VAN VLECK NOTES:
THE
NEWSLETTER
of the
MATHEMATICS DEPARTMENT
of the
UNIVERSITY OF WISCONSIN
MADISON

Number 5, FALL 1992

Having been on leave this past academic year at the IMA in Minneapolis, I felt like an investigative reporter trying to track down the news from this past year. What really happened in Van Vleck Hall last year? Where did they hide all those dark secrets from my reporter's notebook?

I went down to the deep recesses of Van Vleck expecting that they were stashed in the storage room off B-239. But I had no luck there. One evening after the Mathematics Library had closed I climbed to its highest reaches but found nothing. I rode the elevators up and down Van Vleck thinking a hidden room would open up and suddenly I would find them. But again no luck! As a last resort, one moonlit night I took some graduate students to a dark corner in the Rathskeller of Memorial Union feeling sure they would spill the beans. But not even the answers to the algebra qualifying exam could tempt them into telling all. What was I to do? Were there no hidden secrets? Surely there must be some! Where could they be? Exasparated I went back to my office on the fifth floor and turned on my computer. It was there that I found them, right under my nose! They never thought I would suspect. In a hidden file called .secrets I found them.

My heart beat wildly while I prepared to read the file. But then it happened. My hard disk started rotating rapidly, the file scrolled uncontrollably on the screen, a deafening noise rang out from the machine. I had no choice. I turned off the machine and it quieted down. After a few minutes I turned the machine on again, and then I saw them. Slowly the words appeared on the screen *WELCOME BACK!*. That was it. A sense of relief came over me. There were no dark secrets in Van Vleck. Van Vleck Hall is as I always remembered it, and as I hope the way you remember it, an exciting, friendly and mathematically stimulating place, a place that remains in one's memory for those who must move on elsewhere. But if you have to leave it, we are always delighted to see you again and to welcome you back for a visit, or to welcome your students to our graduate program and begin the cycle all over again.

And now the news . . .

1 The Second Floor

Those of you who might pop into Van Vleck Hall after not having been back for a while will probably not notice much in the way of changes. The second floor is as bustling as ever, especially between classes when everyone is checking their mailboxes, carrying on a conversation with a colleague or student, asking Ann Caruso for a yellow pad, or reaching for the elevator button (on their way to the ninth floor conference room for coffee). *Alex Nagel* is now in his second year as Chair of the Mathematics Department and occupies the office of the Chair. Steve Bauman although no longer T.A. supervisor continues to occupy his corner office on the second floor. The current T.A. supervisor is Dan Rider who, not wanting to give up his view of Lake Mendota and the Capitol building, continues to occupy his eighth floor office. The other people holding administrative type positions within the department are Associate Chair: *Dietrich Uhlenbrock*, Graduate Coordinator: *Frank Forelli*, Placement and Precalculus Supervisor: *Phil Miles*, and Undergraduate Coordinator: *Michael Voichick*.

2 New Faculty

While we did not hire any new faculty this past year, there are a number of people here this fall for the first time who were hired the previous year.

Panagiotis Souganidis, formerly of Brown University (and a 1983 Wisconsin Ph.D.) and *Thaleia Zariphopoulou-Souganidis*, formerly of Worcester Polytechnic Institute, have now joined us, and their presence is already being felt in the mathematical life of Van Vleck. We are also happy to have *Yong-Geun Oh* with us, now that he has completed his year's leave at the Institute for Advanced Study.

Also joining us for the first time this year are Van Vleck Assistant Professors *Arun Ram*, who was at the Massachusetts Institute of Technology last year, and *Tom Ilmanen*, who is fresh from a year's stay at the Institute for Advanced Study.

Some information about all of these new colleagues of ours can be found in the last newsletter.

This year we have three visiting teaching faculty. *Gloria Mari-Beffa* is here for the full academic year and is teaching two courses in the fall and one in the spring. Gloria received a Ph.D in geometry from the University of Minnesota in 1991 and was most recently a Visiting Assistant Professor at the University of California in Davis. *Claudia Neuhauser* is in Madison for the fall semester and is teaching one course. Claudia received her Ph.D. from Cornell University in 1990 and currently is Assistant Professor of Mathematics at the University of Southern California. *Michael Tsatsomeros* is teaching one course during the fall semester. Michael's Ph.D. is from the University of Connecticut in 1990, and most recently he held a postdoctoral fellowship at the University of Victoria in Canada.

