Report from the Chair

by Krishnaswami Alladi

THE academic year 2003–2004 was yet another eventful year highlighted by the *Special Year in Applied Mathematics* which strengthened ties with several departments on campus because of successful collaborative programs. More specifically, the main events of the *Special Year* 2003–2004 were four conferences and workshops which were organized by our department in collaboration with the Departments of Industrial Engineering, Computer and Information Sciences, and Aerospace and Mechanical Engineering.

The main organizers of the *Special Year in Applied Mathematics* were Professors **William Hager, Yunmei Chen, Shari Moskow,** and **Jay Gopalakrishnan,** as well as the graduate students of the SIAM Gators Chapter. The special year's activities opened with an *International Conference on Mathematical Methods in Imaging and Vision,* January 24–27, 2004, which was organized by Professor Chen with the assistance of Professors **Tim Olson** and **David Wilson** of our department and Drs Randy Deunsing of . . .
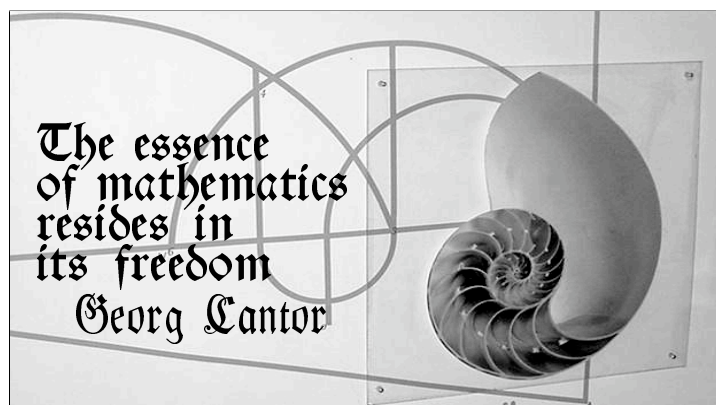
Special Year in Applied Mathematics

by Shari Moskow

THE *Special Year in Applied Mathematics* series of workshops were a big success. They included three faculty-run conferences and one student workshop. All were interdisciplinary in nature and organized along with members of non-mathematics departments. The student conference was unique in that it was run entirely by students in the SIAM student group with faculty acting only as advisors. The National Science Foundation (NSF) supported this effort generously, along with all of the other workshops.

In general, the special year was funded by NSF, the UF Division of Sponsored Research, CLAS, the UF College of Engineering, and of course the Department of Mathematics, with much thanks to the efforts of our Chair, Krishna Alladi. The optimization conference was additionally funded by the UF Department of Computer and Information Science Engineering (CISE), the UF Department of Industrial and Systems Engineering (ISE), and e-techservices.com. The computational methods conference also . . .

The essence of mathematics resides in its freedom
— Georg Cantor

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Report from the Chair

by Krishnaswami Alladi

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...MRI Devices and Nikos Paragios of Siemens Corp. The conference attracted leading researchers worldwide from both academia and industry, and provided an excellent forum for exchange of ideas between professors at universities and researchers in industry.

One of the main lectures at this conference was the Sixth Ulam Colloquium by Professor Stan Osher of UCLA on *Mathematics in the real world and the fake world,* in which he described applications of imaging to real problems like MRI as well as to optical effects created by Hollywood in movies.

In February–March 2004 three conferences of the *Special Year in Applied Mathematics* took place within a ten day period. The first of these, on *Multiscale Optimization Methods and Applications,* during February 26–28, 2004, was organized by Professor William Hager of our department along with Professors Tim Davis of the CISE and Panos Pardalos of the ISE departments. This was followed immediately by a conference on *Computational Methods in Multiscale Analysis and Applications,* February 29–March 2, 2004, organized by Professors William Hager, Shari Moskow, and Jay Gopalakrishnan of our department along with Professors Andrew Kurdila, Wei Shyy, and Loc Vu- Quoc of Mechanical and Aerospace Engineering.

One of the highlights of the conferences was the sixth *Erdös Colloquium* by 1966 Fields Medallist Stephen Smale of the University of California, Berkeley, and the Toyota Technical Institute, Chicago. Professor Smale spoke on *Shannon sampling and reconstruction of functions from point values.* Dean Neil Sullivan of the College of Liberal Arts and Sciences made the Opening Remarks for this lecture. The conferences also had a featured lecture by Dean Tony Chan of UCLA on *Multilevel optimization for circuit placement* for which Dean Pramod Khargonekar of the College of Engineering made the Opening Remarks. In addition, for the purpose of reaching a wide audience, several *History Lectures* were arranged during the conference by Professors Francesco Brezzi, Terry Rockafellar, and Michael Vogelius.

One of the unique features of the *Special Year in Applied Mathematics* was a *Student Workshop* organized entirely by the graduate students of our SIAM Gators Chapter—**Jung Ha An, Beyza Aslan, Weihong Guo, Feng Huang, Sukanya Krishnaswamy, Arun Krishnaswamy, Adnan Sabuwala,** and **Hongchao Zhang.** The *Special Year,* which received generous funding from the National Science Foundation, had a specific allocation for this *Student Workshop,* which attracted participants from as far away as India and China. Dean Ken Gerhardt of the Graduate School inaugurated this conference.

This year the department launched two distinguished colloquia—the *Math–Stat Colloquium* and the *CAM Colloquium.* The first *Math–Stat Colloqium* was delivered on September 21, 2003, by the world famous statistician C.R. Rao, Eberly Professor Emeritus of the Pennsylvania State University on the topic *Anti-eigen values and anti-singular values of a matrix and applications to statistics.* Dean Neil Sullivan of the College of Liberal Arts and Sciences made the Opening Remarks for this lecture. On January 24, 2004, the Center for Applied Mathematics, under the leadership of its two new Co-Directors Professors **Yunmei Chen** and **Scott McCullough,** launched the first *Center for Applied Mathematics (CAM) Colloquium* with a talk by Dean Tony Chan of UCLA on the topic *Variational PDE models and algorithms for image processing.*

The month of January also saw the visit of 1983 Fields Medallist S.T. Yau of Harvard University. Yau who received the Fields Medal for path breaking work in differential geometry has recently also applied his expertise to the area of computer imaging where he is applying techniques from differential geometry. Yau, who was visiting UF to give the *Barr Systems Lecture* in CISE, also agreed to give a *Special Mathematics Colloquium* on January 16, 2004, on the topic *Local mass in general relativity* at the request of our Colloquium Chair, Professor **David Groisser.**

In September 2003, our colleague Professor **Gerard Emch** arranged the visit of Professor Jean Bellissard to our department with the cooperation of the Institute of Fundamental Theory (IFT) and the Florida France Research Institute (FFRI). Professor Bellissard gave a series of lectures in the mathematics and physics departments.

The workshops of the *Special Year in Applied Mathematics* were not the only conferences organized in our department. There were indeed two other very successful conferences.

In early March 2004, Professor **Jorge Martinez** organized the fourth *International Conference on Ordered Algebraic Structures.* Professor Martinez, a world authority in this area, has over the years arranged several conferences on this topic. In the past few years he has been instrumental in getting this regular series of conferences launched, and this is the second time in four years that the conference was held in Gainesville. The conference was funded by the National Science Foundation.

Also in March 2004, the tenth *Southeastern Logic Symposium* was organized by our colleague Professor **Jindrich Zapletal.** This well established conference series has now found a base in Gainesville thanks to the laudable efforts of Professor Zapletal and his contract with the National Science Foundation.

We are able to successfully conduct such international conferences and attract a steady stream of distinguished visitors from around the world because we are an active research department and many of our colleagues are well known as experts in their areas of research. This year we are very pleased that Professor **Alexander Dranishnikov** has been appointed to the Editorial Board of the *Proceedings of the American Mathematical Society,* one of the most widely circulated mathematics journals. This appointment comes on top of previous such appointments to the editorial boards of *Topology and its Applications* and *Fundamenta Mathematica.* Such editorial appointments are fine recognitions of his expertise and scholarship by the international mathematical community.

I have always emphasized that our department maintains a healthy balance between research and teaching. For the past several years, the outstanding teaching done by our department has been recognized each year with at least one CLAS Teaching Award, and this trend continues. This year, Professor **Miklos Bona,** a brilliant young researcher in combinatorics, was recognized for superior accomplishments in teaching with a CLAS Teaching award.

One of our colleagues, Professor **David Metzler,** who received the CLAS Teaching Award last year, has decided to join the faculty of the Albuquerque Academy, a high school for very talented students. We wish him the best as he embarks on this opportunity to bring his inspiring level of teaching to this new arena.

Professor **Steve Saxon,** a senior member of our analysis group is retiring at the end of Spring 2004 under the DROP Program. We thank him for his many years of dedicated service and look forward to continued association in his capacity as Professor Emeritus.

The department was extremely successful in its hiring efforts in 2003–2004. This year the department made two appointments in the John G. Thompson Research Assistant Professorship position. We welcome **Hamza Yesilyurt** who will receive his PhD in number theory from the University of Illinois in Summer 2004, and **Lei Zhang,** a PDE expert from Texas A&M University, as the new Thompson Assistant Professors to start in Fall 2004. In addition we are pleased to welcome Dr **Patrick DeLeenheer** from Rutgers who will join as a tenure-track assistant professor in biomath, and Dr **Sergei Shabanov** who has been a visitor in our department for the past four years as a tenure-track assistant professor in applied mathematics. Finally, Professor **Bernard Mair** who left our department to become Head of the Mathematics Department at North Carolina State University, decided to relinquish that position and return to our department. We are pleased with his decision and welcome him back to our midst.

