the subject matter.

He took his teaching responsibilities very seriously. His courses were well-planned and rich in content. He strove for perfection and sought new ways to make his instruction more effective. He had high standards for his students but was more than willing to help any student to meet these standards.

The University was fortunate to have the services of Dr. Nagle. In his memory, the Mathematics Department is planning a lecture series of outstanding mathematicians. These lectures are to be a tribute to the contributions of Dr. Nagle as a mathematician,

educator, scholar, servant, and friend.

INDUSTRIAL MATHEMATICS SEMINAR

Since many mathematics students go into industry after graduating, some mathematics departments are beginning to look at the mathematics actually used in industry. As part of this movement, Richard Darling and Yuncheng You launched an Industrial Mathematics Seminar, to acquaint faculty and graduate students with problems that industry (and government) want solved. Here, Richard Darling describes the venture.

This semester, we began the seminar with speakers, mostly outside of the department, and many outside of mathematics proper. Although our scope for inviting outside speakers was limited by our budget, we found the success of the seminar far exceeded our expectations.

The outside (i.e., not from Mathematics) speakers who presented unsolved problems, namely Ken Christensen (formerly at IBM, now at the USF Dept. of Computer Science), Kevin Schweiker (Alliant Defense Electronics), Wayne Goodwyn (Alliant Defense Electronics), and David Snider (USF Dept. of Electrical Engineering), and Thomas Davis (CLM/Systems) presented material which was of high mathematical interest to the audience, so much so that one of the PIUs has since written separate grant proposals with both Christensen and Goodwyn.

Attendance varied from about 15 to 70, with a median of about 30. The core participants were a group of about eight Math faculty and six graduate students, supplemented by a variegated audience (depending on the topic) from Computer Science, Electrical Engineering, Physics, and Chemical Engineering. If nothing else, the seminar at least revealed to mathematicians that there are many people in other parts of campus who are interested in mathematical things!

At the beginning the organizers passed around a participant data sheet, to which 27 people replied; of these, 14 were graduate students who listed `government or industrial research' as one of their career expectations. This is consistent with our belief that the seminar may help graduates to orient themselves towards industrial research. In the past, nearly all departmental seminars have been oriented towards a branch of pure mathematics, leading to a cultural perspective which gives primary value to depth of knowledge in one mathematical discipline. The inter-disciplinary nature of the seminar, and the obvious enthusiasm of participants, seems to be building another cultural perspective which also values such things as breadth, communication outside mathematics, and service to other problem-solvers.

CHAIRMAN'S COMMENTS

(Continued from Page 1)

On a beautiful yellow fall day in August, my friend and I walked across the university campus in search of a telephone. We finally found a room full of push-button zinc devices. After paying the attendant, a Nigerian student translated her instructions to us--a long series of numbers and hidden buttons had to be pressed, then finally "when your call is answered you must hang up before you begin to speak". So I started mashing buttons--each creating a little belching sound. Eventually, an operator in the states answered and, considering the effort, I couldn't bring myself to hang up. So the operator, not hearing my voice, hung up. End of call. Athanassios eventually got through.

At the conference, most of the talks were in English. And the audience was usually very attentive and polite--maybe a couple of times some poor professor was cut and dried. The title of my talk was something like "Recent Results on the Abstract Dynamics of Whatever, With Applications to Why-not". But, when my time came, I entered the huge steeply-eschiloned lecture hall still wearing a cowboy hat. Immediate broad smiles covered the faces of the women--they loved me on the spot--and even the men responded favorably. Everyone liked the guy in the hat, and his talk was well-received and often referenced. (Although this self-ridicule is an easy way to amuse my readers, the truth is that the audience was more interested in the contents of my presentation than my appearance or nationality.) After that, as the unmistakable symbol of the west, I was drawn into a major panel discussion conducted in Ukrainian. After an hour or two of sitting before an audience of distinguished mathematicians and trying to look like I belonged there, the organizer turned to me for concluding

comments. In a panic, I complemented their beautiful city, delightful people, and profound mathematics--my 60 seconds had the desired effect and the meeting ended with a standing ovation.

Student grafitti was not much different from ours. It was thickest on the desks of the highest rows of the lecture halls. Their favorite music seemed to be that of U2 and the Doors. Colleagues translated other Ukrainian grafitti for me as "Is this jerk for real?" and "This Professor should get a life", corrected later to "...get a wife". Of course the usual hearts with initials and English profanity needed no translation.

One day Professor Igor Skrypnik, President of the Ukrainian Academy, and his wife invited my friend and I to breakfast. To the best of my memory, it began in their apartment with flaming vodka-covered sausage, cheeses, bread, and a fascinating variety of vodkas (red pepper vodka was most unusual), and cigarettes. There were toasts "to mathematics", "to Ukrainian independence" (recall that they broke away from the former Soviet Union in 1991), "to America", "to Ukrainian and American mathematics", etc., etc. And as the toasts continued, we smoked (as a non-smoker, I get stoned on one cigarette). And Kartsatos tells me there were more toasts while I tried to tell jokes. This breakfast was better than most parties! Then Mrs. Skrypnik stepped out of the room and Igor suggested that we prove some theorems. I don't recall everything else, but I advise any readers that are still reading this narrative to not pass up a chance for a Ukrainian breakfast.

There are four TV channels. The hours of (dubbed) PBS, CNN, Discovery and TLC available on Ukrainian television portray a familiar image of the west; but one that, from this vantage point, seems utterly fantastic. Internet, Mars bars, Desert Storm, Marlborough, Boeing aircraft, men on the Moon, Baywatch, President Clinton, etc. All of this is fantastic when talented and highly-educated Ukrainian professionals spend their days tending vegetable gardens on small plots comandeered from the University's campus--just because their salary cannot cover groceries.

But, the story from the states that really caught my attention was the announcement that our foreign debt would pass $4,000,000,000,000 sometime in October. I've often thought that there was something strange about an economy in which an average American could buy a color TV for only a day's wage, and a fast-food lunch for just 10 minutes' wages--transactions that seem to voilate the law of Conservation of Effort. What sort of smoke and mirrors can lead a not-so-rich world to invest that much money into the US? What will they do when our fantastic economic bubble bursts?

I'll close with a little problem... You are given six kupons (i.e., 6 coins), five of them are identical in weight, but one has a different weight because it is counterfeit. A scale (not a balance) with a digital readout is available for your use. Find a way to locate the counterfeit coin with only three predetermined weighings. This sounds easy, but none of the respected math professors I have given this problem to have solved it in less than two tries. (An answer can be found somewhere else in this newsletter.)

Feel free to contact us. Our e-mail address is: mathdept@math.usf.edu, and our website location is: http://www.math.usf.edu. If you have moved, please give us your new address.

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