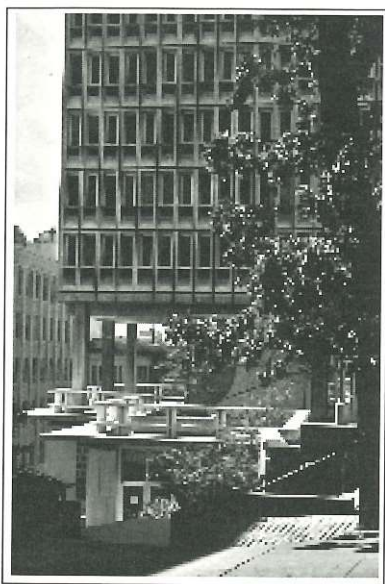




Department of Mathematics
University of Wisconsin

Van Vleck Notes 2001



From the Editor...

Our newsletter is a little later than usual this year due to the fact that it will now be based on a calendar year, rather than the academic year as in the past. It will be distributed about this time every year from now on. The last newsletter was dated 1999; this one is dated 2001. It's not a Y2K problem; you haven't missed an issue. Nor have you missed any of the news that we know you look forward to reading about every year. The current issue is packed with news about faculty, students, staff, awards, conferences, and many other things as well. I won't give any of it away here, you'll have to look inside.

And what about the University, the City of Madison, and the State of Wisconsin? All remain very exciting places in which to work and live. UW-Madison

has undergone a change of leadership with David Ward stepping down as chancellor after 8 years and, after a national search, with Provost John Wiley becoming the new chancellor. The smooth transition took place at the end of the year 2000.

The big news in Madison is the major civic gift of Madison businessman W. Jerome Frautschi to develop an Arts District, bounded by State, Henry, Fairchild and Mifflin Streets, enclosing the current Civic Center. The entire area will be remodeled with existing facilities expanded and new ones added. Internationally recognized architect Cesar Pelli has been selected to lead the design of the project. A renaissance is taking place in downtown Madison.

The big news about the State is that after 14 years, Tommy Thompson has resigned as governor to become Secretary of Health and Human Services in the Bush administration. Recently Governor Thompson has been a strong advocate for the university supporting, in particular, new construction on campus and the UW-Madison Initiative of David Ward, which has added new funds to the university in a public/private partnership. The overall goals of the Madison Initiative include maintaining our research preeminence by retaining faculty and attracting new faculty, especially in emerging areas of knowledge, improving our world-class education, and keeping Wisconsin's best students in Wisconsin.

The old-timers among you certainly remember the *Statute of Liberty* emerging from the ice of Lake Mendota about 30 years ago. Had you been in Madison during the first weekend of February of this year, you would have seen it all over again, but this time emerging from Lake Monona in front of the Monona Terrace Convention Center.

This newsletter is now available on the web in full color: <http://www.math.wisc.edu/events/>

...RAB

From the Chair...

It is a great pleasure for me to take the opportunity to write a few lines for the readers of the Van Vleck Notes. As you may know our department is marching full steam ahead with its hiring. Last year we hired four excellent mathematicians (S. Jin, X. Gong, T. Yang and A. Ionescu). They cover a wide variety of mathematical areas and will add considerable strength to our faculty. I am pleased to report that this year we have also been very successful at hiring, in fact we made three offers and had three acceptances! Our newest colleagues are very distinguished mathematicians: Sergey Bolotin (from Moscow State University, 1994 ICM speaker) works in dynamical systems; Timo Seppäläinen (from Iowa State) works in probability; and Lev Borisov (from Columbia University) is an algebraic geometer with interests in both mathematical physics and number theory.

As readers of these newsletters can surely tell, our department has been undergoing a substantial rejuvenation. In this process we have sought to foster development in important areas of mathematics that were previously underrepresented at Wisconsin. Our success has been quite remarkable, for instance we now have a growing national reputation in areas like number theory, symplectic geometry and applied mathematics as well as continued strength in traditional areas.

Another important development have been the multiple math conferences that are now held in Madison every year. This year we have had an algebra conference, a logic conference and soon we will hold a conference

in mathematical physics. This summer the MAA will hold its annual Mathfest in Madison. Our department will also be hosting an AMS Central Section meeting on October 12 & 13, 2002; it is the first such meeting to be held in Madison in many years.

Unfortunately not all the news is good, the recent death of Professor L. C. Young was a very sad event for all of his family, friends and colleagues. He was a remarkable mathematician and human being and he will be sorely missed.

Last year we were fortunate to have an undergraduate scholarship endowed by David and Janet Kirkbride - he is a former UW math undergraduate. We received a very generous gift for the WES program from Wally Hilliard. We also received an endowment to establish the John Nohel Prize for a thesis in applied mathematics, generously funded by Carl de Boer, Liselotte Karrer and Mike Crandall. Space limitations do not permit me to mention all of those who have contributed to our department, let me just say THANKS! Your gifts mean a lot to us and we are very grateful for your generosity. Even small donations can make a big difference for our research and teaching programs and we are especially careful to make good use of them.

Let me sign off by extending an invitation to all of our friends to stop by and visit us here in Madison or to simply drop us a line. We would be delighted to talk with you and fill you in on local developments. Keep in touch!

Sincerely,
Alejandro Adem
UW-Madison Math Dept Chair

Alumni Information

Please use this form to update our database of alumni. Send to:

Richard A. Brualdi, Editor
Department of Mathematics, University of Wisconsin
480 Lincoln Drive
Madison, WI 53706-1381
(brualdi@math.wisc.edu)

☐ Check here if new address

Name: _____

Home Address: _____

Current Title: _____

Work Address: _____

E-mail Address: _____

MAA and AMS Meetings in Madison 2001 and 2002

MAA Meeting

The Annual Summer Meeting of the Mathematical Association of America will be held in Madison in 2001 (MathFest 2001). The dates of the meeting are August 2–4, 2001. The meeting will be held at the Monona Terrace Community and Convention Center on Lake Mendota, just down Dr. Martin Luther King, Jr. Boulevard from the State Capital. Participants will be housed in Sellery Hall on West Johnson Street (overflow to Witte Hall as necessary). Those chosen to give Invited Addresses are: Judith Grabiner of Pitzer College, Frank Morgan of Williams College, and Michael Starbird (PhD 1974, M. Rudin) of the University of Texas. S. Brent Morris of the U.S. Department of Defense will be the banquet speaker. Information as it becomes available can be found at the MAA website: <http://www.maa.org/meetings/meetings.html>

Immediately following the MathFest, Ken Ono is organizing for the MAA a short course entitled *The Life and Legacy of Ramanujan*. Lecturers include Scott Ahlgren (Colgate University), George Andrews (Penn State University), Richard Askey, Bruce Berndt (PhD 1966, J. R. Smart) (University of Illinois), and Ken Ono.

Ken is anticipating having a lot of fun with the short course. He is designing 'hands on' computer lab activities for participants. In addition, there will be in-depth lectures on the "Ramanujan story," including photos and other memorabilia, and mathematical lectures which briefly describe some of Ramanujan's most famous discoveries. Included in the lectures will be some of the important things which continue to be of interest today in terms of open problems, new theorems, etc.

If you are in Madison for the MathFest, then be sure to come to the:

WISCONSIN PHD ALUMNI GATHERING

4:30–6:30 PM, Wednesday
August 1, 2001
9th floor lounge, Van Vleck Hall
Wisconsin Beer & Cheese

AMS Central Section Meeting

The Central Section of the American Mathematical Society will hold a meeting at UW-Madison on October 11–12, 2002. As of this writing those selected to give invited addresses have not been announced. The only deadline announced at this time is that of March 12, 2002 for organizers of special sessions. More information will be available in next year's newsletter.

We hope that these meetings will afford an opportunity for many Wisconsin PhDs and other Wisconsin friends to come back for a visit to the Mathematics Department.

New Faculty

One (full) professor and three tenure-track assistant professors were hired during the 1999–2000 academic year. In addition, two associate professors and one tenure-track assistant professor have already been hired this year, to take effect beginning with the 2001–02 academic year.



Shi Jin

A new (full) professor, **Shi Jin**, received the PhD from the University of Arizona in 1991. His thesis “Numerical transport in diffusive regimes” was written under the guidance of C. David Levermore. Before going to Arizona, Shi received a B.S. degree from Peking University (China) in 1983. After the PhD he spent two years at the Courant Institute of NYU, and joined the faculty of Georgia Institute of Technology in 1993. While at Georgia Tech, Dr. Jin held several visiting positions, including 3 months at Stanford University.

Shi’s research interests lie in the development and study of effective computational and mathematical methods for problems arising in a wide variety of physical and engineering problems. In particular, he is interested in numerical methods for fluid dynamics, rarefied gas dynamics, wave propagation and material sciences. Numerical and computational analysis is of strategic importance on our campus, and Dr. Jin is expected to play a major role. One of Shi’s major achievements (with Z. Xin) was the design of relaxation schemes which allow a much simpler discretization of hyperbolic systems of conservation laws than the usual schemes. Basic to these schemes is the design of a linear supersystem with stiff relaxation terms that relax to the original nonlinear system. These schemes have been widely adopted and developed in many application areas. Recently he began the study of a nonlinear Schrodinger equation with random inhomogeneities. Like a true applied mathematician, he has developed collaborations with engineers and scientists.

A new assistant professor, **Alexandru Ionescu**, received the PhD in 1999 from Princeton University. At Princeton, his advisor was Elias Stein. Dr. Ionescu’s undergraduate education was at the University of Bucharest (Romania) and MIT. He won a Silver Medal at the International Mathematical Olympiad in Germany in 1989 and a Gold Medal at the Olympiad in Sweden in 1991. He was a postdoctoral fellow at the Institute for Advanced Study (Princeton) in 1999–2000, and is spending the 2000–01 year at MIT before joining us in the fall of 2001.

Alexandru’s research area is real analysis on Lie groups. This area involves several branches of mathematics including Fourier analysis, global and harmonic analysis, partial differential equations, differential geometry, and probability theory. One of his striking achievements is a dramatic improvement of the Kunze-Stein phenomenon for L^p . In the case of rank-one semi-simple Lie groups he obtained the optimal form that, in the setting of Lorentz spaces, the convolution of two $L^{2,1}$ functions yields a $L^{2,\infty}$ function. Other aspects of his work concern $L^p_T \rightarrow L^q_s$ estimates for the wave operator and the noncentered Hardy-Littlewood maximal operator.



Alexandru Ionescu

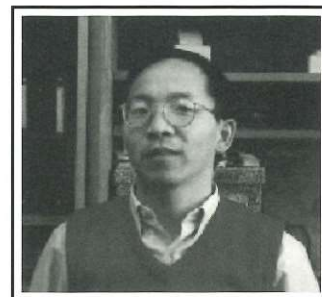


Xianghong Gong

Also a new assistant professor, **Xianghong Gong**, received the PhD from the University of Chicago in 1994 where his PhD supervisor was Sidney W. Webster. The title of his thesis was "Real analytic submanifolds under unimodular transformations." Xianghong received B.A. and M.S. degrees at Jilin University and Nanjing University (China), respectively. He spent the year 1994–95 at the Institute for Advanced Study (Princeton) and 1995–96 at the Mathematical Sciences Research Institute (Berkeley). He was assistant professor at the University of Michigan from 1996–1999 and at Oklahoma State University from 1999–2001 (on leave in 2000–01).

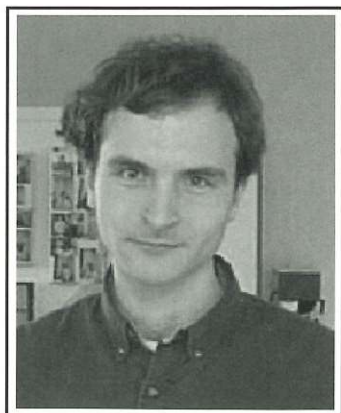
Dr. Gong's main research interests are in several complex variables and dynamical systems. In collaboration with Dan Burns, he has been studying singular Levi-flat real analytic hypersurfaces. His most recent research work includes the normalization of holomorphic symplectic mappings admitting invariant Levi-flat real analytic sets, non-reversibilities of real analytic area-preserving mappings and Hamiltonian systems, and the existence of periodic points of symplectic and reversible holomorphic mappings near a fixed point. Gong brings a breadth of knowledge in a number of areas of mathematics that will significantly impact our research programs.