Next year promises to be as exciting as the past few years and will be highlighted by the *Special Year in Number Theory and Combinatorics.* With the support of both the department and the Dean, it is my pleasure to serve another term as Chair of this department and continue my efforts to take us to a higher level of accomplishment and recognition.   ॐ

Special Year in Applied Mathematics
by Shari Moskow

…benefitted from additional support from the UF Department of Mechanical and Aerospace Engineering.

The first of the workshop series, *Mathematical Methods in Imaging and Vision,* January 24–27, was run by our own **Yunmei Chen, Tim Olson** and **David Wilson,** in addition to two organizers from industry: **Randy Duensing** from MRI devices and **Nikos Paragios** from Siemens Research Corp. The conference featured 32 speakers from Mathematics, Statistics, Computer Science and Biomedical Engineering departments from around the country. Several international visitors presented their work, including the guests from Hong Kong and Germany. Approximately thirty-five graduate students and postdocs also attended the workshop, which thus made for a fairly large-size group.

Aside from the talks, the events also included a reception in Little Hall, a dinner at the Arrendondo Room, as well as a computer lab / open house / poster session. UF Dean Neil Sullivan of CLAS and UCLA Dean Tony Chan (Dean of Physical Sciences and Professor of Mathematics) both made some remarks at the dinner, and the lab open house gave graduate students a chance to present their research along with computer demos of their numerical results.

Several of our graduate students worked hard to make the imaging conference such a success. These include **Jung-ha An, Weihong Guo, Feng Huang, Xiaolu Yan, Qinggou Zeng** and others.

The week of February 26–March 4 was another very exciting one for our special year. The two conferences *Multiscale Optimization Methods and Applications* and *Computational Methods in Multiscale Analysis and Applications,* and the Student Workshop ran consecutively.

The conference *Multiscale Optimization Methods and Applications,* February 26–28, was organized by **William Hager,** along with **Timothy Davis** of UF CISE and **Panos Pardalos** of UF ISE. The research presented was focused on continuous and discrete multilevel optimization and sparse matrix techniques, along with their applications to chip design, parallel computing and dynamic simulations. About forty prominent applied mathematicians and computer scientists spoke, and many students both from outside and within UF presented their work in a poster session. Tony Chan was also a featured speaker at this time, here on his second trip to Gainesville this spring! In his talk, he explained how the operators that arise in the multigrid method for solving partial differential equations have analogues in a difficult optimization problem that arises in VLSI design: place circuits on a computer chip in order to optimize design criteria such as the length of wire required to connect the circuits. The participants came from all over this country and from abroad, including from China, Hong Kong, Belgium, Canada, Italy, and the UK.

The research at the optimization workshop tied in nicely with the next event the day after, namely the conference *Computational Methods in Multiscale Analysis and Applications,* February 29–March 2. **Jay Gopalakrishnan,** Bill Hager and myself organized this workshop with the help of **Andrew Kurdila,**

Chair **Wei Shyy,** and **Loc Vu-Quoc** of the Mechanical and Aerospace Engineering Department. We brought together applied mathematicians and engineers to present and discuss the latest developments in computational techniques for problems involving multiple scales and multigrid methods. Some of the applications discussed included electromagnetics, acoustics and material elasticity. The thirty-five invited speakers included guests from the Netherlands, France, Italy, and Germany.

Connected to this conference were two very enjoyable and well-presented mathematics history lectures. **Franco Brezzi,** from the Universita di Pavia, Italy, spoke on *The inf–sup condition, the bubble and the subgrid,* which told the very interesting history of the finite element method, the functional analysis involved and the interplay between mathematicians and engineers. **Michael Vogelius,** from Rutgers University, spoke on *Low volume fraction mixtures and polarization effects,* surveying recent history of homogenization theory, small spatial scale perturbations, related inverse problems and their relationship to each other.

Fields Medalist **Stephen Smale's** *Erdös lecture,* held before an overflow audience, also provided a unifying thread in the special year program. Smale studied the familiar equation $Ax = b$, where the system is overdetermined. He supposed that the right side was polluted by noise ν, which was non-Gaussian and bounded. With minimal assumptions, an estimate was given for the error in the usual least squares estimate of x.

Both the optimization and computational workshops featured a reception at the Sovereign Restaurant. The coffee breaks were all arranged and set up beautifully by our graduate students. A special thanks goes to **Beyza Aslan** and **Adnan Sabuwala** who were in the atrium working daily before we even got there! They also had some help from **Jung-Ha An, Sukanya Krishnaswamy, Shu- Jen Huang** and **Hongchao Zhang.** We are also very grateful for the efforts that staff members **Sandra Gagnon** and **Sharon Easter** made. Despite the fact that they were short-staffed, the conferences ran smoothly and with no problems.   ☙
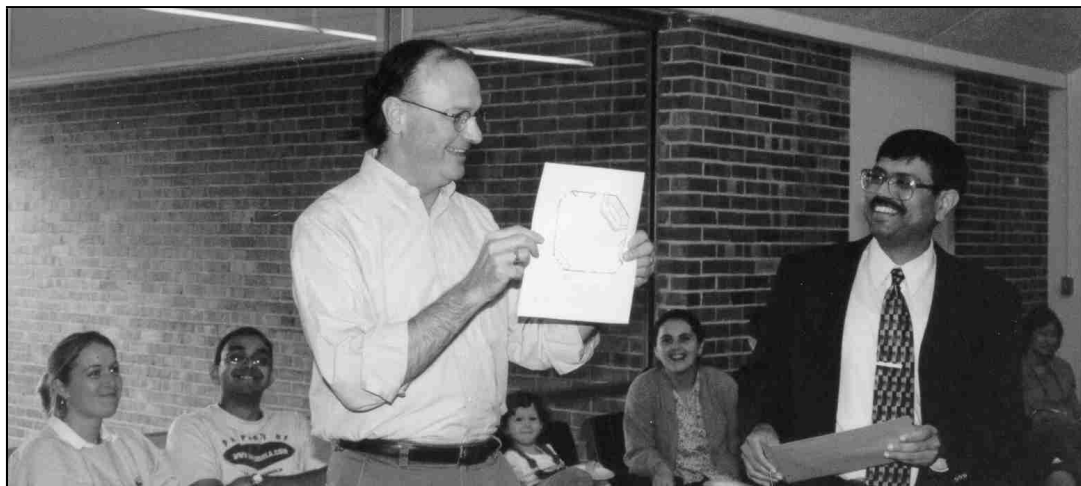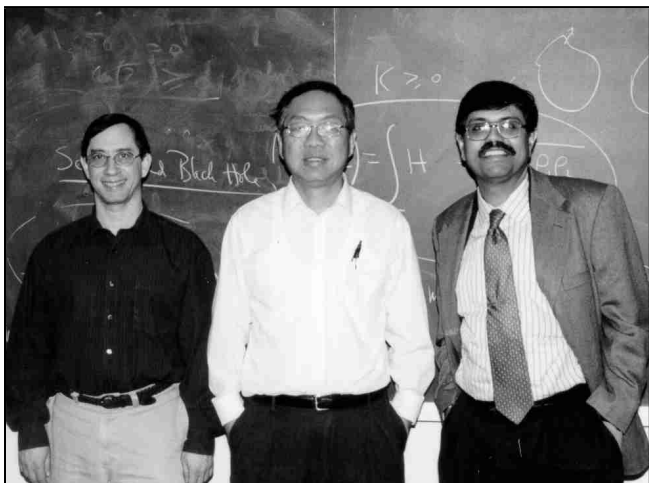
The Year in Pictures

Eberly Professor C.R. Rao of Penn State University led off the year, delivering the First Math–Stat Colloquim in September 2003 on *Anti-eigenvalues and anti-singular values of a matrix with applications to statistics.*

Everybody eagerly anticipated the fine buffet always expertly arranged by the staff for the annual Christmas party.
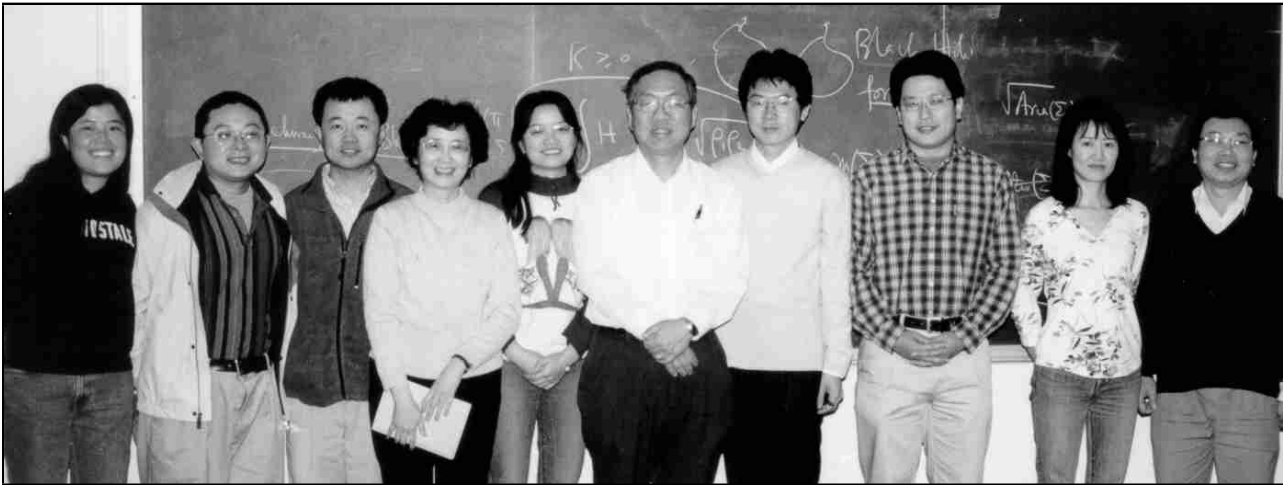
Professor Rick Smith continued the tradition of presenting Chair Krishna Alladi with a humorous gift at the Christmas party.


