IN THIS ISSUE

Awards and Prizes

Art Krener's Seminal Work in Control Theory

Under the auspices of the IEEE Control Systems Society, a twelve-member editorial board has recently selected twenty-five papers that have made a major impact on the field of control in the 20th Century. "Nonlinear controllability and observability," IEEE Transactions on Automated Control, AC-22, 1977, by Robert Herman and **Arthur J. Krener** was one of the twenty-five papers selected. Other selected authors include Nyquist, Black, Bode, Bellman, Pontryagin, Kalman, Zames, LaSalle, Brockett, Sussman, Willems, Åstrom and Ljung.

The paper by Hermann and Krener was one of the most mathematical to have appeared in the IEEE TAC to that time. Its importance was immediately recognized by its selection for an Honorable Mention for Best Paper of the year in the journal and its impact has continued to grow. It is the standard reference on controllability, observability and minimality for nonlinear control systems. But more importantly the mathematical techniques introduced in the paper have had a profound impact on future developments in nonlinear control.

Controllability is an important property of a control system. For linear systems it is the ability to steer the system from any state to any other. For nonlinear systems the situation is more delicate, loosely speaking a nonlinear system is controllable if it can be steered off of every lower dimensional submanifold.

Observability is the ability to determine the full state of a system from measurements of only some of its coordinates. A control system is minimal if it is of minimum dimension necessary to describe its input-output behavior. A linear system is minimal if and only if it is controllable and observable and Hermann and Krener generalized this to nonlinear systems.

[Robert Hermann was at Rutgers University when the paper was written and is now retired and living in Brookline, MA.]

Moscow Mathematical Society Prize to Alexander Soshnikov

The "Moscow Mathematical Society Prize for Young Mathematicians" is awarded annually to mathematicians under 30 that show exceptional promise. **Alexander B. Soshnikov**, the 2000 laureat, received his Ph.D. in Mathematics in 1997 from Princeton University and joined our department after completing his term as Tausski-Toda Assistant Professor at Caltech. He works in probability theory with strong interests in analysis and mathematical physics.

Soshnikov?s thesis, which was published in the prestigious Annals of Mathematics, dealt with generalizations of the central limit theorem in the context of random matrix theory. He recently proved that a wide class of random matrix models, called Wigner matrices, lie in the same universality class as that of the corresponding gaussian matrices at the edge of the spectrum. This result, proved using both probabilistic and combinatoric methods, is a fundamental result in random matrix theory and is expected to have far reaching consequences for this area. In addition to his work in random matrix theory, Dr. Soshnikov has studied both Anderson localization and Schrödinger operators, both fundamental areas of research in mathematical physics.

For more than 10 years, **Dmitri Fuchs** served on the ruling body of the Moscow Mathematical Society, and in this capacity he participated in voting for candidates for the prize. He commented that "It was our common understanding that we were selecting the most outstanding young mathematicians, and our choice was usually right." Indeed, some of the past recipients include: Serge Novikov, Dima Arnold, Yasha Sinai, Igor Krichever and Boris Dubrovin, Grisha Chudnovski, Eric Vinberg and Simon Gindikin and, last but not least, **Albert Schwarz**. Also, I. Gelfand was a recipient of the prize in the 30's and told

Dmitri Fuchs that he used the prize money to buy a warm overcoat!

Sloan Fellowship to Steve Shkoller

Steve Shkoller was selected as one of two Davis researchers to be honored nationally with an Alfred P. Sloan Research Fellowship. Each receives a two-year, $40,000 award, which is given to support outstanding researchers early in their academic careers. Steve, 31, came to UC Davis in 1999 as an Assistant Professor.

His research uses geometric techniques to study problems in fluid mechanics, particularly one long-standing problem: developing mathematical models of hydrodynamic problems that can be solved by computer programs. His work is contributing to the understanding of turbulence, one of science's great unsolved problems.

Hydrodynamic models could have a wide range of applications, such as weather prediction, aircraft design, and studies of biological and chemical systems. The main difficulty in developing them is that a continuum of spatial scales exists in nature, but only a finite number of scales can be modeled on a computer. Moreover, the smallest scale that even a supercomputer can handle is typically still a great deal larger than the spatial scales where interesting fluid motion may be occurring.

By studying the geometry of certain infinite-dimensional spaces called volume-preserving diffeomorphism groups, Shkoller has developed such models, proved the existence and uniqueness of their solutions, and developed new numerical algorithms that are able to preserve fundamental conservation laws.

The Sloan fellowship program grants 100 awards annually in seven fields-chemistry, computer science, economics, pure and applied mathematics, neuroscience and physics. It began in 1955 as a means of encouraging research by young scholars. Twenty-one past Sloan Fellows have won Nobel Prizes.

Evelyn Silvia Receives Top National Teaching Award in Mathematics

Evelyn M. Silvia was selected by the Mathematical Association of America (MAA) as one of three recipients of the Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics. This is the highest award in university level teaching in mathematics and honors her accomplishment in teaching that spans three decades and at all three levels: lower division, upper division, and graduate. She became eligible after receiving the Distinguished Teaching Award of the Northern California Section of the MAA in February, 2000.

Eligibility criteria for this Award include that the nominee should be widely recognized as extraordinarily successful in their teaching, have teaching effectiveness that can be

documented, have had influence in their teaching beyond their own institutions, and foster curiosity and generate excitement about mathematics in their students.

That Evelyn is eminently qualified for this Award is clear from the following excerpt from the letter nominating her for this high distinction:

"The hallmarks that set Evelyn Silvia apart from other excellent teachers are her complete dedication to maximize learning for every student she encounters, her ability in making even the most difficult concepts very simple to comprehend, her amazing energy, and her personal qualities of integrity, helpfulness, and caring. Her enjoyment of mathematics, excitement about teaching, commitment to learning, and genuine concern for all her students, endear her to all those who have had the privilege of having her as a teacher. Their evaluation of her teaching consistently places her at the top."

ONR Award to Naoki Saito

Naoki Saito has won an Office of Naval Research (ONR) Young Investigator Award of 2000. This year 26 scientists and engineers throughout the nation received this prestigious award, out of which only 2 awards are made in the area of Mathematics and Computer Science. The announcement was made last February at ONR, Arlington, VA.

This grant, totaling $300,000 for three years, will enable Naoki to conduct research on characterization and efficient representation of objects measured by vector-valued sensors (e.g., hyperspectral images and 3D seismic data) for classification and segmentation using the computational harmonic analysis techniques.