Another new assistant professor, **Tonghai Yang**, received the PhD from the University of Maryland in 1995 with a thesis "Theta liftings and L -functions of elliptic curves" written under the direction of Stephen Kudla. Before coming to this country to study, Tonghai received a M.S. degree from Anhui University (China) in 1987. Dr. Yang spent the 1995–96 year at the Institute for Advanced Study (Princeton) and was Hildebrandt Research Assistant Professor at the University of Michigan from 1996 to 1998. While at Michigan he spent summers at the Max-Planck Institute for Mathematics (Germany). In 1998 he joined the faculty of SUNY at Stony Brook and spent 1999–2000 at Harvard University as an AMS Centennial Fellow.



Tonghai Yang

Tonghai's research interests are in number theory, arithmetic geometry and representation theory. He has worked extensively on the central values and derivatives of Hecke L -functions. One of his striking results is a formula for certain representation densities of quadratic forms. Recently he obtained a striking formula for the central derivative of the L -function of a canonical Hecke character, the derivation of which involved enormous insight and computational skill.



Lev Borisov

Also newly hired as an assistant professor is **Lev Borisov** whose appointment begins in 2001–02. His early education was at Moscow State University, and he was awarded the PhD in 1996 from the University of Michigan. His thesis "A finiteness theorem for subgroups of $Sp(4, \mathbb{Z})$ " was written under the guidance of Igor Dolgachev. Lev was a postdoctoral fellow at MSRI (Berkeley) in 1996–97, and since 1997 has been Ritt Assistant Professor at Columbia University. In 1987 he won first prize at the International Math Olympiad.

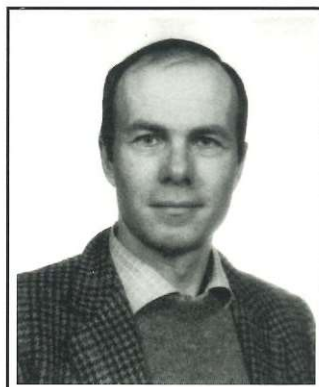
Dr. Borisov's research area is algebraic geometry and currently he is working on problems related to mirror symmetry, a byproduct of research by physicists in string theory. He has also interests in number theory and, more recently, in protein folding problems in mathematical biology. The ultimate goal in the latter area is to predict a three-dimensional structure of a protein from its amino acid sequence.

A newly hired associate professor is **Timo Seppäläinen** with his appointment starting in 2001–02. He received an M.Sc. from Helsinki University of Technology (Finland) in 1986 and a PhD from the University of Minnesota in 1991 with a thesis guided by Steven Orey. Timo was an instructor at Ohio State University for two years, a postdoctoral fellow at the IMA (Minnesota), and a postdoctoral fellow at the Mittag-Leffler Institute (Sweden). He went to Iowa State University in 1995 where he currently is associate professor.



Timo Seppäläinen

Dr. Seppäläinen's research interests are in probability theory, with special interests in interacting particle systems, large deviation theory, combinatorial probability, and statistical mechanics. His current main research concerns the large-scale behavior of interacting particle systems. In a series of papers, he has developed a method for studying certain asymmetric systems where an infinite family of processes is simultaneously constructed so that a complicated process can be represented as an envelope of simpler processes.



Sergey Bolotin

Also newly hired as an associate professor is **Sergey Bolotin** whose appointment begins with the 2001–02 academic year. He received the D.Sc. from Moscow State University in 1997 with a thesis "Variational methods in Hamiltonian systems." His advisor was V. V. Kozlov. Sergey is currently on the faculty of the Department of Mathematics and Mechanics at Moscow State. Dr. Bolotin has been a visiting faculty member in our department in 1996 and 2000; he has also been a visiting faculty member at the University of Trento (Italy). He gave an invited address at the International Congress of Mathematicians in Zurich in 1994.

Sergey's research interests include variational methods in Hamiltonian systems, conditions for nonintegrability and chaotic behavior of Hamilton systems, billiards, rigid body dynamics, and celestial mechanics and inertial navigation. With Z. Z. Kozlov, he received the S. V. Kovalevskaya Prize of the Russian Academy of Sciences in 2000 for a series of papers on integrability and nonintegrability of Hamiltonian systems.

Van Vleck Visiting Assistant Professors



Rear: Y. Barnea, D. Knopf, W. Wieczorek, M. Banagl, R. Solomon
Front: R. Kulkarni, J. Bruinier, C. McCoy

Eight new Van Vleck Assistant Professors arrived in Madison this year, the larger than usual number due to funding from the Department's NSF VIGRE grant (NSF-V), and from Ken Ono's Number Theory Foundation (NTF) and Packard Foundation (PF) Grants, and NSF Career Award (NSF-C).

Weizhu Bao

Weizhu Bao received the PhD from Tsinghua University in 1995 in the Mathematics of Computation. Since then he has held positions at Imperial College, Tsinghua University, and Georgia Institute of Technology. His research interests include computational fluid dynamics, finite element methods for nonlinear problems, and numerical methods for partial differential equations in unbounded domains.

Yiftach Barnea

Yiftach Barnea received the PhD in 1999 from the Hebrew University of Jerusalem with a thesis "Pro- p groups and Lie Algebras" written under the guidance of Aner Shalev. He spent 1999-2000 as a Postdoctoral Fellow at MSRI (Berkeley). Yiftach's research interests are in pro- p groups, Lie algebras, Kac-Moody algebras, and finite p -groups.

Jan Bruinier

Jan Bruinier received the PhD in 1998 from the University of Heidelberg (Germany). After the PhD he was given an appointment at Heidelberg. His UW appointment is partly funded by the grants NTF, PF, and NSF-C. Very recently, Jan has been awarded a habilitation degree by the University of Heidelberg. Habilitation degrees are awarded, by German universities, to those researchers who have established a superb track record (sort of a "super PhD"). It is quite unusual to be awarded such a degree only two years from the PhD. Dr. Bruinier's research interests are in number theory, in particular, Borcherds theory of infinite products in automorphic forms and modular forms.

Rebecca Field

Rebecca Field received the PhD from the University of Chicago in 2000. Her thesis "On the Chow ring of the classifying space $BSO(2n, C)$ " was guided by Burt Totaro. She lists her research interests as interactions between algebraic cycles and group actions (and consequences in representation theory), and connections between algebraic geometry and

algebraic topology. Rebecca is one of our VIGRE Van Vlecks being partially supported by our NSF-V grant.

Jeremy Lovejoy

Jeremy Lovejoy was co-advised by George Andrews and Ken Ono at Pennsylvania State University where he received the PhD in 2000. Jeremy is also a VIGRE Van Vleck partially supported by our NSF-V grant. He lists his research interests as partitions and q -series, modular forms, and combinatorics. With Ken Ono, Jeremy recently has helped shed new light on Ramanujan's congruences for the partition function (see the article on Ken Ono's PECASE Award).

Ernesto Lupercio

Ernesto Lupercio received the PhD from Stanford University in 1997 with a thesis "New holomorphic versions of the Bott periodicity." He was an Assistant Professor at the University of Michigan from 1997-2000, spending 1998 as a Postdoctoral Fellow at the Max Planck Institute in Bonn, Germany. Ernesto lists his research interests as algebraic topology, loop groups, mathematical physics, and algebraic geometry.

Charles McCoy

Charles McCoy finished his PhD thesis in 2000 at the University of Notre Dame. His thesis "Categoricity, dimension, and relativization" was guided by Peter Cholak (PhD 1991, T. Millar and S. Lempp). Also a VIGRE Van Vleck being partially supported by our NSF-V grant, Charles has research interests in mathematical logic, computability theory, and model theory; much of his current work involves finding natural characterizations of certain computability-theoretic notions in models.

Wojciech Wieczorek

Wojciech Wieczorek received the PhD in 1995 from Michigan State University. His thesis "Donaldson invariants and embedded 2-spheres" was

guided by Ronald Fintuschel. Before coming to Madison, Wojciech was a post-doctoral associate and instructor at the University of Georgia. His research interests include low dimensional topology and symplectic geometry, and Donaldson and Seiberg-Witten invariants,

Continuing Van Vlecks this year are Markus Banagl, Rajesh Kulkarni, and Bo Su. Continuing VIGRE Van Vlecks are Dan Knopf and Christopher Raymond.

Visiting Faculty

This year, as is usually the case, there are a number of visiting faculty who are both teaching and collaborating in research with members of our faculty.

Fall Semester Teaching Visitors

Zeljko Cuckovic from the University of Toledo; functional analysis, complex analysis, harmonic analysis.

Harvey Friedman from Ohio State University; mathematical logic.

Miroljub Jevtic from the University of Belgrade (Yugoslavia); complex analysis and harmonic analysis.

Andrei Kelarev from the University of Tasmania (Australia); ring theory and algebras.

An-Min Li from Sichuan University (China); differential geometry.

Andrei Morozov from the Sobolev Institute of Mathematics (Russia); mathematical logic.

Gabriel Navarro from the Universitat de Valencia; group theory and algebra.

Edwin Perkins from the University of British Columbia (Canada), probability.

Jean-Philippe Rolin from the University of Bourgogne (France); mathematical logic.

Otmar Spinas from the University of Kiel (Germany); set theory.

Professors Friedman, Morozov, Rolin, and Spinas lectured to graduate students in logic at different times throughout the semester.

Spring Semester Teaching Visitors

Alberto Elduque from the Universidad de Zaragoza (Spain); Lie algebras and symmetric spaces.

Lorenzo Pareschi from the University of Ferrara (Italy); numerical methods for partial differential equations.

Long-an Ying from Peking University (China); numerical analysis and partial differential equations.

Greg Lee from the University of Alberta (Canada); algebra.

Professors Cuckovic, Navarro, and Perkins are also teaching in the spring semester.

Honorary Fellows

An unusually large number of people have or will come to Madison for all or part of this academic year to collaborate with faculty here. Some of them will be teaching part-time during their stay in Madison. Included among those appointed Honorary Fellows this year are the following people, listed with their home institution and sponsoring local faculty member:

Honorary Fellow	Institution	Faculty Sponsor
Edith Adam Bante	University of Illinois	I. M. Isaacs
Peter Butkovic	Birmingham University, England	R. A. Brualdi
Zeljko Cuckovic	University of Toledo	P. Ahern
Alberto Elduque	Universidad de Zarazoga, Spain	G. Benkart
Morris Hirsch	UC-Berkeley	J. Robbin
Zejun Hu	Zhengzhou University, China	Y. Ruan
Shouli Jiang	Shandong University, China	M. Rudin
Jorge Jimenez Urroz	University Autonoma de Madrid, Spain	K. Ono
Youngju Kim	Seoul National University, Korea	Y. Oh
Hyungwoon Koo	Hankuk University, Korea	A. Nagel
Kenneth Koenig	University of Chicago	A. Nagel
Britta Kruger	Theodor-Heuss Grund & Hauptschule Sinsheim Germany	K. Ono
M. Pilar LaBurta	Universidad de Zarazoga, Spain	S. Jin
Greg Lee	University of Alberta, Canada	D. Passman
Ki-Suk Lee	Korea National University	D. Passman
Chanyoung Lee	University of Wyoming	G. Benkart
Yingming Liu	Sichuan University, China	Y. Ruan
Wafik Lotfallah	University of Cairo, Egypt	H. J. Keisler
Alexander Moreto	Universidad del Pais Vasco, Spain	I. M. Isaacs
Margherita Nolasco	Univ. of L'Aquila, Italy	P. Rabinowitz
James Osterburg	University of Cincinnati	D. Passman
Daniel Juan Pineda	Universidad Nacional Autonoma de Mexico Mexico City, Mexico	A. Adem
Bryan L. Shader	University of Wyoming-Laramie	R. A. Brualdi
Tsung-Hsi Tsai	Academia Sinica, China	J. Kuelbs
Chih-Wen Weng	National Chiao Tung University, Taiwan	P. Terwilliger
Guosong Zhao	Sichuan University, China	Y. Ruan
Quan Zheng	Sichuan University, China	Y. Ruan

Sabbaticals and Leaves

Three faculty members are on sabbatical for all or part of the 2000–01 academic year.