Professor S.-T. Yau of Harvard, Fields Medalist, gave a Special Colloquim on *Local mass in General Relativity* on January 16, 2004. Here he is with host David Groisser and Mathematics Chair Krishna Alladi.

The Year in Pictures

Professor S.-T. Yau is pictured here with Professor Yunmei Chen and her students and colleagues from Computer Science during this visit to the department.
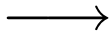
On January 24, 2004, the audience waits for the inauguration of the International Conference on Imaging and Vision. At the far right is head organizer Professor Yunmei Chen and next to her, Dean Neil Sullivan of the College of Arts and Sciences.
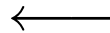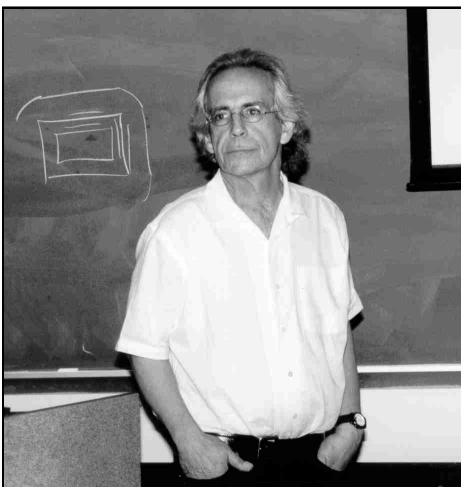
As part of this conference, Professor Stan Osher (UCLA) delivered the Sixth Ulam Colloquim on Jan. 26, 2004 on *Mathematics in the real world and the fake world.*
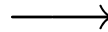
Vice President for Research Dr Win Phillips made the opening remarks for this Sixth Ulam Colloquim.
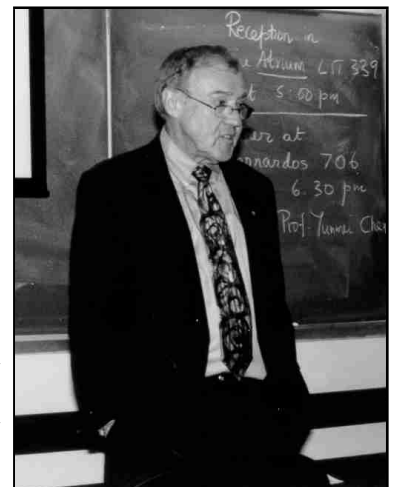
The Year in Pictures

Ulam Colloquim speaker Stan Osher with (from left) Professors William Hager (Special Year Organizer), Paul Ehrlich (Editor of Little-by Little), Yunmei Chen (Conference Organizer and host), Mathematics Chair Krishnaswami Alladi and conference participant Joachim Weichert from Saarland, Germany.

Earlier in this conference, Dean Tony Chan also of UCLA gave the First Center for Applied Mathematics Colloquim on January 23, 2004 on *Variational PDE Models and Algorithms for Image Processing*.

Dean Pramod Khargonekar, College of Engineering (and PhD alumnus) made the opening remarks for the Featured Lecture of Dean Tony Chan on *Multilevel Optimization for Circuit Placement* as Chan returned to speak at a second conference here on February 27, 2004.
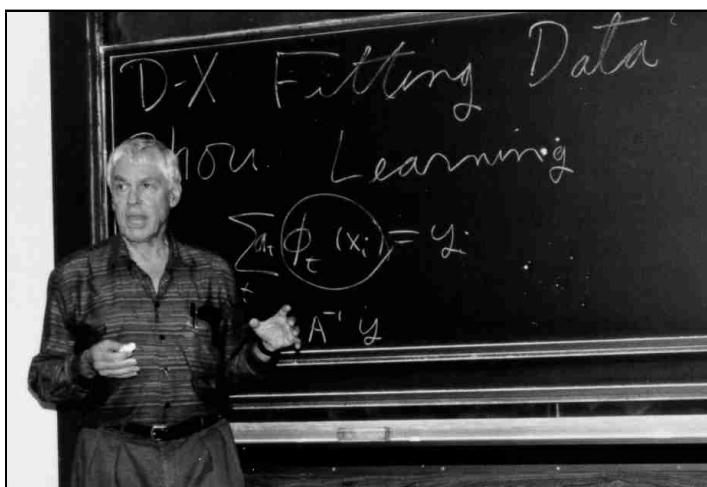
Professor Stephen Smale, Fields Medalist and Professor at U.C. Berkeley and the Toyota Technical Institute in Chicago, delivered the Sixth Erdös Colloquim on March 1, 2004 on *Shannon sampling and reconstruction of functions from point values.*
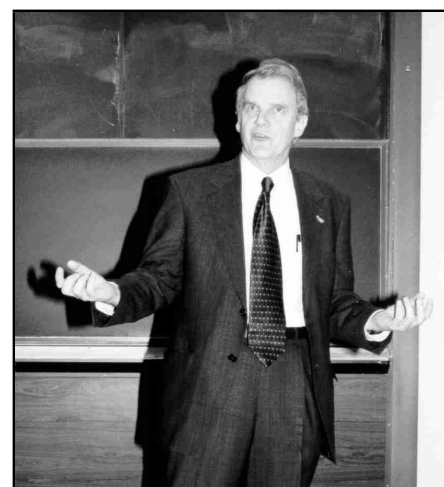
Dean Neil Sullivan made the opening remarks for this Sixth Erdös Colloquim.

The Year in Pictures

Professor Franco Brezzi of the University of Pavia, Italy, delivered a History Lecture on March 1, 2004 on *The inf-sup condition, the bubble, and the subgrid.*

The audience listened intently to Professor Brezzi's lecture involving the history of the finite element method. In the front row toward the right are conference organizers Professors Shari Moskow and Jay Gopalakrishnan.

Professor Michael Vogelius of Rutgers University gave a second History Lecture on March 2, 2004 on *Low Volume Fraction Mixtures and Polarization Efforts.*
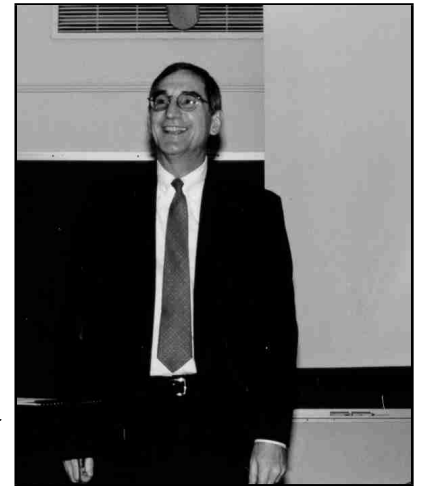
On March 3, 2004, Dean Ken Gerhardt of the Graduate School inaugurated the Student Workshop, organized entirely by the graduate students in applied mathematics as part of the Special Year.

 Dean Gerhardt is shown here with the chief organizers of the Student Workshop: Adnan Sabuwala, Jongchao Zhang, Jung-ha An, and Beyza Aslan.

Newsflash

Change is coming to Calculus

by Larry Wilson

This past academic year, Thompson Assistant Professor Larry Wilson served on the Undergraduate Committee and hence had a first hand part in deliberations concerning the teaching of the core calculus courses. Thus, we asked him to report on these recent developments for the newsletter.

— the Editor

BEGINNING in Fall 2004, students in *Analytic Geometry and Calculus 2* and *3* (the second term of single variable calculus and the multi-variable calculus course) will meet with their professor not four, but three hours a week. The fourth hour, currently also spent with the professor of the course, will now be spent in a problem session led by a different professor.

Professors **Bruce Edwards** and **Scott McCullough** will share the assignment of leading these problem sessions. A committee consisting of McCullough, Professor Emeritus **Arthur Crummer,** and Professor **Neil White** is currently developing a more detailed syllabus for each course and a set of problems to be covered in each problem session. One consequence of this is that each section of the course will have to cover common material and at approximately the same pace. In the past, sections of this course might cover different material and at different levels of difficulty. Students have often commented on the variations within the course and this new format should ameliorate this. The students further benefit by seeing problems worked from a different perspective.

Currently students in *Analytic Geometry and Calculus 1* and in *Survey of Calculus 1* meet with their professor three times a week and then with a teaching assistant for a fourth hour. The department may extend the use of common problem sessions to these courses in future years.   ⚬

CAM inaugurates new lecture series

by Paul Ehrlich

INSPIRED by the now well established yearly *Erdös* and *Ulam Lectures,* the Center for Applied Mathematics (CAM) under the directorships of Professors **Yunmei Chen** and **Scott McCullough** inaugurated an annual CAM Colloquium series this past year.

As the opening lecture in the January 2004 *Imaging Conference,* Dean of Physical Sciences **Tony F. Chan** of UCLA Mathematics delivered the first CAM Lecture on *Variational PDE models and algorithms for image processing.* This topic was especially relevant to our program since Professors **Yunmei Chen, Bernard Mair, Murali Rao,** and **David Wilson,** as well as PhD alumni **Stacey Levine** and **Thomas Wunderli** have used a PDE technique in which Chan was a leading developer, called adaptive total variation, to study restoration problems in image analysis.