The Department at the Dawn of the 21st Century

By Motohico Mulase, Chair

Mathematics is an interface between our brain and the outside world. Through this interface we understand, interpret, and interact with the world. A new mathematical idea, born in a person's brain, is disseminated through communication. A mathematical concept established in one generation will be carried over to the next via education. Trying to understand a new idea or a concept of mathematics is purely a biological process, taking place in our brain. During the process, our brain has to be carefully nurtured. At the end of the process, if successful, we acquire a new interface. It may give us a new point of view of the world, or better understanding of what's going on in the universe. It may eventually lead to an invention of new technology. Mathematics education is, therefore, as important as discovering a new idea.

At the turning point of the millennium, the Department of Mathematics at UC Davis, in its

mission in discovering new knowledge and in teaching, occupies an honorable position in the mathematical community.

The American Mathematical Society organized an international conference this past summer in Los Angeles, celebrating the 100th anniversary of David Hilbert's famous Paris address at the International Congress of Mathematicians in 1900. The AMS conference, "Mathematical Challenges of the 21st Century," provided a window on the future of mathematics, a future that is destined to include important developments internal to mathematics as well as deepening connections to other areas of science and technology.

Of the 30 plenary lectures delivered by the most prominent mathematicians from all over the world, including Bill Thurston, 10 speakers mentioned works done by Davis faculty members, as reported elsewhere in the Newsletter. Craig Tracy's works were mentioned several times, in the talks on such a variety of subjects as algebraic combinatorics, high-dimensional data analysis, statistical mechanics, and probability theory. The new concept Tracy and his collaborator, Harold Widom of UCSC, discovered a few years ago is now known as the *Tracy-Widom distribution*.

During the past decade, many striking new results have been obtained by our faculty members, and as a consequence, many awards have been bestowed upon them. Roger Wets was elected to the Ukrainian Academy of Sciences, and won the George B. Dantzig Prize, the highest award in his research area, for his work in optimization. Blake Temple won a Guggenheim Fellowship for his work on nonlinear conservation laws and shock wave analysis. Together with his collaborator, he discovered an exact shock wave solution to Einstein's gravitational field equation, sending a shock to the mathematical community. The famous double-bubble problem was finally solved by Joel Hass and his collaborator, which made a breakthrough in the area of differential geometry. Five Alfred P. Sloan Foundation Fellowships were awarded to our faculty: Joel Hass, Abigail Thompson, Jeremy Quastel (currently faculty at Toronto), Greg Kuperberg, and Steve Shkoller. As reported elsewhere, our faculty members are continuing to make astonishing accomplishments. And as you see from the front page of this Newsletter, honors are just pouring into our faculty this year, ranging from the prestigious ONR Young Investigator Award to Art Krener?s lifetime recognition.

The reputation of the research programs of our faculty can be measured, for example, by a large number of research grants awarded from several federal agencies. Currently 19 faculty members serve as PI or Co-PI of active federal research grants: Cheer, De Loera, Fannjiang, Hass, Hunter, Krener, Kuperberg, Mogilner, Mulase, Nachtergaele, Puckett, Saito, Schwarz, Shkoller, Strohmer, Temple, Thurston, Tracy, and Wets. In addition, Gravner, Hass, Hunter, Strohmer, Thompson, Thurston, Tracy and Wets serve as editor or associate editor of major research journals in the mathematical sciences.

In our endeavor in education, Evelyn Silvia has just won the nation's highest award in college/university teaching in mathematics. This past Spring, she won the Distinguished Teaching Award of the Northern California Section of the Mathematical Association of

America. Earlier this past decade, the sectional awards were also made to Don Chakerian and Tom Sallee.

Under the leadership of Vice Chair Jim Diederich, our undergraduate programs have been reorganized and restructured for the 21st century. As the importance of mathematics in the society increases at an enormous speed, our offering of multiple major programs in our Department, such as Mathematics, Applied Mathematics, Mathematics of Computation, and Bioinformatics is on our horizon. Strong unity and cohesive identity of the Department faculty are the absolute requirements for such a dramatic change.

The current cohesive research atmosphere of the Department is centered at the dual foci: applied mathematics and geometry/topology. Applied mathematics includes applied analysis, non-linear PDEs, stochastic analysis, optimization, mathematical biology, statistical mechanics, dynamical systems, probability theory, digital signal processing, and scientific computation. The general area of geometry/topology includes low-dimensional topology, three-dimensional geometry, knot theory, differential geometry, complex geometry, discrete mathematics, combinatorics, representation theory, complexity, and topological quantum field theory. Mathematical physics and computational complexity bridge the two foci.

Our current size, 32 FTE, is still smaller than what we had in 1990. A rapid growth is absolutely necessary to meet the demands from the explosive enrollment increase in the first decade of the 21st century. Our slogan is "build on existing strength." Instead of trying to become a universal mathematics department, we want to keep the cohesive environment and exceptional strength in research. Already our careful and aggressive hiring has been noticed by the worldwide mathematics community.

All these activities show the true value of our undergraduate and graduate education and training at Davis. Our students are taught by the nation's top teachers and world-class researchers.

I invite you to join us, as a student, as a faculty, as a staff, or as a visitor, and to participate in our exciting endeavors at the dawn of the 21st century.

New Faculty

This year, two new faculty join the department. They are Anne Schilling and Andrew Waldron.

Anne Schilling received her undergraduate degree in Mathematics and Physics from Bonn University in 1991, and her Ph.D. in Physics from SUNY at Stony Brook in 1997. Since then, she has held a post-doctoral position at the Institute for Theoretical Physics at

Amsterdam University, and a Moore Instructorship at MIT.

Anne's research interests lie at the intersection of algebraic combinatorics and statistical physics. She is especially fond of understanding the relations between different areas in mathematics and physics. Often this helps to unravel hard problems in one area by exploiting the techniques of another area. In recent work with Kirillov and Shimozono, Anne has studied combinatorial properties of quantum algebras and associated q-series. The concept of quantum algebras has its roots in two-dimensional solvable lattice models from statistical mechanics, and these algebras exhibit beautiful combinatorial properties. Anne has established new formulas for the configuration sums of the lattice models, which physically describe the exclusion statistics of the particles in the underlying lattice model (similar to those seen in the fractional quantum Hall effect). The associated q-series yield generalizations of the famous Rogers-Ramanujan identities from combinatorics.

Anne's personal interests include bike riding, piano tinkering (especially Bach), traveling (she writes: "a good way to escape the Bostonian winter is to spend some time at Uluru - also known as Ayers Rock - in Australia; a good way to experience a truly different culture and meet extremely friendly people is to travel to Japan!"), and beating her husband, Andrew Waldron, at Othello.

Andrew Waldron received his undergraduate degree in Physics from the University of Melbourne in 1991, and his Ph.D. in physics from SUNY at Stony Brook in 1997. He has since held postdoctoral appointments at the NIKHEF (National Institute for Nuclear and High Energy Physics) in Amsterdam, and Brandeis University.