Sigurd Angenent is on sabbatical all year at the University of Leiden (The Netherlands). There he is collaborating with R.C.A.M. van der Vorst on problems in classical mechanics, and with J. Hulshof on asymptotics of singular solutions in nonlinear heat equations. In addition, he is connecting with working groups on medical imaging and computer vision in Utrecht.

Steve Bauman is also on sabbatical all year, spending most of his time in Madison. A graduate seminar in the teaching of mathematics at the university level has been meeting these last couple of years, and Steve is trying to develop a course on this topic. Thus Steve is joining with other efforts on campus in the scholarship of teaching science, engineering, and mathematics. Steve is also thinking about issues connected with the topic of quantitative literacy.

Richard Brualdi has completed his Fall, 2000–01 sabbatical, having spent most of his time in a basement study in central Vermont. His primary project, which continues, was the writing of a research monograph “Combinatorial Matrix Classes,” a sequel to his book “Combinatorial Matrix Theory” with H. J. Ryser.

In addition to these sabbatical leaves, there are quite a few other people on leave for the entire academic year: Franc Forstneric (University of Ljubljana, Slovenia), Alexandru Ionescu (MIT), Gloria Mari-Beffa (University of Leiden, the Netherlands), Robin Pemantle (Stanford University), Panagiotis Souganidis (University of Texas at Austin), and Thaleia Zariphopoulou (University of Texas at Austin). On leave in the spring semester are Anatole Beck (London School of Economics, England) and Arun Ram (Isaac Newton Institute for Mathematical Sciences, Cambridge, England)

Faculty Dinner Recognizes Retirees

Our annual faculty dinner - this year a catered dinner - was held on May 3, 2000 in the 9th floor lounge of Van Vleck Hall. There were six faculty members who fully retired from active service at UW-Madison at the end of the 1999–2000 academic year. They were **Howard Conner**, **Simon Hellerstein**, **Louis Solomon**, and **Michael Voichick** who ended their post-retirement agreements, and **Phil Miles** and **Marshall Osborn** who ended their full-time service without an interlude of post-retirement teaching and service. The careers, including some anecdotes, of the retirees were recalled at the dinner.

Michael Voichick

Mike received the PhD from Brown University in 1962 where his thesis was on function theory. He was John Wesley Young Research Instructor at Dartmouth College from 1962–64 before joining our faculty as an assistant professor in 1964. He took on the job of *Undergraduate Advisor Coordinator* in 1968, and continued with that job until his retirement in 1996. He had a post-retirement agreement but chose not to make use of it.

Mike was the first Undergraduate Advisor Coor-

dinator in the Department. He made that position into a vital one for the department. He learned the intricate graduation rules, and met cheerfully with countless many students. He put department rules into order and designed a Handbook for our majors. Career planning advice was another important aspect of his job. During his career he received many accolades from students. In 1995 he won the *Excellence in Student Advising Faculty Award* from the College of Letters and Sciences. Dan Shea, who succeeded Mike as Undergraduate

Advisor Coordinator, got off to a running start because of the excellent order in which Mike left the records and files.

Joann Elder, who was the Undergraduate Advisor Coordinator in the Department of Sociology and who worked with Mike in the Faculty Advising Service, said about Mike: "Everything I knew about Mike - his amiability, attention to changing rules, openness to seeing students, giving them his time - he was a true professional and a really nice guy. The Math Department was lucky to have him."

Marshall Osborn

Marshall received the PhD from the University of Chicago in 1957 where he worked with A.A. Albert. He joined the UW-Madison faculty right after receiving the PhD and thus was an active faculty member for a remarkable 43 years. He was Chair of the Department from 1981 to 1984. In 1995, he was chair of a committee to seek a new associate chair. Not finding a willing candidate he volunteered for the job himself and stayed with it until his retirement in 2000. Thirteen PhD theses were written under his guidance.

Marshall's mathematical speciality is nonassociative algebras but he also did substantial work on Lie algebras of characteristic p , skew-derivations, and infinite-dimensional Lie algebras of Cartan type. Don Passman relates how many years ago at another university and at about the time Marshall's paper on varieties of algebras occupied an entire issue of *Advances in Mathematics*, he overheard some people discussing Marshall. Looking elsewhere, but with both ears pointed at the discussers, he heard one of them say: "Marshall had impeccable mathematical taste." A conference was held in Madison in 2000 as a way of honoring Marshall for his many and important research accomplishments.

Using the metaphor of "diapering," Jake Levin recalled how he had been the recipient of excellent diapering by Marshall in tax and legal issues. He described the job of associate chair as the "ultimate diapering job."

Marshall has been closely involved with the American Players Theatre in Spring Green for many years and was at one time President of their Board.

He has also been involved with the Madison Opera. So, in addition to his service to the department and to the University, we have Marshall to thank for excellent theatre and opera in our area.

Howard Conner

Howard received the PhD from MIT in 1961. He was born and raised in Wisconsin and received a B.S. degree from UW-Madison in 1956. Howard was one of the first graduates of the Applied Mathematics, Engineering, and Physics (AMEP) program. He came to Madison as a member of the Mathematics Research Center and was appointed Assistant Professor in 1962. As a faculty member, Howard skillfully and with great care guided the AMEP program for nearly 30 years. The objective of this program is to offer a broad undergraduate program in mathematics, engineering, and the sciences. Subject to general rules, students can select a personalized course of study depending on their interests and goals (work in industry or graduate school). But AMEP students also went on to law, medical, and business schools.

Howard's early research area was in applied probability and focussed on branching processes and the application of stochastic processes to nonlinear Boltzmann-type equations. In later years, his interests shifted to linear algebra and matrix theory. In the 1980s Howard worked with others on developing the computing facilities in the Department.

Simon Hellerstein

Si did his graduate work at Syracuse University where he received the PhD in 1961 working with Albert Edrei. After two years at Stanford University, he joined our faculty as an Assistant Professor. Si was Chair of the Department from 1988 to 1991. He was also Chair of the Executive Committee of the Division of Physical Sciences in 1993-94. Simon spent 1974-75 in Washington serving as a 'rotator' at NSF. At Wisconsin, he had 9 PhD students. Si was known and revered as an inspiring lecturer and had high standards. In a supporting letter to his nomination to the UW Teaching Academy, one student wrote that "Much of what he tried to instill in me will remain for many years. His drive for excellence has become mine as well."

Si's mathematical research interests have been

in the theory of functions of a complex variable, their zeros, derivatives, and growth behavior. Later he became interested in differential equations in the complex domain. He collaborated for many years with Albert Edrei and Wolfgang Fuchs (Cornell University).

Louis Solomon

Lou received the PhD in 1958 from Harvard University where his thesis advisor was Richard Brauer. Before arriving in Madison in 1969, he held positions at Bryn Mawr University, Haverford College, and New Mexico State University. While at UW-Madison, he held visiting positions at the Institute for Advanced Study (Princeton), the Rockefeller Institute, Queen Mary College of the University of London, and MSRI (Berkeley). At Wisconsin, Lou had 10 PhD students.

Lou's research interests have been in group representation theory and algebraic combinatorics. Major themes in his research have been reflection and Coxeter groups, integral representation theory, group characters, hyperplane arrangements, and generator and relations for groups. In recognition of his research accomplishments and the esteem in which he is held all over the world, a conference was held in his honor in Madison in 2000. You can read more about this conference elsewhere in this newsletter.

Phil Miles

Phil, who was born and raised in Madison, received the PhD in 1960 from Yale University with a thesis on B^* -algebras written under the direction of Charles Rickart. He joined our faculty in the fall of 1960 and was an active faculty member for 40 years. He spent the years 1964-66 on leave in California working on a film project for the MAA, holding the MAA title of Associate Executive Director and Executive Director, Committee on Educational Media. He returned to Madison in 1966 to take up the post of Associate Chair, a position that was crucially important at a time when the Depart-

ment and University were experiencing tremendous growth. Phil held and excelled at this job for 21 years, in particular during the turbulent years of the Vietnam War and strikes on campus. Those who were in the department during the years when Phil was Associate Chair remember with great admiration the prose and (sometimes subtle) humor of his many memos.

With rapidly increasing enrollments in pre-calculus courses, Phil decided in 1987 to move to the new position of Pre-Calculus Supervisor. For 12 years, he guided our pre-calculus offerings, later to include courses in quantitative reasoning, with skill and foresight.

Hiroshi Gunji

In addition to the retirements last summer, Hiroshi Gunji has retired at the end of 2000 fall semester. Hiroshi received the M.S. in 1956 from the University of Tokyo (Japan) and the PhD in 1962 from the Johns Hopkins University. His PhD thesis "Some properties of curves of genus 2 representing singular points of variety of moduli" was guided by Jun-ichi Igusa. He spent two years at Cornell University and two years at the University of Saskatchewan (Canada) before joining our Department in 1966. At Madison he had 4 PhD students.

Hiroshi's work as chair of the graduate admissions and fellowship committee for so many years was so very important for our graduate program. He was a regular and admired lecturer in our calculus sequence. Hiroshi's research interests are in number theory. Recently he was interested in cubic Diophantine equations of type $x^3 + y^3 = A$ studying, for a given integer n , the possibility of constructing all integers A for which the equation has n solutions. A famous example of this due to Ramanujan is $A = 1729$ where $(10, 9)$ and $(12, 1)$ are solutions. A dinner in Hiroshi's honor was organized by the algebraists in December, 2000 with 24 colleagues and spouses participating.

We are extremely grateful to all our retirees for all their service, in the many important forms it took, to the department, the university, and the profession. We wish them a continued good and happy life pursuing their mathematical and other interests.

[Thanks to Georgia Benkart, Jake Levin, Don Passman, and Dietrich Uhlenbrock for some contributions to this story.]

Honors and Awards

Georgia Benkart Named MAA Pólya Lecturer for 2000–01, 2001–02



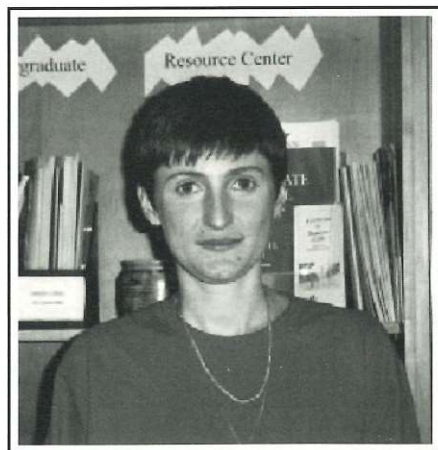
Georgia Benkart

Each year the Board of Governors of the Mathematical Association of America selects a Pólya Lecturer, to serve for two academic years. **Georgia Benkart** has been selected to serve in 2000–01 and 2001–02. On a rotating basis, the various MAA sections around the country can invite a current Pólya Lecturer (there are two at any given time) to speak at a regional meeting.

Georgia received the PhD from Yale University in 1974 and has been a member of our Mathematics Department ever since. Her research specialties are Lie Algebras, Representation Theory, and Combinatorics. She won a University of Wisconsin Mid-Career Award in 1996 on the basis of her strong research accomplishments and continued potential. She is regarded as an inspiring and dedicated teacher, in the best traditions of George Pólya, and won a campus-wide Distinguished Teaching Award in 1987. Giving

lectures around the country won't be anything new for Georgia. In the year 2000 she gave 9 invited lectures, including lectures at MSRI (Berkeley), Seoul National University (Korea), Canada (Toronto and Alberta), and Oberwolfach (Germany). In 1999 among her 11 invited lectures were the Taft Lectures at the University of Cincinnati. Professor Benkart currently serves on the editorial boards of the *Journal of Algebra* and the *Korean Mathematical Colloquium*. Fourteen graduate students have completed doctoral dissertations under her supervision.