Chan was an especially interesting choice for this first CAM lecture also as after obtaining his early education in Hong Kong he came to the US where he took degrees in engineering at Caltech before obtaining the PhD in computer science at Stanford. After faculty positions at Yale in computer science, he came to UCLA in the Computational and Applied Mathematics Group in the Department of Mathematics. He has also served as director of a new Institute for Pure and Applied Mathematics at UCLA, Chair of the Mathematics Department and Dean of the Division of Physical Sciences.

While at UF, he shared his insights not only with the Department of Mathematics but also with our own CLAS Dean Neil Sullivan. In the Los Angeles area, Chan also serves to publicize the importance and ubiquity of mathematics, being quoted in articles in the LA Times and the Los Angeles version of a Chinese language newspaper, the Sing Tao Daily. He likes to emphasize that the term "computer software" hides the many uses that mathematical techniques working in computer algorithms find in our daily lives.   ⚬

Newsflash

Visit by Professor Jean Bellissard

by Paul Ehrlich

UNDER the auspices of the France–Florida Research Institute, the Institute for Fundamental Theory, and the Department of Mathematics, Professor Jean Bellissard, Professor of Mathematics and Physics, Georgia Institute of Technology, and Senior Member of the Institut Universitaire de France, visited the University of Florida in October 2003 and gave a three-lecture presentation of issues that bridge current research in mathematics and physics.

On October 1st, hosted by the Physics Department, he gave a technical IFT Colloquium on *Coherent and dissipative electronic transport in aperiodic media* showing a range of distinctive phenomena not suspected from the usual theories of condensed matter and rich in promising technological applications.

On October 2nd, to the general audience gathered by the FFRI in the humanities and the natural sciences, he surveyed the popular topic of *Entropy and Information.* Starting from "a physicist's point of view", he expanded his scope to exhibit several cogent avatars of the second law of thermodynamics in astronomy, biological systems, communication theory and the study of social groups. He also touched upon the visionary prospect of quantum computers.

On October 3rd, in a special Mathematics Colloquium, Professor Bellissard spoke on *Tillings, Aperiodic media and their Non– commutative Geometry.* Even within mathematics itself, the subject brings in quite interdisciplinary flavors, from esoteric aspects of 2–dimensional geometry and apparently tamed partial differential equations to the functional analysis of operator algebras and algebraic *K*–theory. The synthesis was brilliant and very suggestive of developments to come.

The visit was initiated and synchronized by mathematical physics Professor **Gérard Emch** of the Mathematics Department.   ꙮ

SIAM Gators take initiatives

by Beyza Aslan and Adnan Sabuwala

For the fourth conference during March of the Special Year in Applied Mathematics, our graduate students themselves organized a workshop. Hence, we asked them to write about this aspect of the Special Year for the Little Review as well as the doings of the SIAM Gators.

— the Editor

UNDER the guidance of Professor **Shari Moskow,** the University of Florida Chapter of the Society for Industrial and Applied Mathematics (SIAM) was established here at the Department of Mathematics during Fall 2002.

We started with about twelve members who were all graduate students of our department. Approved by SIAM during October 2002, the SIAM Gators Group is now one of the twenty-five student chapters of SIAM in the United States, which counts almost twenty members. Our chapter is funded by SIAM and the UF Department of Mathematics. Our group's major activity is to organize weekly talks given by graduate students from our department. The talks given during the *SIAM Gators Seminar* are mostly related to areas in applied mathematics. We also invite a faculty member once every month to give us a talk about his/her research and about possible open questions for new graduate students, to help them choose their research areas and their advisors. We try to provide a very friendly, open-to-discussion environment as to encourage student participation.

As a part of the 2003–2004 UF Mathematics *Special Year in Applied Mathematics,* Professor **William Hager** proposed that we organize a student workshop. He incorporated the workshop in the National Science Foundation (NSF) Special Year proposal. Thus the workshop was funded by NSF at a level that was sufficient to fully support our conference. Using the web site created by **Arun Krishnaswamy,** students from all over the US and the world applied to the *SIAM Gators Conference.* We invited seventeen graduate students to give us a talk or present a poster,

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giving priority to the members of other SIAM chapters. Together with speakers from our school, we had twenty-one talks and four poster presentations. The topics covered were mainly related to three research conferences in the *Special Year* program: *Image Processing, Optimization,* and *Multiscale Analysis.* Also, during the conference, there were two special lectures given by Dr Tyrrell Rockafellar, University of Washington, and Dr Biswa Nath Datta, University of Northern Illinois. As part of the conference, we awarded a prize for the best presentation: Dionisio Fleitas, who is a PhD student at the University of Texas at Arlington, and Firmin Ndeges, who is an undergraduate student under the supervision of Dr Terry Herdman at the Virginia Polytechnic Institute, were tied and both won the award. The proceedings of this conference, *Advances in Applied Mathematics,* will be published. The editors are **Jung-ha An, Yermal Bhat, Shu-Jen Huang,** and **Hongchao Zhang** from our department, and Oleg Prokopyev from the Industrial and Systems Engineering Department. It was a great pleasure to organize such a conference.

As a tradition, every year SIAM supports graduate student participation in the *SIAM Annual Meeting.* This year, our chapter was one of six student chapters invited to send a representative to present a research paper on *Student Day* during the SIAM Annual Meeting in Portland, Oregon. After an application process, it has been decided that Hongchao Zhang, who is working on his PhD under the direction of Dr Hager, will represent our chapter. After the SIAM Gators Student Conference, SIAM's executive director James Crowley also authorized support for our President, **Beyza Aslan,** to represent us at the Annual Meeting in Portland, Oregon. Recently we learned that **Jung-ha An** and **Qingguo Zeng,** both working towards their PhD under the direction of Professor **Yunmei Chen,** won a travel award from SIAM to participate in the *SIAM Conference on Imaging Science.*

The SIAM Gators also organizes a potluck at the beginning of each semester to bring together the faculty members, graduate students and their families. We enjoy nice food, and we play all kinds of games. Next time, we hope to see all of you there.

Though SIAM Gators only involves mathematics graduate students at the moment, our plan is to open our group to the graduate students of other departments, such as Computer Science, Industrial Engineering, Electrical Engineering, Statistics etc. The other plan is to involve undergraduate students in the group to give them a chance to explore possible research opportunities.   ✍

Math Chair meets the President of India
by Paul Ehrlich

ATHEMATICS Chairman Krishnaswami Alladi recently had the opportunity to meet the President of India Dr Abdul Kalam. During December 20-22, 2003, Alladi participated and gave a plenary talk at an *International Conference on Number Theory and Secure Communications* organized by SASTRA University in Kumbakonam, India.

Mathematics Chair Krishnaswami Alladi being introduced to the President of India Dr Abdul Kalam. Evan Pugh Professor George Andrews of Penn State University is looking on.

Kumbakonam is the town in the state of Tamil Nadu in South India where the mathematical genius Srinivasa Ramanujan grew up. SASTRA which is a recently founded private university, purchased Ramanujan's home in 2003 and will maintain it as a musuem for posterity. To mark the occasion, SASTRA organized this international conference to coincide with Ramanujan's birthday which falls on December 22. The event was considered so important that the President of India, Dr Abdul Kalam inaugurated the conference on

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December 20 and declared open Ramanujan's home as a museum and national treasure.

Srinivasa Ramanujan, a self taught mathematical genius, startled mathematicians at Cambridge University in the early part of the twentieth century when he communicated his remarkable findings in letters to the eminent Professor G.H. Hardy. Over the years we have realized the depth of Ramanujan's discoveries and the impact his work had made in such diverse areas like number theory, combinatorics, analysis, modular forms, Lie algebras, physics, and computer science. There are books available on the remarkable life story on this Indian genius, and on the phenomenal results contained in the notebooks he maintained. And there is even the *Ramanujan Journal,* an international journal devoted to all areas of mathematics influenced by Ramanujan, for which Alladi is the Editor-in-Chief. This conference held in connection with the conversion of Ramanujan's home into a musuem, is the most recent significant event connected with Ramanujan.

Following the inauguration by the President of India,

the first conference lecture was given by Evan Pugh Professor George Andrews of The Pennsylvania State University, the world's pre- eminent authority on Ramanujan's work. Immediately after Andrews, Alladi gave his talk entitled *A new companion to Ramanujan's continued fraction.* Other plenary speakers at the conference were Professors Noam Elkies of Harvard University, Samuel Wagstaff of Purdue University, and Antol Balog of the Hungarian Academy of Sciences. Professor Alladi's visit to the conference as well as that of other plenary speakers from the United States was supported by the Indo–US Forum through a grant administered by the National Academy of Sciences.

In connection with this event, Alladi wrote an article entitled *Ramanujan's growing influence,* which appeared in *The Hindu,* India's national newspaper, on December 22, 2003, Ramanujan's 116th birth anniversary.   ॐ

The wild world of 4–manifolds
by Alex Scorpan

As an outgrowth of a recently written book on modern 4–manifold topology which will be published by the American Mathematical Society, the second Thompson Assistant Professor, Alexandru Scorpan from Berkeley, delivered a series of seven lectures in the Geometry and Mathematical Physics Seminar. We are delighted that he agreed to provide a brief summary of this material for the newsletter.