Andrew's research is in quantum field theory, which is motivated in part by the goal of constructing a self-consistent quantum theory of gravity. Possible ways to do this, such as string theory, have led to many recent mathematical advances in geometry and topology. His current research interests include the relationship between anomalies in quantum field theory and index theorems in topology; the physics of higher spin particles, particularly when they interact with gravity; and the role of supermembranes as a description of the fundamental degrees of freedom in string theory. Studying higher spin relativistic particles provides novel evidence that strings may really be necessary to describe nature, since the vibrating modes of a string correspond to particles of any spin.

Andrew writes that his personal interests "include trying to do the childhood stuff missed out on the first time round with my daughter Katja. Otherwise, mucking around with guitars of various kinds (especially Jimi Hendrix), reserving classical music for the occasional tinker on the piano. I?m also not likely to complain when presented with a large ocean with nice waves or a long walk along a scenic path."

Four Visiting Research Assistant Professors Welcomed this Year

by J. Blake Temple

We are fortunate to have four outstanding new Visiting Research Assistant Professors (VRAPs) joining the Department of Mathematics in the fall of 2000: Jean-Bernard Bru, Branko Kosovic, Wolfgang Spitzer and Diana Verzi.

Jean Bernard Bru received his Ph.D. in mathematical physics in 1999 from the Aix-Marseille II University and Centre de Physique Théoreque, Marseille, France. Dr. Bru's undergraduate studies were taken at Lycée Gustave Eiffel in Bordeaux and Ecole Nationale Supérieure de Physique in Marseille. His current research interests center around the study of weakly interacting Bose Gases in an external potential, taking account of the recent experimental discoveries of condensation in alkali diluted Bose gases. He is collaborating with Bruno Nachtergaele, (his faculty mentor), on the study of the corresponding Gibbs states.

This appointment will keep our contingent of French VRAPs at a constant level. **Jean-Marie Aubry**, who has completed his VRAP term, has been appointed Maître de Conférence (~ Associate Professor) at the Université de Paris XII, Créteil.

Branko Kosovic will be the departments first Knowledge and Distributed Intelligence Initiative (KDI) fellow. He will be funded by the NSF-KDI grant of which Steve Shkoller, (his faculty mentor), is the principle investigator. Kosovic is coming to us from the California Institute of Technology where he has worked on computational turbulence modeling and simulation. Dr Kosovic was trained as an applied mathematician early in his career in Croatia, and finished his Ph.D. in 1998 on the turbulence of atmospheric science at the National Center for Atmospheric Sciences at the University of Colorado in Boulder. He is already working with Steve Shkoller developing the first computational algorithms to simulate the solutions of the anisotropic averaged Euler equations. Shkoller has been actively developing a theory of these equations during the past several years.

Wolfgang Spitzer graduated from the University of Vienna, Austria, in 1996, and has recently taught at Princeton University. He has worked in several areas of mathematical physics, including statistical mechanics, hydrodynamic limits, Schrödinger operators and semi-classical analysis. Dr. Spitzer?s faculty mentor will be Bruno Nachtergaale. To quote Wolfgang himself: "Besides my interest in science, in particular mathematical physics, I love to participate in sports, and to watch professional sports. My favorite game is table tennis, but I am afraid that this isn?t very popular in California. In both fields I came together with many interesting people, from whom I learned a lot. I am looking forward to coming to Davis, meeting new people, and contributing to the academic environment in teaching and research."

Diana Verzi is a half time VRAP and half time RTG fellow at the Institute of Theoretical Dynamics. Dr. Verzi comes to us from Claremont Graduate University, having taught mathematics at Arizona State University and California State Polytechnic University in Pomona. She works on mathematical models of neurons, and is an expert in continuum modeling and the numerical analysis of partial differential equations. Her recent work in scientific computation concerns a system of differential equations that describe slow changes in the morphology of the dendrite in response to rapid changes in electrical/chemical activity. When time is available, she likes to sail or play the piano.

Thomas Strohmer and Bruno Nachtergaele receive Promotions

This summer **Thomas Strohmer** received tenure promotion to the rank of Associate Professor in the Department. Dr. Strohmer is an applied mathematician whose research concerns numerical harmonic analysis and digital signal processing. More specifically, he works on recovering signals from irregular sampling.

In the middle of the 20th century, Claude Shannon proved that a signal that does not have extremely high frequency modes, or a *band-limited* signal, can be reconstructed by its values at regularly spaced sample nodes, if the spacing is suitably chosen. Shannon?s theorem became one of the main igniting fuses of the current explosive revolution of digital world. In actual situations, however, it is often difficult to obtain data from *regularly* spaced samples. For example, a low-flying airplane cannot collect uniformly spaced measurement of the gravitational field of the earth.

Recently Strohmer and his collaborators obtained a fast and robust algorithm to reconstruct band-limited functions from non-uniformly spaced samples, vastly expanding the limit of Shannon?s theorem. Their method is currently the best available algorithm for irregular sampling. It has already found applications to cardiology, to geophysics, and to other real world problems such as in removing captions from movie scenes and in audio restoration.

Strohmer serves on the Editorial Board of the international journal, *Sampling Theory in Signal and Image Processing*.

Bruno Nachtergaele received promotion to the rank of Professor effective July 1, 2000. Dr. Nachtergaele is a world-class leading authority in the field of mathematical analysis of quantum statistical mechanics.

This past spring Nachtergaele made an astonishing accomplishment, settling a century old problem in mathematical physics. The problem, deriving the macroscopic fluid dynamics

equations from microscopic molecular motions, is so tough that it has even claimed the life of a legendary Austrian physicist, Ludwig Boltzmann.

Boltzmann was among the first few scientists who noticed that gas and fluid dynamics were the result of molecular motions. But at around 1900, there were no mathematical techniques available to Boltzmann that would allow him to prove his dream. The birth of quantum mechanics was still decades away from his time.

A century later, Nachtergaele and his collaborator, Professor H.-T. Yau of Courant Institute, New York University, have succeeded to derived the macroscopic Euler equation of fluid dynamics from the Schrödinger equation of quantum fermions, and thus fulfilled Boltzmann?s dream. This is the first rigorous mathematical derivation of this kind.

On the Move

Bill Thurston delivered a plenary address at the star-studded AMS-organized conference on "Mathematical Challenges of the 21st Century," celebrating the 100th anniversary of the Hilbert?s ICM lecture in Paris in 1900. A meeting in which the results of various faculty members were mentioned eminently, in particular **Craig Tracy** for the Tracy-Widom distribution, **Joel Hass** for his double-bubble theorem, **Albert Schwarz** for his work on Morita equivalence, **Motohico Mulase** for his work on the Schottky problem using the KP equations and **Greg Kuperberg** for his work on the Seifert conjecture.