Eleny Ionel Awarded Sloan Fellowship



Eleny Ionel

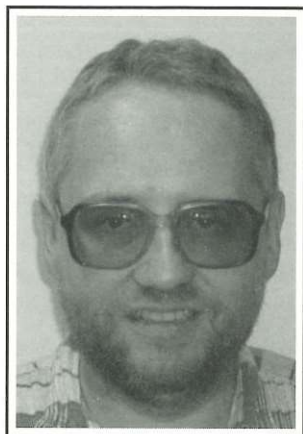
An Alfred P. Sloan Fellowship has been awarded to **Eleny Ionel** for the years 2000–02. According to the award letter, the fellowship is “an extraordinarily competitive award, involving nominations for most of the best scientists of your generation from around the country.” The award, worth \$40,000, recognizes past research accomplishments and future potential.

Eleny studied as an undergraduate at the University “Al. I. Cuza” (Romania) and received the PhD from Michigan State University in 1996 with a thesis “From Gromov invariants to enumerative invariants” guided by Thomas H. Parker. She was C.L.E. Moore Instructor at MIT before arriving on the Madison campus in 1999. In addition, she was a Postdoctoral Fellow at MSRI (Berkeley) in the fall of 1996.

Professor Ionel's research interests are in symplectic topology and 4-manifolds, and Gromov-Witten and Seiberg-Witten invariants. Among the highlights of her work are the computation of

the number of tori in projective space with fixed j -invariants, a gluing formula for Gromov-Witten invariants, and the discovery of important new relations in the cohomology of Deligne-Mumford moduli spaces of stable Riemann surfaces. Very quickly she has become a leading member of our growing topology & geometry group.

Steffen Lempp receives Vilas Associate Award



Steffen Lempp

Named a Vilas Associate for the years 2000-02 by the Graduate School is **Steffen Lempp**. This prestigious award provides summer salary support for two years and \$10,000 each year in flexible research funds for the pursuit of his scholarly activities. The Department's record in winning such awards is impressive in that there have been 8 such awards to its faculty in the first five years of the Vilas Associates Program.

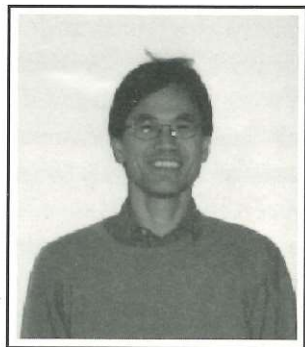
Steffen studied at the Universities of Karlsruhe and Bonn (Germany) before entering the graduate school at the University of Chicago where he received the PhD in 1983. He was a Gibbs Instructor at Yale University for two years before joining our Department in 1988 as an Assistant Professor. He was promoted to Associate Professor in 1992 and Professor in 1996. Steffen was on research leave at the University of Leeds (England) in the spring of 1996 and spent the summer of 1998 at the University of Siena (Italy). Seven students have received PhDs with his guidance. He was the editor of the *Journal of Symbolic Logic* from 1993-98, and is currently the

editor of the *Lecture Notes on Logic* series of the Association for Symbolic Logic.

Professor Lempp's research area is computability theory in which he is a leader. According to Steffen, computability theory is the study of the effective content of mathematics, in particular of mathematical constructions. It has strong connections with theoretical computer science since it explores the theoretical limitations of mechanical computability, that is, by idealized computers without bound on run time or memory space. Computability theory arose out of the work of Gödel in the 1930's in which it was demonstrated that Hilbert's program to axiomatize arithmetic in a finitary manner was impossible. This work led to a number of undecidability results, including the undecidability of the word problem for finitely presented groups and of Hilbert's 10th problem on diophantine equations.

Steffen has done significant and ground-breaking work in the two major aspects of computability theory, namely the study of complexity of sets of integers (regarded as coding natural mathematical problems) and applied computability (the study of the effective content of various branches of mathematics, in particular, algebra and model theory). He has been a energetic member of our logic group, organizing meetings, seminars, and other activities.

Yong-Geun Oh receives Korean Young Scientist Prize



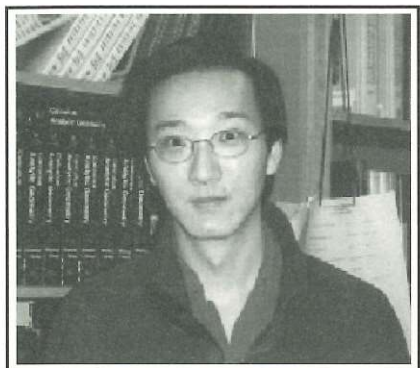
Yong-Geun Oh

Associate Professor **Yong-Geun Oh** has just been notified that he will be awarded the "Korean Young Scientist Prize." The award will be presented to Yong-Geun by Korean President Kim Dae Jung at a ceremony in Korea in February. The award includes a 5-year research grant worth over \$100,000.

Yong-Geun received the PhD from UC-Berkeley in 1988 under A. Weinstein. He spent postdoctoral years at MSRI (Berkeley) in 1988-89, at the Courant Institute of NYU in 1989-1991, and the Institute for Advanced Study (Princeton) in 1991-92. He came to Madison in 1992 and was promoted to Associate Professor in 1997. The academic years 1998-2000 were spent at the Korean Institute for Advanced Study and Kyoto University.

Since receiving the PhD, Yong-Geun has concentrated his research on developing and enhancing the so-called Floer homology theory in symplectic geometry and its application to various problems in symplectic geometry and topology.

Ken Ono is PECASE Recipient



Ken Ono

Associate Professor **Ken Ono**, who joined the Department of Mathematics in 1999, was named in April, 2000 as recipient of the 1999 Presidential Early Career Awards for Scientists and Engineers (PECASE). Ken was one of 20 recipients and the only mathematician in the bunch. The awards were presented at the White House Old Executive Building by President Clinton's science advisor, Neal Lane. According to an NSF news release, the PECASE award is the highest honor bestowed by the U.S. government on outstanding scientists and engineers who are in the early stages of establishing their research careers. These awards were established in 1996 in order to recognize some of the nation's finest scientists and engineers and to maintain U.S. leadership across the frontiers of scientific research. Each awardee receives

\$500,000 over a five-year period to further their research and educational efforts.

As PECASE recipient, Ken participated in the NSF's 50th Anniversary Celebration and its yearlong initiative *Scientists and Engineers in the School*. Along with Nobel Laureates Leon Lederman (1988, physics) and Russell Alan Hulse (1993, physics), Ken visited with high school students in the Midland, Michigan area in order to share science, experiential learning, and personal experiences with innovation and discovery. As part of this celebration, Ken and his PECASE Postdoctoral Fellow, **Gwynneth Coogan**, gave a presentation to students at Cherokee Heights Middle School in Madison in September, 2000. Coogan received the PhD from the University of Colorado in 1999 and is Assistant Professor at Hood College in Frederick, Maryland. She is spending the 2000-01 academic year in Madison teaching and doing research. In addition to her academic abilities, Gwynneth was a member of the 1992 USA Olympic Track and Field Team, competing in the 10,000-meter event. She was also an alternate member for the 1996 Team in the marathon.

One of Professor Ono's research interests is the partition function $p(n)$. Ramanujan discovered congruences for the partition function involving the numbers 5, 7, and 11. For instance,

$$\begin{aligned} p(5n + 4) &\equiv 0 \pmod{5}, \\ p(7n + 5) &\equiv 0 \pmod{7}, \\ p(11n + 6) &\equiv 0 \pmod{11}. \end{aligned}$$

Similar relationships hold when 5, 7, and 11 are replaced by their powers, or for a product of these powers. Since Ramanujan, only a few isolated examples of similar congruences had been found, and it was generally thought that there were no other families of congruences of this type. Now Ken Ono has shown that there are infinitely many such congruences. Ono's work was described in an article in *Science News* in Volume 157, No. 25, June 17, 2000. In that article, Bruce Berndt (PhD 1966, J. R. Smart) of the University of Illinois was quoted as saying "Ono's work is really spectacular. This certainly must rank as the most important work on partition congruences since the epic work of Ramanujan."

Ken used the theory of modular forms and discovered a connection between $p(n)$ and a specific modular form. This led him to establish the existence of the congruences modulo a prime number for $p(n)$. But he provided only one specific example:

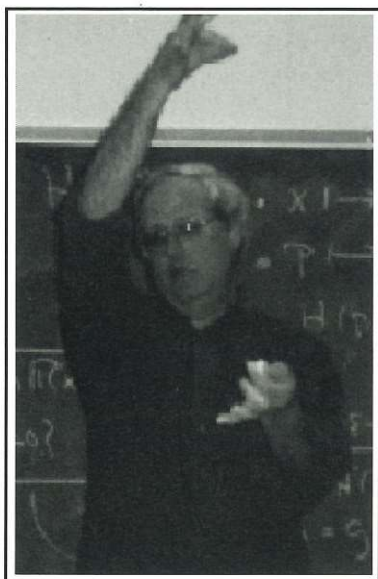
$$p(59^4 \cdot 13n + 111,247) \equiv 0 \pmod{13}.$$

An undergraduate, Rhiannon L. Weaver, working with Ken at his former institution, Penn State, found thousands of congruences for primes from 13 to 31. Both Ono and Scott Ahlgren of Colgate University

have now shown the existence of congruences for $p(n)$ for every modulus coprime to 6. In a recent joint paper with VIGRE Postdoctoral Fellow, Jeremy Lovejoy, Ken and Jeremy examine the optimality of the moduli in the family of congruences found by Ramanujan. In that paper they remark that to their knowledge, no explicit congruences for $p(n)$ are known for any prime modulus greater than 31.

This past summer, Professor Ono was one of the instructors at the National Youth Science Camp in West Virginia. At this Camp, near Bartow, West Virginia in the Monongahela National Forest, were two graduating seniors from every state in the union. The Camp was established in 1964, in the post-Sputnik era, as a gift to the nation on West Virginia's 100th birthday.

Special Lectures



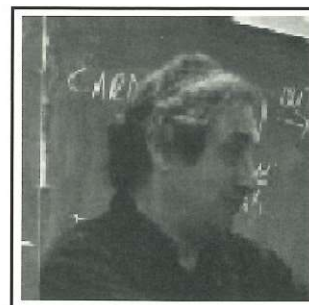
L. C. Evans

On March 29, 2000, Professor **L. C. Evans** of UC-Berkeley gave the Fifth Wolfgang Wasow Memorial Lecture on "Effective Hamiltonians." In his lecture Professor Evans explained some recent work with D. Gomes concerning PDE methods for Hamiltonian dynamics. As he described it, the main point is that there exist weak solutions of a certain PDE and these solutions lead to a sort of integrable structure for certain trajectories. Following the lecture there was a reception in the 9th floor lounge of Van Vleck Hall.

Previous Wasow Lecturers have been Jürgen Moser, Joseph Keller, Louis Nirenberg, and Cathleen Morawetz. The Sixth Memorial Lecture will be given by Professor Emeritus Peter Lax of the Courant Institute of NYU in early fall of 2001.

Professor **Persi Diaconis** of Stanford University was the Spring 2000 Distinguished Lecturer. He visited the Mathematics Department during the week of April 3, 2000 and gave three lectures. The first lecture was in the Probability Seminar on "Random Walks & Hecke Algebras." The second lecture was aimed at graduate students and undergraduates and was titled "The Mathematics of Shuffling Cards," and was given to a full house in B-239 Van Vleck. Both students and faculty alike marveled not only at the beautiful mathematics involved but also at Professor Diaconis's manual dexterity with cards. The third lecture was part of our colloquium series and was on "Zeros of the Zeta Function and Eigenvalues of Random Matrices."

There will be two Distinguished Lecturers this spring: Terence Tao of UCLA in April and C. Vafa of Harvard University in May.