— the Editor

IRST, let us explain what we will be talking about: A *topological n–manifold* is roughly a topological space that is locally homeomorphic to $\mathbb{R}^n$. In other words, a space modeled on pieces of $\mathbb{R}^n$, glued by continuous functions. A *differentiable structure* on an n–manifold M means that the manifold is modeled by pieces of $\mathbb{R}^n$, glued by C^∞–differentiable functions. It essentially enables one to do Calculus on the manifold.

Wild at heart: Dimension 4 is truly unlike any other dimen-

sion. Consider the following results:

Let M be a compact topological n–manifold. Then:
— If $n \leq 3$, then there is exactly one differentiable structure on M.
— If $n \geq 5$, then there are at most finitely many differentiable structures on M.
— If $n = 4$, there are many simply-connected closed 4–manifolds that admit infinitely many distinct differentiable structures; there are no differentiable 4–manifolds known to have only finitely many differentiable structures.

In other words, there are families of infinitely many distinct differentiable 4–manifolds that look the same as topological spaces. One is thus easily tempted to conjecture that most 4–manifolds, if not all of them, admit infinitely many differentiable structures.

For *non-compact* manifolds, things get even worse:

For $n \neq 4$, the topological manifold $\mathbb{R}^n$ admits a unique differentiable structure. But the topological 4–manifold $\mathbb{R}^4$ admits uncountably many distinct differentiable structures.

A good way to get one's mind around these phenomena is that dimension 4 is an unstable boundary case: the dimension is big enough to have room for wild things to happen,

but the dimension is too small to allow room to tame and undo that wildness.

Mathematical context: Of course, to better understand differentiable 4–manifolds one needs to have some perspective on their larger mathematical context.

Structures: For example, differentiable 4–manifolds are included in the much wider class of topological 4–manifolds. Thus, one needs to see how the world of topological 4–manifolds is different. At this moment, the topological realm is in fact much better understood than the differentiable realm, while the latter has just started to unveil its wildness. Contrasting the two territories is necessary for gaining the proper perspective. A first remark is that, by softening one's outlook from differentiable to topological, one makes many differentiable manifolds look topologically the same. (You should probably think of this in analogy with considering topological spaces up to homotopy equivalence: many quite different spaces look homotopically the same.) A second remark is that many topological manifolds do not admit differentiable structures at all.

In the opposite direction, not by weakening the structure but by adding extra rigidity, lies the realm of 4–manifolds that admit complex structures, namely the empire of *complex surfaces.* (A complex structure on a 4–manifold models it by pieces of $\mathbb{C}^2$, glued by holomorphic maps.) Complex surfaces are also better understood than differentiable 4–manifolds, and are an excellent source of examples. The extra rigidity of the complex realm ensures that many complex surfaces that seem the same as differentiable 4–manifolds are in fact quite different as complex manifolds. And, of course, most differentiable 4–manifolds will not admit any complex structures whatsoever.

Other dimensions: For gaining the proper perspective on 4–manifolds it is inevitable to also peek at what happens in other dimensions. Manifolds of dimension 1 are a bore (circles and lines), manifolds of dimension 2 (real surfaces) have been well-understood for quite a while. If we accept the Poincaré Conjecture (which might have been proved in 2003 by G. Perelman, whose proof is still under scrutiny as of this writing), manifolds of dimension 3 are essentially governed by their fundamental groups (but of course are far from being completely understood). In any case, the distinction between differentiable and topological manifolds is inexistent in lower dimensions, and simply-connected manifolds are uninteresting (again, with faith in the Poincaré Conjecture).

On the other hand, in dimensions higher than 4, a theory of a completely different flavor has been developed for dealing with differentiable manifolds. For simply-connected high-dimensional manifolds, the main tool is the h–Cobordism Theorem, discovered in 1960. Its power in

helping clear the waters in high dimensions cannot be understated, and its author, **Steven Smale,** received a Fields Medal (the mathematical equivalent of the Nobel Prize) for discovering it.

Developments: Such a powerful tool as the h–Cobordism Theorem lying just one dimension higher than the realm of 4–manifolds can only tempt one to use it in our land as well. An examination of its high-dimensional proof reveals that it hinges on the ease of embedding 2–dimensional disks in the manifold; that ease disappears in dimension 4. Nonetheless, eventually **Michael Freedman** was able to prove in 1981 the h–Cobordism Theorem for dimension 4, but at the price of dropping differentiability and softening to the more flexible domain of topological manifolds. That enabled him to quickly obtain a complete classification of simply-connected topological 4–manifolds, and earned him a Fields Medal.

But just one year later, **Simon Donaldson** showed that in contrast the realm of differentiable 4–manifolds is not so easy to understand. Making use of differential geometric methods, he showed first that most topological 4–manifolds do not admit any differentiable structures. Later, he exhibited differentiably-distinct 4–manifolds that look the same topologically, and even infinite families of such. These results led to a Fields Medal as well.

After about ten more years, in 1994, Nathan Seiberg and **Edward Witten,** two string-theory physicists, came up with a different approach to Donaldson's insights, which was much easier to use and thus proved to be quite more powerful. (E. Witten already held a Fields Medal for his previous mathematical work; for his work in theoretical physics he is year-after-year present on *Time*'s list of the "World's 100 Most Influential People"; Steven Hawking does not make that list.) While Donaldson's methods worked best on complex surfaces, the Seiberg–Witten methods are much more flexible, and led to more striking results. Among them is a method (due to R. Fintushel and R. Stern) for modifying many 4–manifolds in a manner that alters their differentiable structure but does not change their topological type.

Conclusion: The paradoxical result of all these advances is that they just made more and more obvious the level of our current ignorance, opening windows towards vast fields of unsuspected phenomena, for which presently we do not even have methods of exploration. As a simple example, we currently have no tools for studying differentiable manifolds that topologically look the same as the 4–dimensional sphere: there might be infinitely many distinct such creatures, or just old S^4.

It's a wide and wild world out there.   ॐ

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Faculty, Alumni, and Staff Notes

by Paul Ehrlich

ROFESSOR Emeritus **Nicolae Dinculeanu** received an honorary doctorate from the University of Bucharest, Romania on June 30, 2003. In July, he was elected as a member of the Romanian Academy. In connection with this visit to Romania, he also attended the Congress of Romanian Mathematicians, where he presented a lecture on *Stochastic integration in Banach spaces.*

We are pleased to belatedly report that two of our faculty members are active on national committees of the Association for Symbolic Logic. Professor **Douglas Cenzer** is serving as Chair of the Committee on Membership and Professor **Jean Larson** is serving as Chair of the Committee on Education.

A Conference on Groups, Representations and Galois Theory in Honor of Walter Feit was held at Yale University during October 30, 2003 through November 2, 2003. Professor **Alexandre Turull** and Graduate Research Professor **John Thompson** delivered plenary lectures at this meeting. Indeed, Thompson opened the conference with a lecture on *Galois groups and finite projective planes.* Turull lectured on *Schur indices and fields in character correspondence.* Two enjoyable aspects for the Editor of the conference web site included the phrase "Only a lower bound (of two hours) is provided for the travel time from the New York airports. (Those curious might contact the Guinness Book of World Records for an upper bound)." Also, the conference extended over the Halloween Holiday, so the social schedule included a notice that a Halloween Party would be held at the home of the Feits on October 31st. There the conference web site noted that "Costumes are not mandatory. Coming as a mathematician is scary enough."

We are pleased to be able to report that proceedings of the conference in Galois Theory held here during November, 2002, as detailed in the last issue of the newsletter, have appeared in the *Developments in Mathematics* series of Kluwer Academic Publishers. Professor **Helmut Voelklein** and UF PhD 2001 alumnus Professor **Tanush Shaska** of the University of Idaho served as co-editors of this volume. The volume appears with the title *Progress in Galois Theory: Proceedings of the John Thompson 70th Birthday Conference.* Voelklein authored an article *The image of a Hurwitz space under the moduli map,* and also Voelklein, Shaska and fellow UF PhD alumnus **Dr Vishwanath Krishnamoorthy** co-authored an article on *Invariants of binary forms* for the volume.

The faculty was well represented at the *2003 Fall Southeastern Sectional Meeting* of the American Mathematical Society held at the University of North Carolina at Chapel Hill during October 24–25, 2003. Of especial note, Professor **Helmut Voelklein** delivered an Invited Hour Address on *Interactions between group theory and algebraic curves via Riemann's existence theorem.* In addition, Voelklein along with past departmental visitor Professor **Kay Maagard** of Wayne State University organized a Special Session on Group Actions on Curves. Professor **Pham Tiep** spoke in this Session on *The eighth moment and Larsen's conjecture* and Voeklein spoke on *A catalog of the loci of curves of low genus.* UF PhD alumnus Professor Tanush Shaska spoke in this same Session on the topic of *Coverings of degree* 5 *from a genus* 2 *curve to an elliptic curve.* Shaska is now at the University of Idaho, having finished his postdoctoral appointment at UC Irvine. In addition to the participation of the algebraists in that session, Professor **Yuli Rudyak** also participated in the meeting, speaking on *Algebraic structures on generalized strings* at a *Special Session on Homological Physics.* Also, Professor **John Mayer,** UF PhD 1982, of the University of Alabama at Birmingham spoke in a *Special Session on Measurable, Complex and Symbolic Dynamics* on *Indecomposable Continua and the Julia Sets of Rational Maps.*

Three faculty members, Professors **Pham Tiep, Alex Turull,** and **Larry Wilson,** participated in the 995th Sectional Meeting of the American Mathematical Society held at Ohio University in Athens, Ohio during March 26 and 27, 2004. Turull spoke on *A strengthening of the McKay Conjecture by including local fields and local Schur indices,* Tiep gave a preliminary report on *Real conjugacy classes in algebraic groups and finite groups of Lie type,* and L. Wilson spoke on *Bounds on orders of products in p–groups.* Also, Professor Douglas Brozovic, a co-author of Professor **Chat Ho'**s, spoke on their joint work on *Some characterizations of finite Desarguesian translation planes by orders of subgroups of collineations.*

Two faculty members and one UF PhD alumna participated in the *Annual Winter Meeting* of the American Mathematical Society held in Phoenix, Arizona during January 7–10, 2004. Professor **Richard Crew** spoke in a *Special Session on Arithmetical Algebraic Geometry* on the topic of *Vanishing Cycles in Rigid Homology.* A new faculty member in mathematical biology, Professors **Maia Martcheva,** participated in a *Special Sessions in Mathematical Biology,* speaking on *Competition and Coexistence of Strains: The Impact of Vaccination* in a *Special Session on Competitive and Adaptive Dynamics in Ecology.* Professor **Chawne Kimber,** UF PhD 1999, from Lafayette College, co-organized a panel discussion on the topic of *Finding your next job.* . . .