Naoki Saito was made a Senior Member of the Institute of Electrical and Electronics Engineering, Inc., the highest professional grade of the IEEE. He gave invited lectures at the SPIE conference on Wavelet Applications in Signal and Image Processing (in Denver) and at the NSF-CBMS Conference on Interactions of Harmonic Analysis, Statistical Estimation, and Data Compression (in St Louis). **Roger Wets** was invited to deliver the Acheson Duncan Lectures at Johns Hopkins University. The Center for Applied Optimization at the University of Florida (Gainesville) organized a conference on "Stochastic Programming" to celebrate his 60th birthday. **Jesus De Loera** was an invited speaker at meeting on "Discrete Geometry" meeting Oberwolfach Germany, and a featured speaker at the workshop on "Spaces of triangulations of point sets" in Santander, Spain. **Angela Cheer**, our Director of the Institute of Theoretical Dynamics (ITD), organized a conference on "Non-linear dynamics in Biology and Chemistry" last September at ITD and she will be Co-Chair, this September again at ITD, of a conference on the "5th Overset Grid Technology." **Albert Schwarz** and **Bruno Nachtergaele** were invited speakers at the XIII International Congress on Mathematical Physics held in London this past summer.

Department Statistics

Students Enrolled in Courses in 1999-00: 13,481
(about 500 more than in 1998-99, for a 3.3% increase)

Personnel responsible directly and indirectly for instruction:
Faculty
Lecturers
VRAPs
Visiting Faculty
Associate Instructors
Teaching Assistants
Readers

Breakdown of course offerings in 1999-00:
101 lower division courses
53 upper division courses
30 graduate courses

Visitors ...

In addition to the Colloquium, that featured a distinguished list of speakers, the department supports four very active weekly seminars (Analysis and Mathematical Physics, Geometry and Topology, Optimization and Variational Analysis, Applied Mathematics), and it also plays a major role in the seminar series of the Institute of Theoretical Dynamics. This Fall, Steve Shkoller will start a new seminar series on Partial Differential Equations/Applied Mathematics.

A large number of visitors contributed to the enrichment of the research environment, both by lecturing and by interacting with students and faculty. Longer term visitors included: Claudia Neuhauser (U. Minnesota), Shogo Shiode (U. Kobe), Alexander Barvinok (U. Michigan), Stephane Mallat (Ecole Polytechnique), James Burke (U. Washington), Maury Bramson (U. Minnesota), Jinde Wang (U. Nanjing), Rekha Thomas (U. Washington) Gregory Beylkin (U. Colorado), Serkan Hosten (San Francisco State U.), Marco Perone-Pacifico (U. of Rome).

News from the Undergraduate Program in Mathematics

by James Diederich
Vice Chair for Undergraduate Matters

This was another very active year for the Undergraduate Program Committee (UPC) which has the responsibility for initiating changes and for monitoring our undergraduate program. Some of the highlights of changes in the program are

The Mathematics Department was successful in having all of its regularly scheduled upper division mathematics courses designated as 4 unit courses. This change is a better reflection of the work load in our Math courses, which are very demanding, and it helps students in meeting their schedules for graduation.

The revisions of the tracks for math majors have been approved by the College of Letters and Science and will become effective in the new catalog for 2000-2001. The most significant change is the modification of the old "Applied Mathematics" track, now named the "Computational and Applied

Mathematics" track, which allows far more flexibility in tailoring an applied student's mathematics program.

Math 21B Honors Discussion, an experimental honors discussion section for second quarter majors' calculus, will be offered this Fall by **Duane Kouba**. This will be the first step in revising our honors calculus offerings and will be offered in cooperation with the Davis Honors Challenge.

A History of Mathematics course, Math 111, has been proposed and will be offered for the first time in the Winter 2001.

Math 22AL, a linear algebra computational lab for Math 22A using Matlab, was proposed and approved and will be offered starting in the Fall 2000.

The UPC gave its support to the proposal for a Blended Program, a combined Mathematics degree and credentialling program. This proposed program by **Tom Sallee** will better integrate the credentialling and mathematics program throughout a student's program, starting in the freshman year, and will make it possible to obtain both a B.S. in Mathematics and a single subject matter credential in four years, including one summer.

First Awards of the Henry L. Alder Prize for Excellence in Teaching

At the Department?s Annual Awards Ceremony on June 8, 2000, the first awards of the Henry L. Alder Prize for Excellence in Teaching were presented. The award consists of a cash prize of $2,000 and a certificate for the best teaching performance by a graduate student during the preceding three quarters. In view of the exceptional teaching performance by several graduate students, the selection committee decided to confer two awards this year, each with a prize of $2,000. The awards were presented by Henry Alder.

Tyler Evans is exceptionally worthy of receiving this distinction. Even when teaching for the very first time in the mathematics department in the Winter quarter of 1996, his faculty mentor described him as "an excellent teacher even now, at the beginning of his career" and added that "he teaches with great confidence and competence and has absolutely no problem with any aspect of classroom presentation or course organization. Most important is his obvious command of the subject and the fact that he is always well prepared for lectures."

In each of the classes he taught during the past year, the average score of students? responses to the question asking for an overall evaluation of the instructor?s teaching (on a scale from 1.0 to 5.0) ranges from 4.5 to as high as an incredible 4.7. An unusual number of students added individual comments to

their evaluations, of which the statement "did a great job" appears over and over again.

Tyler?s teaching excellence was further recognized on campus. In July the Academic Senate announced that he was chosen to receive a Teaching Award for Outstanding Graduate Students of 2000, among the ten winners campus-wide to share this honor.

Regina Parsons has done a remarkably effective job in her teaching ever since she taught her first class in the mathematics department in the first summer session of 1996. Her faculty mentor at that time reported that "from the very beginning, Regina did things well which many beginning teachers have difficulty with." He added: "I was particularly impressed with the way she covered integration by parts during my third visit to her class. Not only did she present the topic in a very appealing way which students should find easy to understand, but she also had developed by that time excellent interaction with the students in the class and gave good answers to questions raised by students."

The student evaluations for the classes taught since that time clearly confirm the impressions of this faculty mentor. In each of the classes she taught during the past year, the average score of students? responses to the question asking for an overall evaluation of the instructor?s teaching (on a scale from 1.0 to 5.0) ranges from 4.3 to as high as an incredible 4.7. Most noteworthy is that this remarkable score was achieved in a calculus course for non-majors which for almost all students in the class is a required course and, therefore, typically not a favored one. Many students added individual comments to their evaluations, of which the statement "she is an excellent teacher" appears repeatedly.

Regina?s excellence in teaching was further recognized with her sharing the departmental 2000 Prize for Outstanding Teaching of Lower Division Mathematics..