We also have a distinguished group of honorary fellows this year, people who are on sabbatical from their home institutions and are spending all or part of it with us. They are: *Laura Chihara* (9/1/92-11/1/92) from St. Olaf College in Northfield, Minnesota (Laura was a Ph.D. student of Dennis Stanton of the University of Minnesota, and Dennis was a Wisconsin Ph.D. student of Richard Askey), *Joachim Hilgert* (1992-93 academic year) from the University of Erlangen in Germany, *Lee Klingler* (UW Ph.D., 1984, L. Levy) (1992-93 academic year) from Florida Atlantic University; *Fernando Montaner* (9/92-4/93) from the University of Zarazoga in Spain (Fernando is accompanied by a graduate student Carlos Gomez from the University of Zarazoga); *Declan Quinn* (UW Ph.D., 1985, D. Passman) (6/1/92=1/31/93) from Syracuse University; *Edgar Lee Stout* (UW Ph.D. 1964, W. Rudin) (9/1/92-12/1/92) from the University of Washington; *Sarah Ziesler* (1/92/1/93) from the University of Sussex in England.

All of these people will help make the current

academic year among our most stimulating!

3 Promotions

Three Assistant Professors were promoted to Associate Professor this past year. They are *Alejandro Adem*, *Steffen Lempp* and *Athanasios Tzavaras*. Alejandro works in topology, Steffen in logic and Athanasios in applied mathematics. We are pleased to have them as permanent members of our department.

4 Sabbaticals

Several people received sabbaticals this year and some are using the opportunity to travel and do collaborative work elsewhere. *Carl de Boor* will spend the entire academic year at the Sonderforschungsbereich on 'Diskrete Strukturen in der Mathematik' at the University of Bielfeld in Germany. *Seymour Parter* will spend the spring semester of 1992-93 at the Courant Institute for Mathematical Sciences. *Louis Rall* plans to spend his spring semester sabbatical partly in Madison and partly at Marquette University while *Robert Turner* plans to spend his sabbatical in Madison. Also on leave this academic year at Stanford University is *Athanasios Tzavaras*.

5 Obituary

We are sad to report the death of Emeritus Professor *Richard H. Bruck* in Madison on December 18, 1991 just eight days short of his 78th birthday. He is survived by his wife Helen Bruck. Dick, as he was known to his colleagues, came to the University of Wisconsin in 1942. He retired from the faculty in 1985, holding a Distinguished Research Professorship from 1967. On the occassion of his retirement a conference *Groups and Geometry*, attended by over 70 mathematicians from around the world, was held in Madison on July 20-24, 1985. He is the author of the book *A survey of binary systems* and the author or coauthor of over 45 mathematical papers. He supervised the theses of 29 graduate students. A memorial service 'A celebration of the life of Richard H. Bruck' was held at the First Unitarian Society on January 19, 1992.

When he was a young schoolboy, Dick was very interested in poetry and wrote several poems himself. One of his schoolteachers in Pembroke, Ontario was Grace West (a sister of Rebecca West who was H.G. Wells' wife and who was also a sister of the writer Jessamyn West). Grace West had a career in literature in mind for the young schoolboy, but he chose mathematics. Nevertheless, he maintained a Christmastime correspondence with her until very recently. He also maintained an interest in poetry, and started collecting his poems in the form of a book in 1935. One of the poems in the book is called *Mathematics* and is reproduced below from Dick's handwriting.

Mathematics

The thought is finished, and the
moment's come
To seize an instant's immortality.
Here have been none but me. I know
And thrill upon the knowing, spare not
Oceans of adulation, humble myself
in admiration
Of me, of my bold concepts. Merry
be the night!
For the morrow
Will be a cold dull thing to a cold
dull man
Grim-gripped to the half-repudiated
truth
That work's ahead, that the dead
mind
Which cannot hold the light can
still await it.