The Annual Students, Staff, and Faculty Appreciation Day
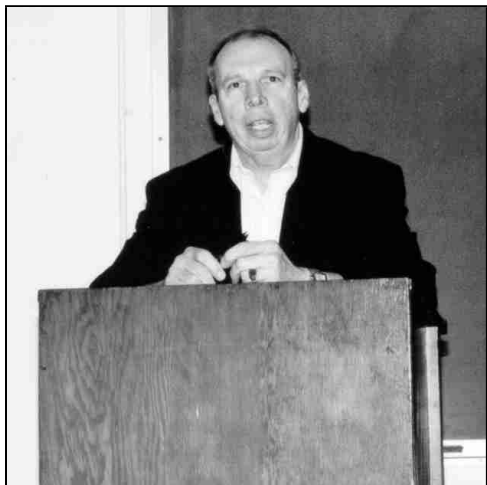
Associate Chair Jim Brooks capably acted as Master of Ceremonies.

Faculty advisor Professor Kenneth Keating presented a certificate of appreciation to Michael Skobel for his participation on the Putnam Exam Team.
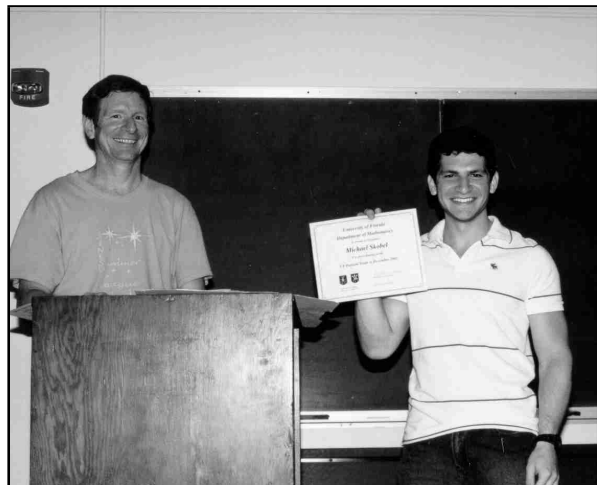
Professor Bruce Edwards, faculty advisor in mathematics for the Actuary Club, presented awards to Betsy Hansen, Lisa Smith, Alberto Abalo and Kyle Scherer.
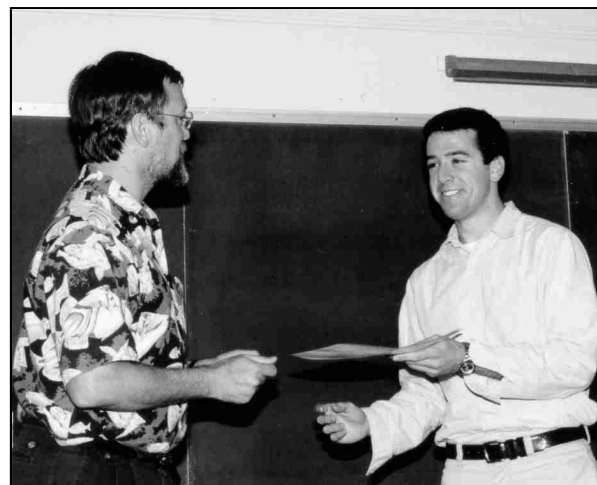
Selection Committee Chair Professsor Richard Crew presented Benjamin Wood with the prize for the Robert Long Essay Competition.
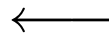
Director of Graduate Studies Professor Paul Robinson presented certificates to the officers of the newly established SIAM Gators club: Treasurer Adnan Sabuwala, President Beyza Aslan, and Secretary/Webmaster Sukanya Krishnaswamy.

The Annual Students, Staff, and Faculty Appreciation Day

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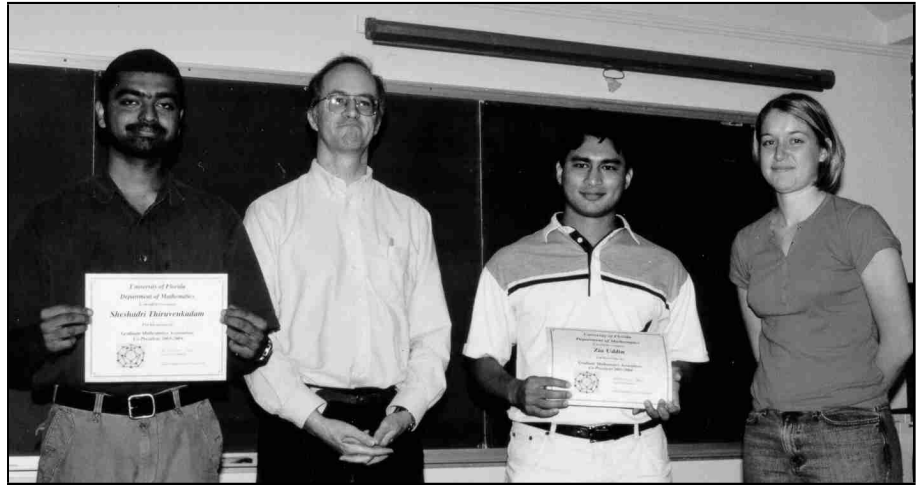
Professor Robinson also presented certificates to the officers of the older Graduate Mathematics Association: Co-Presidents Sheshadri Thiruvenkadam and Zia Uddin and Vice-President Bria Berger.

Shu-Jen Huang (not shown), Erika Migues and Michael Schroeder received Certificates of Excellence for Graduate Student Teaching.

Professor Miklos Bona was recognized for winning a 2004 CLAS Teaching Award.

Office manager Sandy Gagnon was recognized for 15 years service at UF and Senior Secretary Julia Porchiazzo for 5 years service. Here they are shown at a reception held by CLAS on June 2 in the Keene Faculty Center.

[Photo courtesy of Jane Domiguez, CLAS News and Publications.]

The Annual Students, Staff, and Faculty Appreciation Day
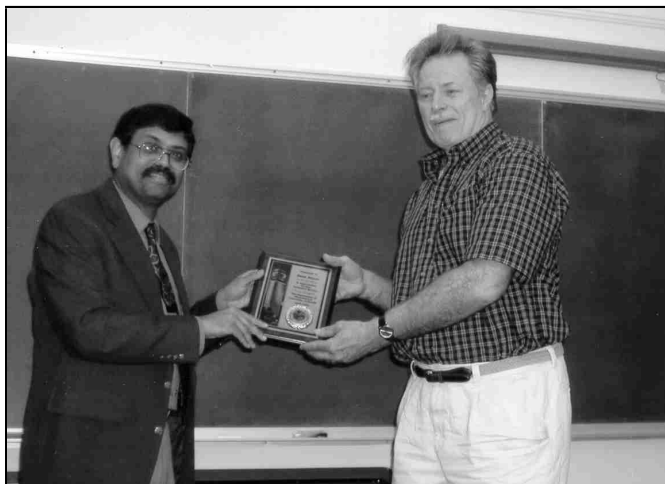
Professor Steven Saxon was presented with a plaque by Chair Krishna Alladi marking his many years of service at UF.

Ms. Deniz Kazanci (from Istanbul, Turkey) served as President during 2003–2004 of the University of Florida Chapter of the Pi Mu Epsilon International Honor Society. Through monthly talks, Kazanci reported, "our goal is to serve the intellectual student body at our University by igniting the interests of our colleagues who are interested in mathematics and related areas. Let's explore our minds and the universe together through the pathway of mathematics." A Note she co-authored with Professor Andrew Vince about *A Property of Normal Tilings* is appearing in the November 2004 issue of the American Mathematical Monthly.

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Faculty, Alumni, and Staff Notes

by Paul Ehrlich

Continued from page 14.

. . . This panel was cosponsored by the Young Mathematicians Network and the MAA Project NExT.

Professors **Jindrich Zapletal** and **Bill Mitchell** were plenary lecturers at a Workshop held at the Institute for Advanced Study at Hebrew University in Jerusalem during March 23–29, 2004 on the theme *Cardinal Arithmetic at Work.* Also, Zapletal and Professor **Douglas Cenzer** organized the *10th South-Eastern Logic Symposium* (SEALS) held here during March 2004 (as reported that it would be done inside the last issue of this newsletter) with twenty participants and funding from the National Science Foundation. This annual conference emphasized computability theory and set theory, areas of logic in which UF has several graduate students. About thirty mathematicians participated this year, coming mostly from the eastern seaboard.