James Peirce is the Wm. Karl Schwarze Scholarship Recipient for 2000

James Peirce has been a graduate student in our Math Department for three years, since he received his bachelor's degree in Mathematics from the University of Washington at Seattle. During this time, he has been a Teaching Assistant and has taught six quarters as an Associate Instructor. He is also a very good graduate student in Pure Mathematics, progressing well towards the completion of his Ph.D. thesis project on nonlinear PDE with his advisor, Prof. Allan Edelson.

The scholarship is made possible by a bequest in the amount of $10,000 annually made to the Department by William Karl Schwarze who received his bachelor?s degree in our Department and subsequently became a high school teacher of mathematics in San Francisco. Mr. Schwarze remembered his studies in the Department with such fondness that he decided to leave funds for students in our Department who demonstrate outstanding mathematical scholarship and exceptional promise of making a strong professional contribution as a mathematics teacher at the pre-college or undergraduate college level.

Nathan Farr Wins the Seventh Robert Lewis Wasser Prize

The Robert Lewis Wasser Prize was presented to **Nathan Farr** by our new Vice Provost for Undergraduate Studies Patricia Turner and by Mrs. Vera May Wasser at the Mathematics Department Awards Ceremony held on June 8, 2000. The Wasser Prize of $500 is awarded to the freshman or sophomore with the highest score in the Department of Mathematics Spring Math Contest. Nathan is a sophomore majoring in Computer Science. He also is an active homework reader for courses in the Mathematics Department. Attending the ceremony were Robert Wasser's mother Cheryl Booth and his stepfather Mike Booth.

The Robert Lewis Wasser Memorial Fund, in excess of $10,000, is named in honor of Robert Lewis Wasser and was initiated by his grandmother Vera May Wasser. Prior to his tragic death in an automobile accident in September of 1993 just before the beginning of his junior year as a math major, Robert showed high promise as a developing mathematician, having taken some of the most challenging of our Junior-Senior courses as a sophomore and having impressed his instructors.

Spring 2000 Mathematics Contest

First Prize: **Jeremiah Tauzer**

Honorable Mention:
Caleb Emmons, Ivan Rankenburg, Daisy Raymondson

Shannon Starr and Genevieve Walsh win the 2000 Alice Leung Prize

The Alice Leung Prize is an endowed prize in the Department given to one or more graduate students who have shown exceptional promise in all aspects of scholarship in mathematics, in particular, strong research potential. This year two awards were made to our graduate students. Each winner received a certificate and a cash prize of $1,000.

Genevieve Walsh works in the area of computational geometry under the supervision of William Thurston. In a short period of time she has mastered many aspects of this new area of geometry and has shown her strength and promise for future research. A faculty member attests to her remarkable geometric intuition, and strongly believes that she will grow into a first rate mathematician. A reviewer wrote, "Her mathematical understanding and insight has matured dramatically. I am convinced that she will write an excellent thesis, and that she will do quite well in the world of mathematical research."

Shannon Starr works in mathematical physics with Bruno Nachtergaele. This past summer he received a grant from the National Science Foundation to attend the XIII International Congress on Mathematical Physics held in London, UK, and a travel award from the American Mathematical Society to attend an international conference, "Mathematical Challenge of the 21st Century," held at UCLA. He has been invited to give a talk at a Special Session in the AMS Meeting at Birmingham, Alabama, this coming November. The title of his work will be "Droplet States in the XXZ Heisenberg Chain."

Outstanding Lower Division Teaching Recognized

John Chuchel, a lecturer in the Department, was one (along with Regina Parsons) of two to receive the 2000 Prize for Outstanding Teacher of Lower Division Mathematics. During the period under review he taught a majority of the lower division courses offered. The student evaluations of his teaching ranged from 4.2 to 4.8 out of a possible 5.0. The student comments uniformly praised his teaching skills and his availability.

Picnic Day 2000

The cold weather didn?t deter people from visiting this year?s "Math Tables" on Picnic Day in April and trying their hands at solving some very interesting problems. In addition, there was a contest to guess how many squares on a chessboard would be covered by a large jar of pennies if one penny were placed on the first square, two on the second, and doubling the number on each subsequent square. The winners were

Senior Division:
1. Brad Ballinger, a graduate student at UCD.
2. John Perkins, a Picnic Day visitor.
3. Ken Hawley, a senior in mechanical engineering.

Junior Division:
1. Benjamin Hass, North Davis 3rd grade.
2. Crissy Brown Korbel, Live Oak senior.
3. Jonathan Hawley, Waldorf 6th grade.

Graduation Honors and Departmental Citations

This year six Math Majors graduated with honors. The requirement for graduation with honors is a minimum grade point average of 3.5. Their names are flagged in the listing below.

Joseph Teran is a candidate for higest honors for his senior thesis work with Prof. Angela Cheer. The title of his thesis is "Atherosclerosis: A Numerical Approach." He also won an NSF Graduate

Fellowship. He was accepted at Cornell, Cal Tech, Stanford, Courant, ... and has decided to go to Stanford.

Five seniors received Departmental Citations presented at the Annual Mathematics Department Awards Ceremony. These citations recognize students of exceptional ability who have achieved superb records in mathematics and have taken very strong programs in mathematics. Their grade point averages in mathematics were at or above 3.9 out of a possible 4.0 and their overall grade point averages were similar. They all received very strong support from the faculty. They are **Joren Keylock**, who will be attending Medical School at Dartmouth, **Caleb Emmons**, who will be in the Ph.D. program in mathematics at UC San Diego, **Rebecca Noonan**, who double majored in Math and Political Science, **Joseph Teran**, who has received an full four year NSF fellowship for graduate studies in computational mathematics at Standford, and **Taiyo Inoue**, who will be in the Ph.D program in mathematics at UC Berkeley.

Undergraduate Degrees Conferred in 2000

BA

Bui, Quy
Miranda, Cinthya*
Noonan, Rebecca
Senini, Sean

BAS

Briggs, Ronald
Quinonez, David
Stewart, Michael
Tran, Van
Williamson, Katherine

BS

Branstetter, Karen
Cairo, Evelyn
Carollo, Marisa
Chan, Matthew
Day, Alexander
deLara, Joshua
***Emmons, Caleb**
Goodpasture, Denise
Guentert, Kristina
Hahn, Jason
Henry, Jana
Inglis, Michael
***Inoue, Taiyo**
***Keylock, Joren**
Kim, Lisa
Lau, Kwan
Le, An
Li, Rosa
***Lin, Corrie**

Mahrous, Karim
Nguyen, Huy
Nguyen, Mai
Poehlmann, Sarah
Prince, Robin
Reed, David
Soza, Ruben
Tapia, Susana
***Teran, Joseph**
Thomas, Scott
Valente, Elizabeth
Villalon, Carrie
Warmerdam, Anne
Williams, Christopher
***Williams, Timothy**
Wu, Clayton

*** With honors**

Life After Davis

Submitted by Anne Goodchild (B.S. ?95)

I don?t quite know where to start this story.... Back when I was 8 and the only thing ticked excellent on my report card was math? Back when I was in high school and I realized I could do those things they called proofs that everyone else seemed to hate so much? Or when I arrived at Davis, wide eyed and 17, and met Carole Hom?