Persi Diaconis

Professor Alan Edelman of MIT gave the Fifth Annual LAA Lecture on March 22, 2000. The title of his lecture was "Why are eigenvalues of random matrices cool?" In 1998 Professor Edelman (jointly with Eric Kostlan) was awarded the MAA Chauvenet Prize for the paper: "How many zeros of a random polynomial are real?" *Bulletin of the American Mathematical Society*, 32 (1995), 1–37. In his paper "The Mathematics of the Pentium Flaw" in the March 1997 issue of *SIAM Review*, he gives a detailed description of what went wrong with the pentium chip. A reception in the 9th floor lounge of Van Vleck Hall followed the lecture.

Previous LAA Lectures have been Chandler Davis, Victor Klee, Ludwig Elsner, and Gene Golub. The Sixth LAA Lecture will be given by Professor William Fulton of the University of Michigan on April 27, 2001.



Alan Edelman

Conference News

Conference in Honor of Don Crowe

On May 4–7, 2000 a conference, "Recent Trends in Geometry and Symmetry" in honor of Emeritus Professor Donald W. Crowe was held in Madison. As the conference announcement said, Donald W. Crowe has spent over 40 years popularizing, researching and teaching the many facets of geometry, especially aspects of geometry related to symmetry. The purpose of this conference was to honor his efforts by providing a forum to discuss new trends and developments in the study of geometry and symmetry.



Donald W. Crowe

The four invited speakers were: H. S. M. Coxeter (Univ. of Toronto) speaking on "Isohedra With Rhombic Or Rectangular Faces" [about this talk, Marty Isaacs was heard to say: "It was like going to hear a talk by Gauss."]; Chandler Davis (Univ. of Toronto) on "Wavelet Systems Which Respect Symmetry Groups"; Greg Frederickson (Purdue Univ.) on "Geometric Dissections That Swing And Twist"; and Sue Whitesides (PhD 1975, R. H. Bruck) (McGill Univ.) on "Geometry in Motion: a Survey of Linkage Movement Problems" [Sue's results on unfolding polygonal paths in the plane were written about in Ivars Peterson's September 23, 2000 column in *Science News*]. The banquet speaker, who made less serious but surely mathematical comments, was Solomon Garfunkel (PhD 1967, H. J. Keisler) from COMAP.

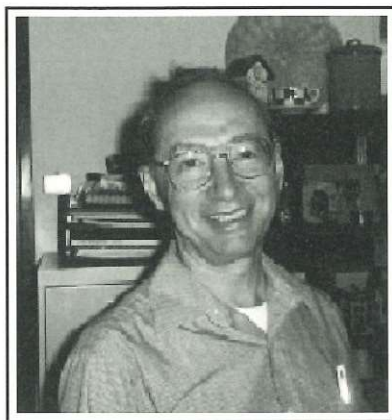
There were twenty-one contributed papers, including those given by former UW-Madison students Darrah Chavey (PhD 1984, D. W. Crowe), Gary Ebert (PhD 1975, R.H. Bruck), Leroy Dickey (PhD 1970, D. W. Crowe), Joe Malkevitch (PhD 1968, D. W. Crowe). In addition, there were sessions devoted to proposing and discussing problems, and exhibits of books and geometrical models and constructions. There were approximately 50 participants from all over.

The conference was organized by Amir Assadi (UW), Steve Bauman (UW), Joseph Malkevitch (York College (CUNY)), Dorothy Washburn (Maryland Institute, College of Art), and Bob Wilson (UW). Funding support came from the UW Mathematics Department and from NSF. Cambridge University Press donated a large number of geometry-related books for use at the conference and placement in the Stephen Cole Kleene Mathematics Library at UW-Madison.

More details including a gallery of pictures of Don Crowe and family and friends, as well as the conference program, are available at the conference web site, <http://outreach.math.wisc.edu/conference.htm>.

Contributed by Robert Wilson

Conference in Honor of Paul H. Rabinowitz



Paul H. Rabinowitz

On May 28–30, 2000 the Department of Mathematics sponsored a conference on “Nonlinear Analysis”, recognizing the 60th birthday of Paul Rabinowitz. The themes of the conference were (1) Variational Methods, and (2) Bifurcation and Degree Theory. A description of these two themes, taken from the conference announcement is:

(1) The idea to use variational principles to prove existence or multiplicity results for solutions to PDEs (elliptic problems, minimal surfaces, Yamabe problem) or ODEs (periodic orbits in Hamiltonian Systems) goes back at least to Poincaré and has been successfully exploited throughout this century. Two classical methods are (i) the direct approach in the calculus of variations, in which existence of minimizers of functionals is proved by suitable compactness arguments, to obtain, e.g. existence results for minimal surfaces; and (ii) Morse and Ljusternik-Schnirelman theory,

in which topology and analysis are combined to deduce existence of periodic orbits in mechanical systems. The last few decades have seen a rapid growth in the number of problems which have been attacked, as well as the emergence of new variational methods which have been brought to bear upon them, e.g.

- Minimax arguments have been used for the construction of closed orbits in Hamiltonian systems with starshaped energy surfaces
- Floer introduced a new approach to Morse theory which allowed him to prove the Arnol'd conjecture in many cases; the complete conjecture was proved by several groups of people. Further developments involve the variational study of closed characteristics on contact manifolds.
- Variational methods have been used in varying degrees of abstractness and generality to construct so-called chaotic solutions or “multibump solutions” in Hamiltonian systems, and in Lagrangian systems (monotone twist maps of an annulus being the simplest example.)

(2) The Brouwer and Leray-Schauder degrees have classically been used for existence proofs for PDEs, and to keep track of solutions to PDEs through bifurcations (e.g. in the Crandall-Rabinowitz bifurcation theorem). More recent developments concern the extension of the definition of the Brouwer degree to maps which are not continuous but close to continuous, and the use of the Leray-Schauder degree in singular perturbation problems.

The conference was organized by Sigurd Angenent and Marshall Slemrod. It featured invited lectures by H. Brezis (Rutgers University and Universit'e Paris VI), A. Bahri (Rider University), H. Hofer (New York University), M. G. Crandall (UC-Santa Barbara), J. N. Mather (Princeton University), S. Bolotin (Moscow State University), V. Coti-Zelati (University of Naples), P. E. Souganidis (UW-Madison), D. Sattinger (Utah State University), D. G. Aronson (University of Minnesota), and A. Ambrosetti (University of Trieste). There were also contributed talks sessions each day.

A reception was held in the 9th floor lounge of Van Vleck Hall on Saturday, May 27. On Sunday evening, May 28, there was a conference dinner in the 9th floor lounge. Many people talked about Paul's spectacular mathematical accomplishments, and Paul as a warm and caring human being.

Conference in Honor of J. Marshall Osborn



J. M. Osborn

In May, Marshall Osborn retired after 43 years on the mathematics faculty at Wisconsin. He had served as both chair and associate chair of the department. In honor of the occasion and to celebrate Marshall's 70th birthday, a conference, "Lie Algebras and Related Topics," was held at the new Pyle Center (formerly the Alumni Center) September 8–10, 2000. Participants were treated to great lectures on Lie algebras, representation theory, and Jordan algebras as well as to a great view of Lake Mendota.

The conference included a "Marshall Osborn Trivia Contest," which posed questions about Marshall's life and career. Richard Block, professor of mathematics at the University of California, Riverside, who has known Marshall since their days as graduate students at the University of Chicago, was the winner of the contest. Georgia Benkart organized the meeting and Efim Zelmanov, Fields Medalist and former UW professor, was the master of ceremonies at the banquet, which was held in the Alumni Lounge overlooking Lake Mendota. Besides teaching mathematics, Marshall has taught many mathematicians to drive - as both Richard Block and Efim Zelmanov attested in their

testimonials to Marshall. The meeting in September provided an opportunity to celebrate Marshall's success in all these endeavors.

Contributed by Georgia Benkart

2000 MWMT Held in Madison

The Annual Midwest Model Theory Meeting (MWMT) was held in Madison on the weekend of November 11–12, 2000. The meeting was organized by Patrick Speissegger.

The American Midwest is now one of the world's major centers for research in the branch of Mathematical Logic known as Model Theory. The three schools most prominently involved are the University of Illinois at Urbana–Champaign, the University of Illinois at Chicago, and the University of Notre Dame, with prominent researchers also at the University of Wisconsin–Madison and the Ohio State University. The meeting featured talks by: Matthias Aschenbrenner (University of Illinois, Urbana–Champaign) on "Ideal Membership in Polynomial Rings over the Integers", Martin Grohe

(University of Illinois, Chicago) on "Graph Isomorphism Testing through Definability", Jean–Philippe Rolin (Universite de Bourgogne, Dijon, France) on "Quasianalytic Denjoy–Carleman Classes", Shawn Hedman (University of Maryland, College Park) on "Finite Variable Axiomatizability and Local Modularity", Byunghan Kim (MIT, Boston) on "Stable local forking", Rahim Moosa (University of Illinois, Urbana–Champaign) on "Saturated Compact Complex Spaces", Andrei Morozov (Russian Academy of Sciences, Novosibirsk, and Novosibirsk State University) on "On groups of computable automorphisms of computable structures", Artur Piekosz (Cracow University of Technology) on "Semilinear and semialgebraic loci of $\mathcal{o}$ -minimal sets".

To promote attendance at the conference by graduate students, some travel grants for graduate students were made available. This year's meeting was supported by the Van Vleck funds through the Department of Mathematics at the University of Wisconsin–Madison.

Conference in Honor of Louis Solomon



The Mathematics Department hosted a 6 day meeting, "Combinatorics of Lie Type," June 16–22, 2000, in honor of the career, mathematics, retirement, and birthday of our colleague, Louis Solomon. Over 130 participants traveled from Argentina, Australia, Canada, England, Denmark, France, Germany, India, Israel, Italy, Japan, Korea, Mexico, Wales and from all over the United States to attend the conference, which was organized by Georgia Benkart, Peter Orlik, and Arun Ram. The lecture topics represented Lou's mathematical tastes: reflection groups, aperiodic order, arrangements of hyperplanes, fundamental groups of configuration spaces, the representation theory of finite groups of Lie type, Lie algebras of characteristic p , Iwahori-Hecke algebras, and quantum affine algebras, growth of group and Lie algebras, symmetric functions, Kazhdan-Lusztig polynomials, reductive monoids, coverings and moduli of curves, and invariants in modules for groups of Lie type.

Two innovations introduced at the meeting were the "preprint buffet" and the mentoring system. Participants brought their preprints for dis-

play on "buffet" tables in the ninth floor lounge and submitted files of them to our web page. Attendees browsed the preprints during the breaks. Yvonne Nagel helped set up a computer and printer nearby to enable participants to print out copies of preprints they desired. This was especially valuable to young mathematicians, as it provided them the opportunity to have their work noticed. A second innovation paired the young mathematicians attending the conference with a senior mathematician who served as an informal mentor.

The new Frank Lloyd Wright Convention Center on Lake Monona was the setting for the conference banquet held the last evening of the meeting. As one participant wrote later, "The mathematics, participants, atmosphere, and organization were all great. I was also very much moved by the reminiscences at the banquet. Their intensity and sincerity made the conference more than great, they made it memorable. Thank you for making me a part of this great event," (and thanks to Lou for providing the occasion).

Contributed by Georgia Benkart

Orbifold String Theory Workshop in Madison

A Workshop on Mathematical Aspects of Orbifold Theory will be held in Madison on May 4–8, 2001. The organizers are Alejandro Adem and Yongbin Ruan of our Department, and Jack Morava of Johns Hopkins University. Expected participants include P. Abramovich (Boston University), P. Aspinwall (Duke University), V. Batyrev (Tübingen University), W. Chen (SUNY-Stony Brook), H. Compean (CINVESTAV, Mexico), B. Greene (Columbia University), M. Gross (Warwick University), J. Harvey (University of Chicago), E. Ionel (UW-Madison), G. Mason (UC-Santa Cruz), I. Moerdijk (Utrecht University), M. Reid (Warwick University), B. Toen (University of Nice), C. Vafa (Harvard University), W. Wang (North Carolina State University), and E. Zaslow (Northwestern University).