The principle speakers were Professors Denis Hirschfedt (Chicago), Slawek Solecki (UIUC), and Stevo Todorcevic (Toronto). Thanks to the generous support from the department, CLAS and NSF, the organizers were able to cover travel expenses of several graduate students attending the conference.

The fourth World Congress of Nonlinear Analysts, held in Orlando at the Hyatt Grand Cypress Resort Hotel from June 30 to July 6 was a delightful affair in this charming venue. Our department was represented by Professors **Paul Ehrlich, Jed Keesling, John Klauder,** and **David Metzler.** Ehrlich co-organized a Session on July 1 and 2 on Geometric Analysis in Mathematical Physics. Metzler delivered a survey lecture on *Fine structure of orbfolds* on July 1. On July 2, Ehrlich lectured in place of his former student Professor Seon-Bu Kim of Chonnam National University in South Korea (who was unable to attend as previously planned), on their joint research on *The index form of a warped product.*

Keesling spoke in a session on July 5 in Topological and Analytical Methods in Differential Equations on *Strange adding machines.* Klauder chaired a Miscellaneous Ses-

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sion also on July 5 and spoke on *Mathematical aspects of Wiener-measure regularization for quantum mechanical path integrals.* At the conference banquet an example was provided of the connectivity phenomena which had been mentioned a few years ago in one of our distinguished lecture series inaugurated by Chair Alladi. When our graduate Dr **Bernhard Bodmann** had been visiting UF this past spring, he told Ehrlich that he had done some applied work with a chemist at the University of Houston. Who should be at Ehrlich's table but this very same chemist, as he revealed when Ehrlich asked him if he had met Bodmann.

Professor **Krishnaswami Alladi** gave an invited special session talk at the *AMS Meeting* in San Francisco during May 2003. In July and August 2003, during a visit to India, Alladi gave talks at the Tata Insitute, the Raman Research Institute, and the Indian Statistical Institute in Bangalore, as well as several lectures in his hometown of Madras (now called Chennai). In November 2003, Alladi visited The Pennsylvania State University to give two lectures: One was a departmental colloquium on his research entitled *New weighted Rogers–Ramanujan partition theorems and their analytic representations.* The second was a MASS Colloquium on the topic *Irrationality estimates using integration by parts* for talented undergraduate students. The MASS (Mathematics Advanced Study Semesters) Program is funded by the NSF and brings together the best undergraduate math students from around the nation for a semester's intense mathematical training. In December 2003 Alladi gave a plenary talk at an *International Conference on Number Theory and Secure Communications* that was inaugurated by the President of India (see page 11 for details). The title of Alladi's lecture was *A new companion to Ramanujan's continued fraction.* During this visit, he also gave the opening lecture at an *International Conference on Number Theory* in Bangalore, India, and visited the Harish Chandra Research Institute in Allahabad for two talks. Finally, in February 2004, Alladi gave the opening plenary talk at the third *China-Japan Number Theory Seminar* in Xian, China. In addition to these research colloquia and conference lectures, Alladi gave two public lectures in Jacksonville on the mathematics of the Indian genius Śrinivasa Ramanujan. The first of these was a Science Colloquium at the University of North Florida on October 31, 2003, and the second a talk in the Science and Engineering Lecture Series (SELS) at Jacksonville University on February 19, 2004.

During the academic year 2003–2004, Professor **Miklos Bona** received a CLAS teaching award during the annual selection process.

In additional to participating in the organization of the 10th SEALS Conference as reported above, Professor **Douglas Cenzer** was on the Program Committee for the *International Conference on Computability and Complexity in Analysis,* held in Cincinnati during August, 2003, with funds from the NSF. Cenzer gave a talk at this meeting and also chaired the session on open problems. Cenzer and former UF PhD student alumnus **Farzan Riazati** were invited speakers at a *Workshop on Computability and Logic* held in Heidelberg during June, 2003. Cenzer also spoke at the *8th International Symposium on Artificial Intelligence and Mathematics* held in Fort Lauderdale during January, 2004.

During April 5–9, 2004, Professor **Yunmei Chen** visited Yale University, Rutgers University and Siemens, lecturing on using PDE methods for biomedical image segmentation. Also her work with her students on diffusion weighted image analysis has been selected for presentation at the *International Conference of Computer Vision and Pattern Recognition.*

Professor **Richard Crew** was in Japan during May and June, 2004, spending May at Hiroshima University and June at Chiba University.

Professor **David Drake** gave invited talks at two conferences during the past year: the third *Pythagorean Conference* in Rhodes, Greece and a Canadian Mathematical Society *Symposium on Design Theory and Coding Theory* in Edmonton, Canada

Professor **Alexander Dranishnikov** was recently appointed to the Editorial Board of the *Proceedings of the American Mathematical Society.* He is currently also on the editorial boards of the journals *Algebraic and Geometric Topology, Topology and its Applications,* and *Fundamenta Mathematicae.* During March 28–April 2, 2004, Dranishnikov participated in the *Troisieme Cycle Romand de Mathematiques* in Les Diablerets, Switzerland, delivering two lectures on *Invariants de quasi-isometrie.*

Professor **Bruce Edwards** was on sabbatical during the Spring semester, 2004, doing more research on CORDIC and textbook revisions. Especially, Edwards traveled to Costa Rica during February, 2004. He spoke at the *13th International Symposium on Mathematical Methods* in San Jose, Costa Rica, giving a Keynote Address in Spanish (*¿Como Trabajan las Calculadoras?*) on the Cordic algorithm for calculating function values. Edwards also spoke at Lincoln High School in San Jose and gave a series of workshops at the University of Costa Rica on teaching mathematics using graphics calculators. New editions of five co-authored textbooks have appeared—*College Algebra, Trigonometry, Precalculus, Precalculus with Limits,* and *Algebra and Trigonometry,* all with Houghton Mifflin Publishers. Also Bruce spoke at the NCTM regional meeting in Charleston, South Carolina during November, 2003 on the advanced placement calculus syllabus.

Professor **Paul Ehrlich** was an invited plenary speaker at a W.E. Heraeus Seminar on *Mathematical Relativity: New*

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Ideas and Developments held at the Physikzentrum in Bad Honnef, Germany during March 1–5, 2004. Ehrlich lectured on *A Personal Perspective on Global Lorentzian Geometry.* Also, the proceedings of the *BeemFest* held in May 2003 at the University of Missouri, marking the retirement of Ehrlich's long time collaborator, Professor John Beem, were finalized for publication as a volume of the American Mathematical Society's Contemporary Mathematics series. Ehrlich served as a co-editor of these proceedings.

As part of the privileges of having been elected Visiting Fellow of All Souls College, Oxford (England), Professor **Gérard G. Emch** spent the Hilary term 2004 there, and he was simultaneously a Visiting Philosopher at the Department of Philosophy, Oxford University. He contributed the following addresses while in Oxford: *Heuristic and logical models* to the Philosophy of Physics Seminar, January 22, 2004; *Objective and subjective probabilities for micro- and macro-physics* to the Theoretical Physics Seminar, February 20, 2004; *Symplectic geometry and gravitation* to the European Science Foundation (ESF) *Philosophy of Space-Time Workshop,* March 25, 2004. Before and after Oxford, he gave invited lectures at the following international conferences: *Quantum Information,* Kyoto (Japan), November 6, 2003; *ESF Foundational issues in Statistical Physics Workshop,* Utrecht (The Netherlands), November 29, 2003; first *Joint Indian and American Mathematical Societies Meeting,* Bangalore (India), December 18, 2003; *Foundations of Probability,* Vaxjo (Sweden), June 8, 2004.

Professor **Frank Garvan** authored an article which appeared in the Rankin Memorial Issues of the Ramanujan Journal. Garvan, an expert in modular forms, wrote on *Relations between the ranks and cranks of partitions* with A.O.L. Atkin.

Professor **Jay Gopalakrishnan** received a grant from Medtronic Inc to study the numerical modelling of irrigated ablation devices. He again received the Oden Faculty Fellowship at the University of Texas at Austin to support his research for one month while he is in residence at the University of Texas.

Professor **William Hager** helped to orchestrate the Special Year in Applied Mathematics (see the articles by Beyza Aslan and Adnan Sabuwala, as well as by Shari Moskow in this newsletter).

Professor **Norm Levin** returned to Paris in May 2004 for a *Conference on K–Theory and Noncommutative Geometry* at the Institute Henri Poincaré.

Professor **Jorge Martinez** organized and hosted the *7th International Conference on Ordered Algebraic Structures* on campus from March 3–6, 2004. Both of his PhD students **Ricardo Carrera** and **Eric Zenk,** who are receiving their PhD's

in August, 2004, lectured at this conference. This conference is the most recent in a series of conferences on this topic, which began informally in 1998, and has been hosted here and in Nashville, at Vanderbilt University, by Martinez and Professor C. Tsinakis, respectively. These conferences have brought researchers from various disciplines and from around the globe to the two campuses. This includes the participation of colleagues from Argentina, France, Germany, Greece, Italy, Japan and Tunisia. The conference in March, 2004, was jointly funded by the National Science Foundation and UF's Office of Research and Graduate Programs, the College of Liberal Arts and Sciences, and the Department of Mathematics. The 8th conference in this series is scheduled to be held in April, 2005, at the University of Mississippi.