I had a wonderful experience at Davis, particularly challenging at times, but of course, that is what made it such a wonderful experience. I finished my degree in September of 1995, after spending the summer finishing a thesis on modeling natural populations. During my last year a "math career night" was organized, and I heard a talk from Kevin Christian, Davis graduate and employee of, at the time, Applied Decision Analysis Inc.. He said they applied mathematics to real world business problems, in a wonderful atmosphere of mutual respect for work and fun. I had already decided to head to graduate school at the University of Virginia in environmental science, hoping to apply my mathematical knowledge in modeling situations, but it sounded interesting, and stayed in the back of my mind.

A year later I was offered a job at Applied Decision Analysis, and started there on June 24, 1996. I now work in the Applied Decision Analysis group of PricewaterhouseCoopers, a product of the same organization. I had never planned on ending up as a management consultant, but the work sounded too interesting to pass up, and I hadn't seen other opportunities for similar work anywhere else.

In my first two years at ADA I learned a lot about myself, and the way that I interacted with other people. I had to become aware of my strengths and weaknesses. I spent most of my time programming in Delphi, various statistics packages, and some interpreter languages. In addition to this I participated in client meetings, and analyzed results to try to draw out useful conclusions. I thoroughly enjoyed the work, as well as the environment in which I worked. I worked with a group of highly talented people. We played volleyball after work, watched all the James Bond films together, and went running at lunch. We had a band that played at the many annual social events. I was a back-up singer.

After two years at ADA I was beginning to manage pieces of projects, and participate in designing models and data collection algorithms. I spent a lot more time understanding what the numbers actually meant, and explaining that to clients. The opportunity came up to move to our office in London. I called my fiancée, and we said yes the next day. We spent four months preparing for a wedding and a move, and arrived in London on August 27th, 1998. At this time our company was bought by PricewaterhouseCoopers, so I began on September 1 at PwC's offices at 1 London Bridge.

The last 2 years in London have been incredible. I now manage projects and spend a lot of time selling our methodology to colleagues and potential clients. We specialize in applying quantitative techniques to business problems, but the hardest part is not the application of the technique, but in getting people to understand it. Of course for me, the fun part is actually applying the techniques. My favorite days at work are the ones when I get to sit down and design a model, or spend a few hours trying to understand strange results.

I am still in London, and am currently applying to Operations Research programs for the fall of 2001. Before returning to the US my husband and I plan to spend several months driving a VW bus around Europe.

When I think back on my Davis experience, I realize how important it was in providing me with a critical and analytical way of thinking. I feel indebted to my professors, particularly Carole Hom, and Motohico Mulase, for sharing so much of their minds with me. For those of you still enjoying your undergraduate years - relish them!

News From the Graduate Program in Mathematics

by Allan L. Edelson
Vice Chair for Graduate Affairs

For the year 2000-2001 we are pleased to announce the arrival of seven new graduate students in the mathematics program. We also want to congratulate all those students who have received advanced degrees this year:

The Ph.D. in Mathematics was awarded to Anatoly Konetchnyi, who came to Davis from Independent Moscow University. His research was on Noncommcutative Geometry and Yang-Mills Theory, and he worked under the supervision of Professor Albert Schwarz. He is currently a Postdoctoral Fellow at UC Berkeley.

Maike Meyer came to Davis from Heinrich-Heine-Universität in Germany. Her Ph.D. was awarded for research in the area of Legen diagrams and Lagrangian Knots. She was a student with Dmitri Fuchs. Maike is now working for Bell Labs, Lucent Technologies, in Nuremberg, Germany. In particular, her work is related to Universal Mobile Telecomunications Systems, also known as 3^{rd} generation wireless.

Tyler Evans came to Davis from Sonoma State University, and received his Ph.D. under the supervision of Dmitri Fuchs. His research concerned Deformations of Infinite Dimensional Lie Algebras, and he is currently a Lecturer at UC Davis.

Najla Fawal received her Master's degree in December, 1999, and has now been appointed to a teaching position at a high school in Santa Clara.

Elizabeth O?Neil received her Master?s degree in December, 1999, and has obtained a tenure-track faculty position at Olympic College in Bremerton, WA. Olympic College is a 2-year public institution.

Bao Guan received a Master's degree in June, 2000 and is continuing her studies in the Ph.D. program.

Opportunities for Students to Obtain Research Experience in Industry and the National Laboratories Increase

by E. G. Puckett
Chair, Graduate Group in Applied Mathematics

The 1999-2000 Academic year produced a number of new opportunities for students to become involved in research projects associated with Industry and or one of the National Laboratories. This June we received letters from researchers at Bell Labs/Lucent Technologies, GeoEnergy Inc., Raytheon, MicroFab Technologies Inc. and Xerox expressing interest in having graduate students and/or post docs participate in research projects that these companies currently have going with UCD faculty. We received similar letters from researchers at the Lawrence Berkeley, Lawrence Livermore and Los Alamos National Laboratories.

Participation in a research project associated with one of these institutions often leads to the opportunity for the student or postdoc to spend time as an intern at the industrial or laboratory partner's research facilities. Not only is this type of experience valuable to students who wish to pursue non-academic careers, but it is often viewed quite favorably by academic employers, and can sometimes provide that extra edge in pursuing that ideal first assistant professorship. In addition, some of these institutions - for example the National Laboratories - have programs that allow a student who has advanced to candidacy to finish their Ph.D. thesis while employed at their research facility, usually at a much higher rate of pay than can be found in academia. This can be especially helpful for students with young families, and again, it is not an impediment to obtaining academic employment in the future.

Although this article has only mentioned graduate students and postdocs, similar opportunities exist for undergraduates as well. Interested students or post docs should contact Professor Puckett for more information.

The GGAM Graduates Two New PhDs

Congratulations are due for Sam Chan and Meng Kai Hong. Sam recently finished his Ph.D. thesis "Reaction-Diffusion Equations in Oscillatory Media" and is taking a position as a Software Engineer at a company in the SF Bay Area called Doubletwist.com. Meng Kai Hong wrote a Ph.D. thesis entitled "Glimm's Method and Riemann Problems Extended to Conservation Laws with Source Terms" and has accepted a CAM postdoc at UCLA. Sam?s thesis advisor was Professor John Hunter, while Meng Kai?s advisor was Professor Blake Temple. We wish Sam and Meng Kai the best of luck with their careers!