Information about the meeting can be found at the URL: <http://www.math.wisc.edu/conklin/ost/>.

New Endowed Awards

David and Janet Kirkbride Scholarship Established

Through a very generous donation of David and Janet Kirkbride, the Mathematics Department has established the “Kirkbride Scholarship” of a semester’s tuition for an outstanding undergraduate student studying mathematics.

David Kirkbride graduated in 1963 with a B.S. degree with a major in Mathematics, after having already served a hitch in the Marine Corps. Dave relates how when he started at UW-Madison in 1955 as a 17 year old freshman out of high school, he was unprepared for the rigors of college life and not sufficiently motivated. So he dropped out after one year and joined the Corps. Returning to Madison in the spring of 1959, he started over, got married to Janet in 1961, had two children, and graduated – all in four years! Both Dave and Janet worked full time while Dave was in school; Janet is a registered nurse. One of the things he learned during these early years is that, if you bring nothing else to the table, commitment and hard work will go a long way.

After graduation Mr. Kirkbride went to work as a computer programmer – a new kind of job then – for Control Data, and his career followed a fairly traditional path, generally concentrating in the development and implementation of application software.

He says there were three overriding influences in his life without which he would not have enjoyed the growth he experienced and his success, namely, in no particular order, the Marine Corps, his wife Janet, and the University of Wisconsin. The donation of the Kirkbride’s was motivated by wanting to be of some assistance to a student who is likely to become, in one way or another, a leader in some future generation.

We are extremely grateful to David and Janet Kirkbride for their generosity in establishing this very important addition to our undergraduate program.

John Nohel Prize Established

Generous donations from Carl de Boer, Michael Crandall and Liselotte Karrer have funded the “John Nohel Prize in Mathematics” for a thesis in applied mathematics. John Nohel is a former member of our department and director of the Mathematics Research Center. He died in 1997 (see the obituary in last year’s newsletter). The prize is to honor his memory and his many important contributions to mathematics, the department, and the university.

Student and Instructional News

UNDERGRADUATE



From left: Man-Kin Yau, Geir Helleloid, Maureen Donahoe, Suzy Reichel, Adam Loeffler, Brian Yablon

At the Annual Student Awards Ceremony on May 10, 2000 in the 9th floor lounge, the following awards were presented to undergraduate students:

R. Creighton Buck Prize for Creativity in Mathematics (\$500): Nicholas Sterling

Mark H. Ingraham Scholarship (\$750): Matthew McGinley; Nicos Savva

Mark H. Ingraham Scholarship (\$500): Keng Ao; Brian Yablon; Adam Loeffler; Man-Kin Yau

Frank D. Cady Scholarship (\$500): Maureen Donahoe; Suzy Reichel

The first David & Janet Kirkbride Scholarship (see the article on the previous page) was also presented to Geir Helleloid at this ceremony (see the next feature).

Geir Helleloid is first recipient of the "Kirkbride Scholarship"



From left: J. Kirkbride, G. Helleloid, D. Kirkbride

Geir Helleloid, currently a third-year undergraduate student, was awarded last year the first David and Janet Kirkbride Scholarship, a semester's tuition worth about \$1800. Geir hails from Eau Claire and is double-majoring in mathematics and computer science. The award was presented at our Annual Student Awards Ceremony in May of 2000. Attending the ceremony were David and Janet Kirkbride, who treated Geir, the Chair, Alejandro Adem, and Undergraduate Advisor, Dan Shea, to dinner at one of Madison's best restaurants. Geir has also been awarded a two-year Goldwater Scholarship, based on a national competition; only about 300 one- or two-year awards are given each year. This past summer Geir participated in a Research Experience for Undergraduates at Cornell University and worked on

algebraic combinatorics. He has been an enthusiastic worker in our Math Lab tutorial program.

In November, 2000 Professor Dan Shea and Geir went to the annual Pi Mu Epsilon Conference at St. Norbert's College where Geir gave a wonderful presentation of the spring semester work done by the participants in the Spatial Systems Laboratory, directed by Professor James Propp. Geir reported on the progress made by the group on the so-called chip-firing problem. As Dan Shea has remarked, part of the pleasure of trips to student-research conferences is the opportunity to discuss mathematics and student life with our students.

Because of his special accomplishments and abilities, this semester Geir, although still an undergraduate, is a Teaching Assistant, our first undergraduate TA. According to Dan Shea, Geir is managing his student and TA responsibilities very well. Geir, who plans to get a PhD in mathematics, is already taking a first-year graduate course.

Matthew McGinley Selected for Budapest Semesters in Mathematics

Matthew McGinley participated in Budapest Semesters in Mathematics this past fall. Budapest Semesters in Mathematics is an overseas study program for math students from North American colleges and universities. Study-abroad programs abound in the humanities and social sciences, but this is one of only a few in mathematics. The pro-

gram was begun in the mid-1980s at a time when Hungary's Communist government was more liberal than that of its neighbors. Open to students in their junior and senior years, the Budapest program offers a broad selection of math courses – in a country with an exceptionally strong math tradition.

Talent Search Honors Day



From left: D. Kane, Y. Zhang, C. Moore, M. Isaacs

Once again the winners of the 1999-2000 Talent Search for Wisconsin High School Students were invited to an Honors Day Program in Madison. Twenty-five students from high school, middle school, an even elementary school this year, were invited to the program on May 9, 2000. The elementary school students were Matt and Nick Wage of Janet Berry Elementary School in Appleton, Wisconsin. They were accompanied by their parents one of whom is Michael Wage (PhD 1976, M. Rudin). Michael is now a practicing ophthalmologist.

The program consisted of a talk by Professor Clint Sprott of the Physics Department on *The New Science of Chaos* and one by Professor Richard Brualdi of the Mathematics Department on *Let Me Count The Ways: Putting painted balls in painted boxes, painted balls in unpainted boxes, unpainted balls in painted boxes, and unpainted balls in unpainted boxes*. There was also a tour of the Astronomy Department.

The prizes were given out by Professor I. Martin Isaacs at a luncheon in the 9th floor lounge. Included among the prize winners were three members of the Loh family from Madison, Po-Ling, Po-Ru, and Po-Shen. Each year, top Wisconsin performers in the Talent Search are eligible to compete for the Van Vleck Scholarship at the University of Wisconsin in Madison. The scholarship pays \$6,000 per year for four years. This year's winners were Daniel Kane, Chris Moore, and Yian Zhang, all from Madison West High School. All three of them finished in the top 25 in North America to qualify in the USA Mathematical Olympiad, as did previous Scholarship winners Howard Liu, Po-Ru Loh, and Po-Shen Loh. Po-Ru Loh, Po-Shen Loh, and Yian Zhang were all among the top twelve finishers, with Po-Ru Loh and Yian Zhang selected to compete with seven other students for the six positions on the team representing the USA in the International Mathematical Olympiad (Taejon, South Korea, July 19-20, 2000). Po-Ru Loh was selected as a team member and was a Silver Medalist for his team which placed third.

Here is a problem from this year's Talent Search.

Sixteen numbers are put into the boxes of a four-by-four array so as to form a magic square. This means that the four row sums, the four column sums, and the two diagonal sums are equal to the same number s . Show that s is also the sum of the four numbers in the corners of the array. (Do not assume that the sixteen numbers are the integers $1, 2, 3, \dots, 16$.)

Eight Undergraduate Math Majors Elected to Phi Beta Kappa

This past year eight undergraduate mathematics majors were inducted into the honorary society *Phi Beta Kappa*. They are: Daniel Drake, Jonathon Giffen, Geir Helleloid, Sarah Knoop,

Matthew McGinley, Clayton Nall, Nicholas Rasmussen, and Chad Sundell. Among the second majors of these talented students are computer science, physics, and political science.

Hilliard Gift to the WES Program

UW-Madison alumnus Wallace (Wally) J. Hilliard announced last April the establishment at the UW Foundation of *The Wallace J. Hilliard Fund* for the purpose of supporting undergraduate students in the College of Letters and Science, and expressed his desire "to support the Wisconsin Emerging Scholars Program". Each year the Foundation "will advise the chair of the Department of Mathematics of the total amount available for distribution in support of the Fund's objectives." The Fund was initiated with a gift of \$100,000. Wally now lives in Naples, Florida, but the gift comes from the Hilliard Family Foundation, which is run by Wally's son, Daniel Hilliard, who lives in Green Bay, Wisconsin. WES Coordinator Melinda Certain hopes to meet Daniel, and possibly Wally, some time next summer and update them on the WES program.

As described in last year's Newsletter, the main goal of WES is improved success in calculus for minorities and other groups of people which historically have been under-represented in advanced mathematics, science, and engineering. The program is open to all qualified students, and recruits minority and rural students.

The WES program was begun in the Fall of

1993 with 2 sections of Math 221. Most semesters there are 4 or 5 WES sections; for example, last Spring there were 2 sections of Math 222, and 1 each of Math 221 and Math 234. WES sections usually have GPAs well above the lecture average. Last spring the GPAs in the WES sections of Math 222 were 3.88 and 3.53, whereas the lecture GPAs were 2.88 and 2.43.

This past Fall the WES program introduced a section of Math 171 for the first time. Math 171 is a combination of pre-calculus and calculus and is followed the next semester by Math 217. Offering a WES section for these two courses is compatible with the WES emphasis on providing first-year students with a "friendly but challenging" math experience. Also in an experimental stage is a WES section of Math 211 followed by one for Math 213. This is a sequence designed primarily for business and finance majors. The fall WES section of Math 211 was a great success, earning a GPA of 3.60.

The Hilliard gift offers the WES program the chance to try new things, but also the means to keep the quality of the program high and assure the ongoing success of the program.

Contributed by Melinda Certain.



Recent Math 222 WES Program Participants

GRADUATE

Fifteen PhDs Awarded in 2000

Fifteen graduate students in the Department of Mathematics were awarded PhDs in the year 2000. With their thesis advisor, thesis title, and current address, they are:

BEHN, Antonio F. (Advisor, D. Passman)

"Group rings whose principal ideals are projective and groups with bounded representation degree", Visiting Assistant Professor, Texas A&M University, College Station TX 77843-3368.

BERGER, Kurt M. (Advisor, P. Milewski)

"Asymptotic and numerical analysis of free surface flows; lump solitons and wave turbulence", Zassenhaus Assistant Professor, Mathematics Department, Ohio State U., 231 W. 18th Ave, Columbus OH 43210.

CHOI, Jongho (Advisor, P. Milewski)

"Long nonlinear water waves over a periodic bottom topography", Lecturer, UW-Madison.

EGGE, Eric S. (Advisor, P. Terwilliger)

"A generalization of the Terwilliger algebra", Assistant Professor, Gettysburg College, 300 N. Washington St, Gettysburg PA 17325.

EGHBALNIA, Hamid (Advisor, A. Assadi)

"A complex valued over complete representation of information for visual search: A learning theoretic approach based on multiscale symmetry", Department of Biochemistry, NMRFAN, University of Wisconsin, Madison.

FELCYN, Pawel (Advisor, J. Robbin)

"Classifying spaces of moduli spaces of Morse shale flows", Faculty Assistant, UW-Madison.

FRANKLIN, Bradbury (Advisor, T. Kurtz)

"The limit of the normalized error in SDEs and SPDEs", Lecturer, Mathematics Department, U. Nebraska-Lincoln, 933 Oldfather Hall, Lincoln NE 68504.

HILDEBRAND, Jeffrey D. (Advisor, G. Benkart)

"Some results on down-up algebras over fields of prime characteristic", Visiting Assistant Professor, Department of Mathematics, Allegheny College, 520 N. Main St, Meadville PA 16335.

HOLTZ, Olga V. (Advisor, H. Schneider)

"Theorems and counterexamples on structured matrices", Associate Researcher, Computer Science Department, UW-Madison, 1210 W. Dayton St, Madison WI 53706-1685.