Professor **Sergei Pilyugin** spent April through June, 2004 at a new Mathematical Biosciences Institute at Ohio State University. There Pilyugin was a co-organizer of two workshops related to his research interests. In May, a workshop was organized on cell signaling and modeling of the immune system, and in June a workshop was held on the host-pathogen interactions that also involve the immune system. Also, Pilyugin lectured at Rutgers University on his research involving microbial kinetics and the dynamics of chemostats. Finally, we are pleased to be able to report that Sergei has been named to the Editorial Board of the journal *Mathematical Biosciences and Engineering.*

Professor **Yuli Rudyak** was a plenary speaker at the *42nd Annual Cornell Topology Festival* during May 2004. Rudyak spoke on the topic of *On category weight and the Arnold conjecture on symplectic fixed points.*

Professor **Pham Tiep** spent June, 2003 at the University of East Anglia in Norwich, Great Britain, to carry out research projects with colleagues in East Anglia as well as the University of Cambridge. His visit was supported by the Engineering and Science Research Council of the United Kingdom. While in the UK, Tiep lectured at the University of East Anglia on June 9th and at Cambridge University of June 18th. Tiep also gave a Colloquim at the Hanoi Institute of Mathematics in Hanoi, Vietnam on October 21, 2003.

Professor **Jindrich Zapletal** published a Memoir of the American Mathematical Society in March 2004 on *Descriptive Set Theory and Definable Forcing.*

The annual *Department of Mathematics Appreciation Day Tea* was held on Thursday afternoon, April 22, 2004 with general master of ceremonies Associate Chair **James Brooks.** Graduate Coordinator **Paul Robinson** provided his English sense of humor during his part of the program with his comments on the contrast between the SIAM Gators, which had two treasurers this past academic year, and the Graduate Mathematics Association, which had two

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co-presidents. Both Chair **Krishna Alladi** and Undergraduate Coordinator **David Groisser** commended the staff for keeping the department running during a shorthanded period during which both Pam Harrelson and Vicki Vallence had found other positions and yet we were holding five conferences in succession during early March. These comments were specifically occasioned by the recognition of staff members **Julia Porchiazzo** for five years service and **Sandy Gagnon** for fifteen years service in the department.

This year, the candidates for the yearly undergraduate mathematics prize, the Kermit Sigmon Scholarship, were so competitive that the comittee for this award found that four students merited Honorable Mentions (**Deanna Abernathy, Michael Damron, Marc Harper, Guy Tal**) in addition to naming the winner, **Micah Coleman.** We had previously reported that Micah's Undergraduate Scholars Project on *Permutations containing the highest possible number of patterns,* done under the guidance of Professor **Miklos Bona,** had received an award under this program. We can further report that this spring, Coleman received one of four finalist awards in the competition for the best quantitative paper written under this program. Starting in August, Micah will start his graduate studies in our program with an Alumni Fellowship and has also published his project as a research article in the *Electronic Journal of Combinatorics.* The paper gives an almost optimal answer to a question of Professor Herbert Wilf of the University of Pennsylvania.

On a less happy note, we regret to inform the readership that at the Recoginition Tea, Professor **Bruce Edwards** presented for the last time the Actuary Club Awards to **Alberto Abalo, Betsy Hansen, Lisa Smith,** and **Kyle Scherer.** The two allied faculty members in Statistics and in Finance that were involved in the UF actuarial program with Edwards have both retired and ceased their participation in this program. So regretfully, it has been decided to phase out this program. In the context of the actuarial program, Edwards had been teaching a course *MAP 3170: Introduction to Actuarial Mathematics* in recent years.   ❧

More Alumni News
by Paul Ehrlich

PROFESSOR **John Kenelly,** UF PhD 1961, Alumni Distinguished Professor Emeritus at Clemson University, received the Certificate of Meritorious Service from the Southeastern Section of the Mathematical Association of America at the Phoenix Joint Mathematics Meeting during January 2004. The MAA Focus had the following citation of Kenelly: "Currently the Treasurer of the Association, Kenelly has served both his Section and the MAA in many ways: as a leader in the reform of teaching and the use of technology in the classroom, as a fund raiser, and by his work as an officer and a member of many committees." Kenelly served as the President of the International Mathematics Olympiad 2001 and will be serving as the Treasurer of the MAA through 2007 and possibly longer.

Professor **Alice Mason,** BA 1970, MS 1977, PhD 1983, of the Department of Mathematics at Tennessee Tech University in Cookeville, Tennesse, passed away on March 6, 2004 from complications following cardiac bypass surgery in November, 2003. After receiving her bachelor's degree from UF, Mason taught mathematics at the High Point High School in Beltsville, Maryland in a suburb of Washington, DC from 1970 to 1975 before returning to UF for the masters degree. Following that degree, Mason was at the University of Tennessee in Knoxville, but returned to UF where she earned the doctorate in 1983 with a thesis on *Open Mappings and Dimension* written with advisor Professor **David Wilson.** After receiving her PhD, Mason joined the faculty at Tennessee Tech where she served as Chair during 1986–1998. The Tennessee *Tech Times* reports that during her time at Tennessee Tech, "she served on several committees and university task forces, and published papers in, among others, The Journal of Mathematical Behavior". Alice's home page reveals her continuing love for topology—she offers an illustration of how a topologist can turn a coffee cup into a doughnut and also of the Möbius strip.

Professor **Chuck Lindsey,** UF PhD 1988, remains at the Florida Gulf Coast University, where he was one of the founding faculty in mathematics. He is currently Associate Dean of the College of Arts and Sciences as well as Associate Professor of Mathematics. He was nominated to stand for election as the Florida Section Governor in the Mathematical Association of America in the March, 2004 election for that office.

Robert W. Shuford, UF BS 1998, reports that he is a Research Programmer at the Center for Naval Analysis, located in Arlington, Virginia, a "mere two hour commute" from where he lives in Jessup, Maryland.

According to the Summer 2004 Alumni CLAS Notes, Dr **Julian C. Bridges,** BA 1952 in English, Mathematics and Psychology, retired in May 2004 after 31 years as a sociology professor at Hardin-Simmons University in Abilene, Texas. He earned five degrees over a 21 year period, including an MA and PhD in sociology from UF in 1969 and 1973 respectively, and a doctorate of theology from Southwestern Baptist Theological Seminary in 1961. He is the former pastor of the First Baptist Church of Dallas.

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Professor **Soon Chul Park,** UF PhD 1999, spent the 2003–2004 academic year in the department participating in the *Special Year in Applied Mathematics.*

Professor **Stacey Levine,** UF PhD 2000, is an Assistant Professor in the Department of Mathematics and Computer Science at Duquesne University in Pittsburgh, Pennsylvania. Levine participated in the January 2004 *Conference on Mathematical Methods in Imaging and Vision in the Special Year in Applied Mathematics,* lecturing on *Nonstandard Growth Models in Image Restoration.* During the spring semseter, 2004, Levine was teaching *Differential Equations and Linear Algebra* and *Optimization* in her department. Visiting the Duquense web site revealed that that institution maintains an internet link, the Blackboard, for interaction with students via the internet, which Stacey employs.

On completion of his postdoctoral appointment at the University of California at Irvine, Professor **Tanush Shaska,** UF PhD 2000, has received a tenure track appointment in the Department of Mathematics at the University of Idaho in Moskow, Idaho, where he is responsible for teaching graduate courses in algebra. Shaska served as co- editor of the Proceedings of the November 2003 conference at UF on Progress in Galois Theory, part of the Thompson 70th Birthday celebrations, which appeared in the Developments of Mathematics Series of Kluwer Academic Publishing during 2004. Shaska co-authored an article for this volume on *Invariants of binary forms* along with Professor **Helmut Voelklein** of our department and fellow PhD alumnus Dr **Vishwanath Krishnamoorthy,** UF PhD 2001. Shaska is also organizing a *Session on Computational Aspects of Algebraic Curves* for the 10th *International Conference on Applications of Computer Algebra,* being held at Lamar University in Beaumont, Texas during July, 2004. He wrote in an e-mail that "It is very beautiful here [in Idaho], especially in the summer. I was here last summer and there are some of the most amazing sights I have ever seen."

Professor **Bernard Bodmann,** UF PhD 2001, now of the Department of Mathematics of the University of Houston, visited the department in mid-March, lecturing on *From the Quantum Fuzz to Filters: The Uncertainty Hedgehog and the Hare.*

Professor **Oana Mocioalca,** UF PhD 2003, is currently a Visiting Assistant Professor in the Department of Mathematics at Purdue University. Oana returned to campus in December 2003 and spoke in the Probability Seminar on *Malliavin calculus for Gaussian processes.* During the fall semester at Purdue, Mocioalca was teaching *Linear Algebra* and *Advanced Engineering Mathematics.* Oana also was here again in March and lectured on *Skorchod Integral for Gaussian Processes.*

Graduate student **Rebecca Smith** has had a paper on *Comparing Two Sorting Algorithms by Two Stacks in Series* accepted for publication in the Annals of Combinatorics.

A Note of Thanks

by Krishna Alladi

It is again a pleasure to warmly thank all of those who contributed to the support of our educational activities during the past year. For the Fiscal Year 2003–2004 we received a total of $5,460 in gifts to the various department foundation accounts. Non-anonymous donations included contributions from **John W. Devine, Karen Fagin, Thomas F. Hagan, William R. Hare, William A. Hemme, Patches L. Johnson, Keith A. Josephs, Philip B. Kane, Lee A. Kraftchick, Jorge Martinez, John C. Mayer, Jean M. McDill, Warren W. McGovern, Joseph J. Neal, Laura J. Rohrbaugh, Robert W. Shuford, Irvin L. Smith, Linda W. Smith, Lucinda F. Thomas, Dongxing Wang,** and **Richard K. White.**

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