Madison, Wisconsin
Feb. 27, 1949

6 Honorary Degree to Paul Rabinowitz

Paul Rabinowitz, Julius Schauder Professor of Mathematics here at the UW, was awarded an honorary degree from the University of Paris on June 10, 1992. The ceremony was held in the 'Grande Salon de la Chancellerie en Sorbonne.' Of the eight honorary degrees awarded, Paul's was the only one given for Mathematics. In presenting Paul for his honorary degree, Professor Henri Berestycki, Chair of the Mathematics Department of the Université de Paris VI, described Paul and his work in this way [editor's translation]: In distinguishing Paul Rabinowitz today, our University honors a 'savant' who has invented some of the most profound methods for the analysis of nonlinear systems and who has changed our way of thinking of these problems. Some of his most important results and many of his methods are now classical and certain of them have become veritable specialities, practiced throughout the world. Among his numerous theorems, I would like to cite the one called *The Global Bifurcation Theorem*, also known as the *Alternative of Rabinowitz*. The theory of bifurcation concerns phenomena of qualitative changes, of ruptures or structural changes, when a parameter attains and passes a critical value. It is, without a doubt, the archetype of nonlinear phenomena, which is one of the grand themes of basic science today. [He then goes on to describe such phenomena in nature beginning with Euler's elasticity and then explains the bifurcation theorem in its abstract form.] Everyone knows the linear equation $AX = LX$ where A is a square matrix admits a non trivial solution only if L is one of the eigenvalues of the matrix A. In this case there is a 'line' of solutions, the corresponding eigenspace. The Theorem of Rabinowitz is the non linear version of this fact. Naturally, when the equations are nonlinear, it is much more complicated, there are now curves instead of lines depending on a parameter. The Theorem establishes that for an eigenvalue of odd multiplicity of the linearized problem, there is always a branch of solutions which either is not bounded or comes back to another point of bifurcation. ... It is one of the rare general results in nonlinear analysis. [After evoking another major theme in the work of Paul Rabinowitz, that of variational methods, Professor Berestycki goes on to say.] Pursuing the variational approach, Paul Rabinowitz has produced, since the beginning of the 1980's, a veritable revolution in the study of Hamilton systems and their periodic orbits. [In describing the geometrical intuition that has gone into Paul's work, he says.] I think that the intuition for his work perhaps comes from the numerous mountain hikes that he loves and for which he without pity persuades the imprudent visitor. His exploits are well known. I remember during a trip to Japan, when I asked my host the name of a place which I saw in the distance, he replied that it was the mountain that Rabinowitz had climbed. [He then describes Paul's influence in France and in particular Paris VI where he has been a frequent visitor, and concludes with the following.] We are all, I believe, very happy today to see distinguished by our University one of the great masters of nonlinear analysis.

And we here at the University of Wisconsin are very proud of Paul!

7 NYI to Alejandro Adem

Alejandro Adem was one of 202 scientists and engineers from throughout the country selected to receive a 1992 National Science Foundation New Young Investigator Award (NYI). These awards, which replace the Presidential Young Investigator Awards that operated from 1984 to 1991, are intended to highlight and enhance the research and teaching careers of outstanding beginning faculty. NSF provides up to $62,500 annually to each awardee for five years. There were over 1600 nominations for these awards with the selection process focusing on the accomplishments of the candidates and their potential to become academic leaders both in teaching and

research.

Of course, we knew that Alejandro was an outstanding young mathematician when we hired him three years ago.

Just as this newsletter was going to press, Alejandro and his wife *Melania Alvarez Adem* were given an 'award' of another sort, an 8 lb., 2 oz. baby daughter (born on September 22, 1992).

8 Teaching Award to Steve Bauman

Steve Bauman has been selected as one of the two winners of the UW-System-wide Wisconsin Power & Light Underkofler Distinguished Teaching Award. The award was presented by Chancellor Donna Shalala in a ceremony in May of this year. One of the accomplishments that Steve was cited for in the award was his development of an orientation program for foreign teaching assistants. This program, inaugurated in the summer of 1987, was chosen by UW-Madison as its non-credit course nominee for the North American Association of Summer Sessions Creative and Innovative Award in 1988. Steve, who was for a long time the T.A. supervisor in the Mathematics Department, is well known for his teaching skills and his genuine concern for the welfare of students. He spent the fall of 1990 at Spelman College in Atlanta teaching linear and abstract algebra courses, and advising students about graduate school. According to Spelman Mathematics Department Chair, Sylvia Bozeman, Steve made quite an impression with students at Spelman. Congratulations to Steve for a well deserved award!

9 First Walter Rudin- McGraw Hill Award

The first recipient of the Walter Rudin-McGraw Hill Award in Complex Analysis is *Carl Mueller*. This award was established by the McGraw Hill Publishing Company in honor of Walter Rudin on the occasion of his retirement in 1991. The award is intended to recognize outstanding work by a graduate student in the field of complex analysis at the University of Wisconsin-Madison, and consists of a monetary prize of $500 and copies of books by Walter Rudin published by McGraw Hill. The prize will be awarded to Carl, who is a Ph. D. student of Jean-Pierre Rosay, at a reception in the ninth floor conference room of Van Vleck Hall following the Analysis seminar.

Congratulations for an outstanding job!

10 Recuperating

Anatole Beck, on his way back from his sabbatical year at the London School of Economics, suffered a heart attack during a stopover in New York City. He was in hospital for one week and rested for three weeks in New York before undergoing quadruple bypass surgery. We are happy to report that he is recuperating well in New York and that his prognosis is very good. He is due back in Madison on October 9 (we are told that he has a nonrefundable ticket!). He will resume teaching this semester on a part time basis, teaching the Undergraduate Problem Seminar (Math 491) and supervising the Undergraduate Math Club.