JEON, Woo (Advisor, J. M. Osborn)

"Generalized Cartan type algebras and their derivations", Assistant Professor, Department of Mathematics & Statistics, University of Minnesota-Duluth, 10 University Dr, Duluth MN 55812-2496.

KUNG, David T-S. (Advisor, A. Seeger)

"Local smoothing phenomena for operators failing the cinematic curvature condition", Assistant Professor, Mathematics Department, St. Mary's College of Maryland, St. Mary's City, MD 20686.

MAC NAIR, Simon G. (Advisor, T. Zariphopoulou)

"Valuation problems in incomplete markets", Post-Doc Fellow, University of British Columbia, #121-1984 Mathematics Rd, Vancouver BC, Canada V6T 1Z2.

MC KINZIE, Mark B. (Advisor, M. Bleicher)

"The Halley-Euler method Instructor", Department of Mathematics, Monroe Comm. College, 1000 E. Henrietta Rd, Rochester NY 14623.

WANG, Dejia (Advisor, S. Lempp)

"Saturation properties in the computably enumerable degrees", Faculty Assistant, UW-Madison Mathematics Dept.

ZIEBARTH, Jennifer (Advisor, A. Adem)

"On the mod p cohomology of the symplectic group $Sp^4(IF^p)$ and the general linear group $GL^3(IF^p)$ ", Assistant Professor, Mathematics Department, Earlham College, Richmond IN 47374-4095.

New Graduate Students in Fall 2000

Thirty-two new students began graduate studies in the Mathematics Department in the fall of 2000. Their names and undergraduate institution are listed below.

BENESH, Bret J.	University of Minnesota-Twin Cities
BOYLAN, Matthew G.	UW-Madison/Penn State University
CHAKRABARTI, Debraj	Indian Institute of Technology/Carnegie Mellon
CHARALAMBIDES, Marios	University of Cyprus
CHATTERJEE, Rohit	University of Texas at Austin
DWYER, Christopher	Notre Dame/University of Chicago
EL-GUINDY, Ahmad	Cairo University
ELLINGTON, Duane	Wake Forest University
ELY, Robert E.	University Northern Colorado
EVANS, Michael D.	Penn State University at Erie
GANESAN, Ashwin	Marquette University
GOOD, Clark E.	University of Texas at Austin
KIESERMAN, Noah M.	Dartmouth College
LADLEY, Michael S.	Eastern Michigan University
LEETE, Jennifer A.	College of Wooster
LI, Xiantao	Peking University/Georgia Tech
LU, Tianshi	New York University
MNEIMNEH, Ola A.	American University Beirut
MOFFITT, Derek	Washington University
MORTENSON, Eric T.	UW-Madison/University of Texas
NEUBAUER, Darren R.	University of Michigan-Dearborn
NEWTON, Benjamin W.	Carleton College
NGUYEN, Xuan Hien	University Libre de Bruxelles
ORES, Kathleen S.	University of Montana
OWEN, Robert H.	Princeton University
RAICHEV, Alexander	Cornell University
REIRIS, Martin	U. de la Republica, Uruguay
SHALLUE, Andrew R.	Gustavus Adolphus College
SUTTON, Taliesin	University of Michigan
SWISHER, Holly M.	University of Oregon
VASQUEZ, Elisa	University de los Andes
WIESNER, Emilie B.	Washington & Lee University

Derek Moffit received a two-year *Prize Fellowship* from the Graduate School. Xuan Hien Nguyen received a one-year *Belgian American Educational Fellowship*. Named *VIGRE Fellows* were: Matthew Boylan, Rohit Chatterjee, Michael Evans, Clark Good, Noah Kieserman, Derek Moffit,

and Emilie Wiesner. Four continuing graduate students were given VIGRE fellowships for the calendar year 2001. They are Matthew Bloss, Aaron Miller, Andy Raich, and Paul Taylor. They were selected as second year students making rapid progress towards the PhD.

Department Awards to Graduate Students



From left: M. Jenkins, J. Cotrina, A. Raich, T. Boester

Our Annual Student Awards Ceremony was held in May of 2000. At this ceremony the following graduate students were given **Excellence in Teaching Awards** which recognize at least three semesters of excellent teaching: **Timothy Boester, Joaquin Cotrina, M. Adrian Jenkins, and Andy Raich**. Receiving the *Sustained Excellence in Teaching & Service*, given for excellence in teaching over a longer period of time, and substantial and noteworthy departmental contributions was **David Kung**. This year's **Distinguished Service Award** went to **Jennifer Ziebarth**. Both David and Jennifer have been very active contributors to department

committees and, in particular, worked on compiling a very valuable *Mathematics Graduate Student Handbook*. Each of these students was presented with an award certificate and a \$75 gift certificate at the University Bookstore.

The Department has established a new **Excellence in Mathematical Research Award**. This award, to be given annually to graduate student(s) who have made significant and substantial contributions to research in pure or applied mathematics, as part of their thesis work towards a PhD at the UW-Madison Mathematics Department. This year's winners are **Bohui Chen** and **Olga Holtz**. The award of \$1500, presented at the end-of-semester party on December 15, 2000, was divided equally between the two winners.

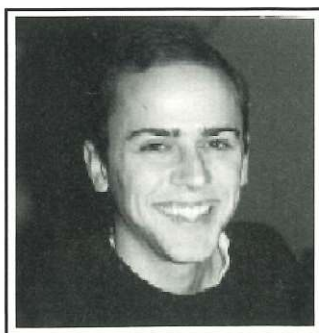
Olga Holtz wrote a thesis on matrix theory in 2000 under the direction of Professor Emeritus Hans Schneider. Her paper "Not all GKK τ -matrices are stable" (*Linear Algebra and its Applications*, 1999), based on work from her thesis, was one of two selected by the SIAM Group on Linear Algebra to receive their award for an outstanding paper in applicable linear algebra published during 1997-1999. The award, consisting of a calligraphed certificate and a plaque, was presented to Olga at the Seventh SIAM Conference on Applied Linear Algebra in Raleigh, North Carolina, October 23-26, 2000. In addition, Olga was invited to present a plenary lecture giving an overview of the prize paper.

Bohui Chen is working with Professor Yongbin Ruan and is expected to receive the PhD this year. According to Professor Ruan, Bohui has made a major advance to an outstanding conjecture (the Witten conjecture) in gauge theory.



From left: O. Holtz, B. Chen

Mark MacLean named L&S Teaching Fellow



Mark MacLean

Mark MacLean was chosen to be an **L&S Teaching Fellow** for 2000. This award, worth \$700, recognizes the high quality of Mark's performance as a teaching assistant in the Department of Mathematics and his many other contributions to the Department. Indirectly, this award to Mark is a compliment on the quality of teaching by our TAs. During Welcome Week at the beginning of the fall semester, Mark led a workshop for incoming TAs in all L&S departments. Mark is currently finishing up a thesis on algebraic combinatorics with Professor Paul Terwilliger.

Hirschfelder Fund Scholarships to Inwon Kim, Shantala Mukherjee, and Meta Voelker

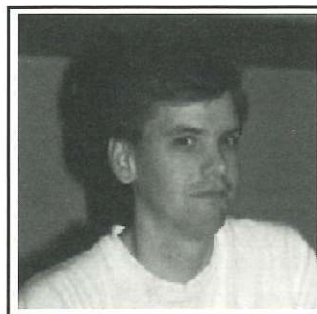


From left: M. Voelker, I. Kim,
S. Mukherjee

Graduate Students Inwon C. Kim, Shantal Mukherjee, and Meta Voelker were chosen to be this year's mathematical recipients of the **Hirschfelder Fund Scholarships**. These important scholarships, worth \$2,100 this year to each recipient, are made possible by the generous contribution of Betty Sokolhikoff Hirschfelder (Ph.D. 1930, M. Ingraham). Inwon Kim is working with Professor Souganidis on a thesis on partial differential equations. Shantala Mukherjee's thesis work is on Lie Algebras and is being directed by Professor Georgia Benkart. Meta Voelker is a MaCE student of Professor William Ferris in the Computer Science Department working on optimization problems.

Excellence in Teaching Award to Eric Egge

Eric Egge was selected this past year for a **Graduate School Excellence in Teaching Award** in recognition of his outstanding teaching. This campus-wide award is given to five to eight TAs each year. The award, for \$1000, was presented at a ceremony at the Pyle Center on May 1, 2000 which was followed by a luncheon. This is the eighth consecutive year that a Mathematics Department TA has won one of these awards. Eric's selection is more evidence of the excellent teaching of Mathematics TAs, and the campus's recognition of them. Eric is now an Assistant Professor at Gettysburg College.



Eric Egge

French-Felten Award to Scott Trigg



From left: S. Trigg, Dean Certain,
Alejandro Adem

A second-year math graduate student, Scott Trigg, was chosen as one of recipients of the **2000 French-Felten Awards for Inspirational Teaching** as a TA in the College of Letters and Sciences. The purpose of this award is to recognize and reward exceptional teachers at an early stage in their careers. Five or six awards are given each year to TAs who have completed their first year of teaching. Scott inspired his students to develop strategies that they would need, not only on exams, but in solving mathematical problems that they might see in future classes and scientific work. Scott received his award, a certificate and a check for \$400, at a ceremonial dinner on October 19, 2000 at the University Club, Scott was accompanied by Professor Alejandro Adem.

Other News

I. Martin Isaacs is the recipient of MAA's *Edith May Sliffe Award* for distinguished high school mathematics teaching. These awards are a result of a bequest made to the MAA by Sliffe, a retired high school mathematics teacher at Emeryville, California. How does a non-high school teacher like Marty receive such an award? Nominations were solicited from the three students of each of the 60 highest scoring teams on the American Mathematics Competition, a program of the MAA. The students were asked to recommend a teacher or mentor for a National Teaching Award. The students from West High School Team in Madison (Daniel Kane, Chris Moore, and Yian Zhang) nominated Marty Isaacs for his mentoring and leadership role in the Wisconsin Mathematics, Engineering, and Science Talent Search Program. The award includes a cash prize of \$350 and a free one-year membership in the MAA. A presentation ceremony will be held at West High School.

James Propp gave an invited talk entitled "Domino Tilings: Enumeration, Random Generation, and Asymptotics" at the 12th International Conference on Formal Power Series and Algebraic Combinatorics in Moscow in June, 2000. Also James Propp and David Wilson have been given the INFORMS College on Simulation's Outstanding Simulation Publication Award. The aim of this annual award is to recognize an outstanding piece of work in the field of simulation that has been published in the previous four years. The \$500 award was given in recognition of the two articles (1) "Exact Sampling with Coupled Markov Chains and Applications to Statistical Mechanics", *Random Structures and Algorithm*, vol. 9 (1996), pages 223–252, and (ii) "Coupling from the past: a user's guide", *Microsurveys in Discrete Probability*, vol. 41 of DIMACS Series in Discrete Mathematics and Theoretical Computer Science, edited by D. Aldous and J. Propp, pages 181–192, American Mathematical Society, 1998.

Alex Nagel has been elected to a 3-year term, beginning February 1, 2001, as Member-at-Large of the Council of the American Mathematical Society.

Richard Askey gave lectures this past year at a meeting on symmetry in mathematical physics in Dubna, Russia and at a meeting in Dalian, China in honor of L. C. Hsu on his 80th birthday. He also gave the Taft Lectures at the University of Cincinnati. Of special interest, Dick also spoke on the mathematical knowledge teachers need at a hearing of the National Goals Education Panel (NGEP) in Burlington, Vermont. NGEP is a group established by state Governors and the business community. Former Governor Tommy Thompson of Wisconsin was the co-chair of NGEP. Professor Askey also was selected by the Wisconsin chapter of the honor society Phi Kappa Phi to be their annual speaker.