Report from M.A.T. Program

The following students received their Masters of Arts in Teaching during the year 1999-00.

Molly Barkhurst
Michelle Chiang
Christopher Garrett
Melinda Hager
Victor Scafuro
R?lyeh Schanning

Six students will arrive in Fall 2000 to pursue their Masters of Arts in Teaching. They come to us from New York University, UC Davis and the University of San Francisco.

Life After Davis

Submitted by Wei Kang (Ph.D. ?91)

Both Lisheng (my wife) and I obtained our Ph.D. in Mathematics from UC Davis. I left Davis in 1991 to join the Department of Systems Science and Mathematics of Washington University in St. Louis. It is a great school and I enjoyed my three years experience at Washington U. as a visiting assistant professor. During that period of time, Lisheng managed to live in St. Louis for one year and to finish her Ph.D. dissertation on medical image processing. Then, she moved back to Davis to work in the Radiology Department of UC Davis Medical School. We had to live two thousand miles apart for two years. In 1994, I got tenure track offers (thanks to Art Krener) from both the Naval Postgraduate School (NPS) and Cal Poly. NPS has a strong program in control theory, a Ph.D. program in applied math, and the school is located in the irresistible City of Monterey. I decided to go to NPS. Three months after I moved to Monterey, Lisheng got an offer from KLA-Tencor, a leading company making yield management equipment for the semiconductor industry. The company is located in San Jose. We moved again from Monterey to Morgan Hill, a midpoint between Monterey and San Jose. Since then, we stayed with the same job at the same place for the last six years. Now, Lisheng is a senior software design engineer at KLA-Tencor and I am an Associate Professor of mathematics at NPS.

The greatest achievement in our lives is our daughter, Doreene Kang. She was born in December 1997, three years after we settled down in the Bay Area. From the beautiful baby, we learned new meanings about love, responsibility and happiness.

Life in the Bay Area is exciting. Our everyday life is surrounded by high tech, new ideas (good or not so good) and new technology, new job opportunities, internet, the stock market, etc. However, everyone has to work overtime to keep up with the pace, especially the pace of housing prices. When we feel tired, we drive to Monterey and enjoy the cool weather for a day. Although I came to my office in Monterey during working days for six years, I have not learned golf yet. Many faculty members of NPS are big golf fans. However, I always enjoy walking around the campus or on the Del Monte Beach next to the campus.

As for my research, I focused on two problems, bifurcation control and formation control. Feedback control of bifurcation and chaos is a young subject field attracting increasing attention. It is a difficult subject involving purely nonlinear performance of dynamical control systems. My joint work with Art Krener introduced a brand new methodology of bifurcation analysis and feedback design for control systems. My work on formation control deals with automation and

coordination of large number of moving vehicles. It is a hot topic interesting to NASA, the Department of Defense, and the robotics industry. Working with a group of engineers, we are developing a mathematical model and a design algorithm for the control and coordination of multi-vehicle systems. My work on formation control has been funded by AFRL for the past two years. Every time when I ran out of ideas for my research, I came to Davis to see Art and it always worked. So, I hope to see some of you in my next visit, when I need new ideas again. Good luck to everyone.

Staff News

by Tracy Ligtenberg, MSO

We've had another year of change and growth amongst the staff in 1999-2000. Some of the change has been in new staff coming on board and having an existing staff member move to a vacant position. To recap the events for the year, three new staff members have joined the Math Staff. Richard Edmiston, our Accounting Assistant and right-hand to the Business Office Manager (Tracey Brooks), came to us from off campus with previous accounting experience and a B.S. in Business Administration from the University of Arizona. Jessica Johnson also came to us from off campus and is our new administrative assistant in the Main Office. Her previous experience has been with an accounting firm in the Bay Area. Kristen White is our newest employee and she will assume the Chair?s Assistant position in early September. Celia Davis, who was formerly in this position, recently moved to the open Graduate Coordinator position. The opportunity provided Celia with some new and different challenges and was too perfect an option to pass up! For me, as the manager of the department, I am pleased to have such a fine group of people to assist me in the many tasks we perform throughout the year.

Emeriti Update

by Sherman Stein, Professor Emeritus

Henry Alder continued to teach the number theory course (MAT 115A) and chaired the committee selecting the recipients of the Henry L. Alder Prize for Excellence in Teaching. He also continued to chair the NSF supported campus project Minority Undergraduate Research Participation in the Mathematical and Physical Sciences. He also served on the committee preparing the statewide tests designed to measure student achievement in mathematics with respect to the State Mathematics Standards. He also was appointed to the Technical Advisory Committee of the High School Exit Examination to be given soon to all prospective California high school graduates. He continued to chair several MAA committees, including the one selecting the recipients of the MAA Distinguished Service Award and was a member of the MAA Task Force advising the NCTM on the revision of its Standards. He also continued to serve as a member of the Board of Governors of the *Pacific J. of Mathematics* and Chair of its Investment Committee

Don Benson?s book, *Moment of Proof*, published by Oxford University Press in March 1999, was the winner of the Association of American Publishers Publishing Division 1999 annual award for

excellence in the mathematical sciences. His publisher says that this is "a major award, among the most coveted among scholarly publishers."

Don Chakerian collaborated with Kurt Kreith on the book *Iterative Algebra and Dynamic Modeling*, published by Springer-Verlag in 1999. He has worked with Kurt in various inservices for elementary school teachers over the past year and will work with him in a Professional Development Institute during the first three weeks of August, 2000. During the past academic year he has given lectures at Fresno State University, Sacramento State University, for the Bay Area Mathematical Adventures, the Asilomar CMC Conference, the Spring meeting of the CMC^3 at Lake Tahoe, and for Math Nite at Acalanes High School.

Kurt Kreith spent two weeks in Spain under the auspices of the Gaspar dePortol Catalonian Studies Exchange Program, visiting universities in Barcelona and Tarragona. He continues to serve as member of an Advisory Panel to the Commission on Teacher Credentialing on the revision of Standards of Quality for Subject Matter Programs for the Multiple Subject Teacher Credential. Under a grant from the California Professional Development Initiative in Mathematics, he is working with G. D. Chakerian on a program for high school teachers addressing "The Role of Technology in Support of Standards-Based Mathematics Instruction."

Sherman Stein has had an "Archimedes Year." After his book, *Archimedes: What Did He Do Besides Cry Eureka?* appeared, he spoke about Archimedes at California State University at San Luis Obispo and at San Jose, the Avid Reader bookstore in Davis, the Hellenic Society in Sacramento, Prof. Mulase?s calculus class, and at a meeting of the home-schooled children of Davis. He also lectured at Math Camp at the University of Washington on algebra and dissections. At the Northern California meeting of the MAA he spoke about four of his unsolved problems, which still remain unsolved. "Discrete and Computational Geometry" published his proof of a special case of his conjecture that a polygon whose sides are parallel to the x- and y-axes cannot be cut into an odd number of triangles of equal areas.