Fred Brauer, recently retired from our Department (but not from mathematics - read on), has an Honorary Appointment at the University of British Columbia in Vancouver where he now resides. Among the faculty there are three Wisconsin PhDs: Cindy Greenwood (PhD 1963, J. Chover), John Fournier (PhD 1967, F. Forelli and S. Wainger), and Dale Rolfen (PhD 1967, J. Martin). Fred took part in a workshop on mathematical approaches to emerging and reemerging diseases at the IMA in May 1999, and the proceedings of this workshop, which will appear soon are being dedicated to Ken Cooke and Fred. Fred also gave talks in the Pacific Institute of Mathematical Sciences' thematic programme in mathematical biology (consisting of five workshops in Vancouver) in 1999, a session on mathematical models via differential equations run by the MAA at the joint meetings in Washington in January 2000, and a minisymposium on mathematical epidemiology at the SIAM annual meeting in Puerto Rico in July 2000. Fred and his wife Esther look forward to visits to Vancouver of their many Madison friends. His book "Mathematical Models in Population Biology and Epidemiology" written with Carlos Castillo-Chavez (PhD 1984, F. Brauer) will be published early this year by Springer, in their series of texts in applied mathematics. The origins of this book are in some handwritten notes for our Math 415 in 1982, revised and augmented many times since then.

Hans Schneider was one of the organizers of an Oberwolfach meeting in November, 2000 on *Nichtnegative Matrizen, M-Matrizen und deren Verallgemeinerungen*. The other organizers were frequent Madison visitors Daniel Herszkowitz (Haifa) and Volker Mehrmann (Berlin).

Louis Rall gave an invited plenary lecture on "Algorithmic Differencing" at Scan2000, GAMM-IMACS International Symposium on Scientific Computer, Computer Arithmetic, and Validated Numerics, in Karlsruhe, Germany in September, 2000.

Carl de Boor has been elected a foreign member of the Polish Academy of Sciences.

Steffen Lempp was one of the organizers of the Oberwolfach meeting in January, 2001 on *Computability Theory*.

Daniel Rider was named Outstanding Faculty Mentor for 1999-2000. Dan was cited for his many hours of volunteer time and his success as a mentor. The award was presented at the Mentor Program Spring Banquet in May, 2000.

Ed Fadell and **Sufian Hussein** are authors of *Geometry and Topology of Configuration Spaces* published by Springer (in the Springer Monographs in Mathematics series).

Kay Strangman has been promoted from Lecturer to Senior Lecturer.

Amos Ron has been awarded an NSF/ITR grant to use computational harmonic analysis to study internet dynamics. NSF held last spring a competition in the area of Information Technology Research. 980 proposals were submitted, and 63 awards were made. UW-Madison was awarded a \$2.6 million grant in order to develop new mathematical tools for studying the dynamics of the Internet traffic. The project involves mathematicians, statisticians and computer scientists from UW-Madison, AT&T, Stanford, Princeton, Dartmouth College and Saarbrücken (Germany).

Tom Kurtz became editor of the *Annals of Probability Theory* on April 1, 2000. Peter Ney held this position from 1988 through 1990.

Markus Banagl, a second year Van Vleck Visiting Assistant Professor, has been awarded a two-year NSF grant for the project "Self-dual sheaves on singular spaces."

Lawrence Levy spent the academic year 1999-2000, his first emeritus year, traveling, primarily to do — face to face — the research that he normally does with various collaborators via email. This took him to US destinations: MSRI (Berkeley), UC-Santa Barbara, and Florida Atlantic University; and basic foreign destination Leeds, England (3 months), with brief side-trips to Bristol and Exeter (England), Padua and Florence (Italy), and Murcia and Barcelona (Spain).

Mary Gallagher and **Diane Rivard** of the Math Tutorial Program have been promoted from Assistant Faculty Associate to Associate Faculty Associate.

November 3, 2000 was the last working day in Van Vleck Hall for the Chair's Secretary, **Deanna Zarecki**. Deanna began in the Mathematics Department with a limited term appointment (LTE) in 1990. That same year she became the Timetable/Registration Representative. In 1994 she was appointed the Chair's Secretary and worked so well in that position for more than six years. Richard Brualdi, who was the Chair for most of Deanna's time in that position, valued her very much as a loyal and extremely knowledgeable and competent member of the support staff. Her expertise with computers was very important in the Department. She was responsible for keeping hiring records, arranging textbooks, preparing tenure and award nominations, among many other things. Many of you know Deanna from this newsletter, of which she was the Technical Editor for four years. She worked with the Chair in designing the new look for our Newsletter in 1995. She worked tirelessly on the PhD Centennial in 1997, for which she was responsible for so much of the organization. She collaborated with the Chair in putting together the Centennial Red Book, which remains a valuable source of information (some of which is now on our web page).

Deanna has taken up a new job with the Division of Workforce Development, Unemployment Benefits, which will allow her to spend more time

with her family. A *good luck gift* was presented to Deanna, along with a cake to share with faculty and staff, on her last day at work.

In September, 2000, UW-Madison hosted a two-week **post-doctoral marathon** that

was sponsored by the Wavelet IDR Center (waveletidr.org). More than 10 post-doctoral fellows from Caltech, Stanford, Princeton and South Carolina met in Madison with senior and junior researchers in the area of Multiresolutions Analysis (wavelet, subdivision techniques, and the like).

Alumni News and Comments

<http://math.wisc.edu/directories/alumni.html>

Colin Adams (PhD 1983, J. Cannon) and the Mathematics Department at Williams College, which he currently chairs, were featured in the Education column of the June 5, 2000 issue of *Newsweek*. In May 2000, 8% of the graduating class (42 students) at Williams received degrees in mathematics; nationally the percentage is between 1 and 2 %. According to *Newsweek*, Williams success in getting students to major in mathematics is "fun and imaginative teaching."

Carlos Castillo-Chavez (PhD 1984, F. Brauer) is coauthor with Fred Brauer of the book "Mathematical Models in Population Biology and Epidemiology" which is to be published early this year by Springer, in their series of texts in applied mathematics.

Charlotte Chell (PhD 1969, J. B. Rosser) of Carthage College was selected by the Wisconsin Section of the MAA for their 2000 Distinguished Teaching Award.

David A. Lamb (PhD 1992, K. Kunen) (lambd@tacom.army.mil) has been working for the last six years for the U.S. Army at a facility in Warren, Michigan.

Chanyoung Lee (PhD 1992, G. Benkart) has been promoted to Associate Professor at the University of Wyoming.

Bryan L. Shader (PhD 1990, R. Brualdi) has been promoted to (full) Professor at the University of Wyoming.

Send your news for next year's newsletter to the editor: brualdi@math.wisc.edu

Death Notices

Jon Barwise Professor of Mathematics at Indiana University, died on March 5, 2000. He was a member of our Department from 1970 to 1984 and had four PhD students.

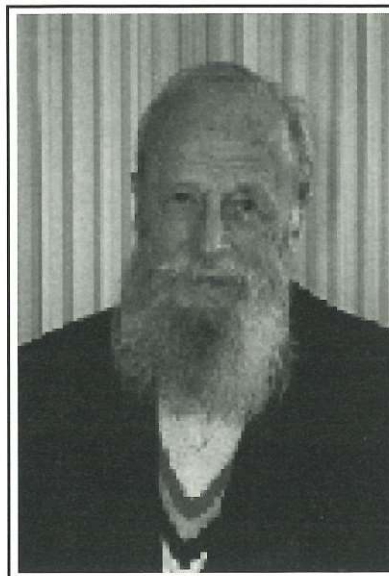
Kennan Smith Professor Emeritus of Mathematics at Oregon State University died on November 18, 2000. He was a member of our Department from 1958 to 1971 and had six PhD students.

Rose Blachman Aronin died on May 26, 2000. Ms. Aronin was an administrative assistant in our Department in the 1960's. In 1968 she moved to Los Angeles where she then worked as an administrative assistant in the UCLA Department of Mathematics.

Obituary

Laurence Chisholm Young
(July 14, 1905 – December 24, 2000)

Professor Emeritus Laurence Chisholm Young died at home in Madison on December 24, 2000 at the age of 95. Laurie, as he was affectionally called, was born in Gottingen, Germany and was the son of British mathematicians, William Henry Young and Grace Chisholm Young. His mother was one of the first women to receive a doctorate in mathematics and one of the first women to receive a doctorate in any field in Europe. Laurie was raised mostly in Lausanne, Switzerland and attended Trinity College of Cambridge University in England. He received an M.A. in 1931 and was a Fellow of Trinity College from 1931 to 1935. He received a Sc.D. in 1938. Professor Young was Professor and Head of the Department of Mathematics at the University of Cape Town in South Africa from 1938 until 1948.



Laurie joined the faculty of UW-Madison in 1948 as Professor of Mathematics. He had a distinguished career in Madison and was given the title "Distinguished Research Professor" in 1968. He was Chair of the Department from 1962 to 1964. He retired from the faculty in 1976, when there was still a mandatory retirement age of 70. In 1984 Professor Young received an honorary degree from the Université de Paris-Dauphine. In 1995 a mini-conference was held in Madison to honor Laurie on his 90th birthday. One of the memorable highlights of this conference was a potluck-dinner in the 9th floor lounge of Van Vleck Hall in which everyone was treated to the ethnically diverse, culinary expertise of the faculty and their spouses.

Laurie Young was internationally recognized for his contributions to measure theory, calculus of variations, control theory, and potential theory. His work on geometric measure theory led to what are now called Young measures associated with a weakly convergent sequence of functions. Young measures have found many applications, including to the theory of materials with nonconvex constitutive relations. He is the author of the book "Lectures on the Calculus of Variations and Optimal Control Theory, published in 1969.

In 1963 Professor Young began the Wisconsin Mathematical Talent Search (now called the Wisconsin Mathematics, Engineering, and Science Talent Search). In this program, which continues today, five mathematical problem sets are sent each year to Wisconsin high schools and middle schools. These mathematical problems do not require much background to solve but they do require ingenuity and insight. In this way it is hoped to identify and nurture mathematical talent among the students in the state and to promote interest in mathematics.

Laurie was a champion chess player and won the Heart of America competition in 1955. In the 1950's he acted in plays on Wisconsin Public Television. A lover of languages, he spoke fluent French, German, and Italian. He enjoyed translating ancient Greek poetry. In his early years at Wisconsin, Laurie would skate across Lake Mendota from his home to campus.

Laurie was preceded in death in 1995 by his wife, Joan Elizabeth Young, and by their son, David, in 1964. He is survived by five children, Frank Young, Elizabeth Rosalind Young, Sylvia Young Wiegand (and spouse Roger Wiegand), Angela Young, and Beatrice Young Nearey (and spouse Terry Nearey).

A Memorial Website for L.C. Young is maintained at the URL:
<http://members.home.net/snearey/lcyoung/index.html>.

Department of Mathematics Annual Fund Drive

Please accept my contribution in the amount of \$ _____ which is designated for:

UW Foundation Accounts (Department of Mathematics)

- ☐ Department of Mathematics General Fund – *serves as the department's "general" account.*
- ☐ R. Creighton Buck Prize Fund – *awards an undergraduate prize for creativity in mathematics.*
- ☐ Wallace J. Hilliard Fund – *provides support for the Wisconsin Emergy Scholars Program (WES).*
- ☐ Elizabeth Hirschfelder Fund – *for Graduate Women in Mathematics, Chemistry & Physics.*
- ☐ Mark Ingraham Math Scholarship Fund – *provides a scholarship for a mathematics major above freshman standing.*
- ☐ David and Janet Kirkbride Scholarship in Mathematics – *provides a semester's tuition for an outstanding undergraduate student studying mathematics.*
- ☐ John Nohel Prize in Mathematics – *a prize for the best PhD thesis in applied mathematics.*
- ☐ Wolfgang Wasow Memorial Lecture Fund – *supports a lecture by an eminent mathematician in a distinguished lecture series.*
- ☐ Van Vleck Math Talent Search – *provides funds for our annual math talent competition.*

For donations to the above funds, please make checks payable to UW Foundation & send to:

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c/o David Simon
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Madison, WI 53708-8860

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