Takayuki Tamura continued his work in semigroups, with a paper of *S*-indecomposable semigroups contributed to the Third Symposium on Algebra, Languages and Computation at Osaka University, the summer of 1999. A sequel will be part of the Fourth Symposium in the summer of 2000. In addition he has continued to serve as a reviewer of Mathematical Reviews and Zentralblatt für Mathematik as well as a monitor of Radio Japan?s World Network. In his avocation of poet he has published in the Tanka form in Japanese and free style in English.

Life After Davis

Submitted by Roberto Lucchetti (Ph.D. ?89)

I came to Davis in 1987, for a sabbatical, on leave from University of Milan, where I held the position of Associate Professor. This was my first trip overseas, and I was accompanied by my wife Adriana, and two sons: Andrea (7 years old) and Emanuele (2 years old), and ... a future baby (to be born in California). During the Spring quarter, I started to think of the possibility of actually

entering the Ph.D. program in Mathematics. This was an unusual move since certainly a 38 years old Italian professor doesn't very often return to being a ?student!? But the very stimulating atmosphere of Davis (and probably of the United States) convinced me to try. Of course, a big advantage was that this would require a longer stay at UCD. University of Milan wouldn?t approve too long a leave of absence so there was a serious time constraint. At times, I was convinced that studying for the Ph.D. qualifying exam, like 15 years earlier, wasn't such a hot idea. Nonetheless, I was able to complete all the requirements by the following Spring and wrote a thesis on "Set Convergence with Applications to Optimization and Probability" with R. J-B Wets as my advisor.

In August 1989 I returned to Italy. I must say that coming back wasn't easy, especially for my wife and my older son: our life in Davis was so rich and interesting that it was hard to re-adapt! I did maintain some good connections with people in Davis. My son Andrea and his friend have been exchanging summer visits. Our ex-baby-sitter (Gina) comes to Europe rather frequently and always visits us; we expect to see her again two months from now. I usually meet my friend John Roemer of the Economics Department when he comes to Italy: he even came for a weekend with his wife Natasha. And there have been a number of other Davis visitors.

I am now Full Professor at Politecnico di Milano (Technical University of Milan). My research interests are similar to those I pursued in my Davis thesis, with some detours to Nonlinear Analysis, specifically variational methods in critical point theory. Last September I organized a conference on well-posedness in optimization and related topics in a wonderful Palazzo in Gargnano, on the west side of an absolutely breathtakingly beautiful lake: Lago di Garda. It was magic, as all the invited speakers showed up, the weather was outstanding, the atmosphere absolutely fantastic. The dinners were served in a wonderful park overlooking the lake... I was lucky, because now many people will remember this conference. And in such a wonderful setting even doing mathematics becomes easier...

I am a sports addict, as a player and as a fan! I am still able to follow American football. A private channel shows us all the playoffs. I gave up watching baseball: baseball can?t be just seen on TV, it must be accompanied by ?studying the statistics? ... which are at least as important as going to the stadium ... moreover the A?s are now a much worse team than they were when I was in Davis. My son Andrea has corralled me into following the NBA. I am still playing tennis, even if much less than in Davis, due to the fact that here it?s more difficult to find compatible opponents ... maybe also due to my getting a bit older?

Alumni News

- **Laura (Loos) Adint (1996, BAS) worked as a consultant for Andersen Consulting and is currently a Systems Auditor for the Ford Motor Company in Dearborn, MI.**

- **Nate Burkett (1993, BS; 1994 MA) is a Senior Sorfware Engineer with Access Health in both Broomfield, CO and Rancho Cordova, CA. He notes that Number Theory has come in handy in his development of prime-number crypto systems.**

- **Jackie Coomes (1993, BS) earned an MS in mathematics in 1998 from Eastern Washington University in Cheney, WA. She is currently a Mathematics Specialist at that Institution.**

- **Elyon DeKoven (1994, MA) is a Ph.D. student in the Department of Industrial Design, Technical University of Delft, The Netherlands with an emphasis on computational**

linguistics, computer science and usability studies.

- **Robert P. Dickinson (1967, Ph.D.) died in September 1999 at age 61 after a short illness. He had taught at Las Positas College and worked occasionally at the Lawrence Radiation Laboratory.**

- **Joe Good (1996, Ph.D.) has left from his tenure track assistant professorship position at Skyline college in San Bruno to join Wind River Systems as a Software Engineer Instructor. This is an industrial teaching position, where he trains engineers to use his company's system development tools to customize their embedded operating systems.**

- **Gentha Gray (1993, BS) is currently a graduate student in computational and applied mathematics at Rice University in Houston, TX.**

- **Michael Harrington (1992, BA) is an Associate Actuary with CalFarm Insurance Company in Sacramento, CA. He is a member of the American Academy of Actuaries and was designated as an "Associate" by the Casualty Actuarial Society earlier this year.**

- **Brenda Hensley (1993, BS) is the Chair and mathematics teacher at Willis Jepson Middle School in Vacaville, CA.**

- **John C. Higgins (1964, Ph.D.) retired two years ago at Brigham Young University but continues to teach there as Professor Emeritus.**

- **Lisa Korf (1998, Ph.D.) is an Acting Assistant Professor/VIGRE postdoctoral fellow in the Department of Mathematics at the University of Washington in Seattle, WA.**

- **Fran Milo (1995, BS) has been working at the Cafe Bernardo in Davis. Since October 1999, he is General Manager of this fine restaurant.**

- **Thomas E. Nordahl (1975, Ph.D.) is an Associate Professor in the Department of Psychiatry at UC Davis and the Center for Functional Imaging at Lawrence Berkeley National Laboratory. Presently on sabbatical leave, he is conducting research on the brain related to Parkinson?s and Alzheimer?s disease. He is still very interested in mathematics.**

- **Kunitaka Shoji (1984, Ph.D.) is a professor at Shimane University and has recently published a paper on the amalgamation of semigroups.**

- **Dennis Simmons (1998, BS) is a teacher at Vanden High School in the Travis Unified School District in Fairfield, CA.**

The Department of Mathematics Newsletter

As always, we would like to hear from former Davis mathematics students about what they are presently doing and how they are applying their mathematical skills.

Alumni News Update Form

Please update information about yourself
by using our electronic update form.

http://www.math.ucdavis.edu/research/newsletters/alumni_quest

More information about the department is available on the Department's Home Page at:

http://www.math.ucdavis.edu