11 Graduate Student News

Seven of our Teaching Assistants were recognized by the department last year for outstanding teaching and were given Departmental Teaching Awards of $75 each. They are *George Alexander*, *Shaun Cooper*, *Robert Leduc*, *Chanyoung Lee*, *Jim Marshall*, *Jennifer Szydlik* and *Steve Szydlik*. Two of these pulled off 'hat tricks.' *Robert Leduc* was presented with the department's Distinguished Service Award of $75 for his work in coordinating visits by prospective new graduate students. *Jennifer Szydlik* was named a College of Letters and Sciences Teaching Fellow for 1992. This award is in the amount of $500.

We have 48 new graduate students this year of whom 17 are Teaching Assistants and 6 are Fellows. The new teaching assistants with their previous institutions are: *Daniel Bettendorf* (Washington and Lee University), *Patrick Burghardt* (Carnegie-Mellon University), *John Caughman* (Purdue University), *Jeffrey Hildebrand* (Swarthmore College), *Jonathan Kochavi* (University of Chicago), *Christopher Kribs* (Georgia Institute of Technology), *Brian Kruse* (St. Olaf College), *Xinsong Li* (East China Normal University and the University of Illinois at Chicago), *Mark Logan* (Carleton College), *Darko Milinkovic* (University of Belgrade), *David Musicant* (Michigan State University), *Darren Parker* (Pomona College), *Vadim Ponomarenko* (University of Michigan), *Kristopher Presler* (University of North Dakota), *Kan Qiu* (Tsinghua University), *Kristine Stacy* (Iowa State University), and *Andres Villaveces* (Univ. de los Andes). Also three continuing students *Nicolas Eisen*, *Daniel Juan-Pineda* and *Hsien-fan Kung* were given teaching assistantships. Awarded Graduate School Fellowships for 1992-92 are *Evan Griffiths* (Victoria University, New Zealand) and *Cheryl Grood* (University of Michigan). *Kevin Strobel*, a continuing student, also received a Graduate School Fellowship. National Science Foundation Fellows are *Joseph Cook* (Baldwin-Wallace) and *Eugene Houseman* (University of California at Berkeley). Current students who also received National Science Foundation Fellowships are *Brian Curtin* and *David Perry*. Also National Physical Sciences Consortium Fellowships have been awarded to *Dolores Danneker* (Pennsylvania State University) and to continuing student *Kathleen Mc Carthy*. A Hertz Foundation Fellowship was received by *Craig Jensen* (Utah State University). Continuing student *Michael Neergaard* has been awarded an Office of Naval Research Fellowship.

Eight continuing graduate students also were named Department of Education Fellows this year. The recipients are *Stephanie Edwards*, *Tom Halverson*, *Evelyn Torres-Gallardo*, *Zoran Spasojevic*, *Scott Lanning*, *Michael Jahn*, *Joseph Dolinak* and *Robert Leduc*.

Warm congratulations to all, good luck to our new students (we're happy you chose Wisconsin!), and best wishes to our continuing students for finishing their theses! There was a departmental party on August 28, 1992 to welcome all new graduate students. All faculty, graduate students and staff were invited creating an everywhere dense set in the 9th floor conference room.

12 New Ph.D.'s

Twenty graduate students received the Ph.D. degree this past year. Their names, advisors, thesis title and new affiliation or location, if known, are:

December 1991:

Jeongwhan Choi (M. Shen), Contribution to the theory of capillary-gravity internal waves in a two layer fluid over an obstruction, Korea.

Ahmad Muchlis (H. Schneider), Some combinatorial properties of polytopes of symmetric, nonnegative matrices with prescribed line-sums, Institut Teknologi Bandung (Indonesia).

Siu Pang Yung (R.E.L. Turner), Results on infinite dimensional Hamilton-Jacobi equations, University of Hong Kong.

May 1992:

Keith Brandt (H. Terao), A combinatorial study of the module of derivations of an arrangement of hyperplanes, University of Kansas.

Paul Fishback (F. Forelli), Holomorphic functions that map continuous nonanalytic functions into the disc algebra, and nicely placed subsets of the real line, College of Wooster (Ohio).

Renling Jen (H.J. Keisler), Independence relative to nonstandard analysis, University of California at Berkeley.

David Lamb (K. Kunen), Pseudocompact and densely compact spaces in products.

Zorana Lazarevic (M. Rudin), Some shrinking spaces, Univ. de Mexico Autonomade.

Peter Turbek (H. Gunji), On compact Riemann surfaces with a maximal number of automorphisms, Purdue University-Calumet.

August 1992:

William Haloupek (A. Beck), Differentiation and analytic continuation of functions defined on arbitrary sets in the plane, University of Wisconsin-Stout in Menominee.

Deborah Kaddah (S. Lempp), Uniformity in the recursively enumerable degrees and infima in the degrees of the differences of recursively enumerable sets.

Chanyoung Lee (G. Benkart), Stability in modules for classical Lie superalgebras, University of Wyoming.

Wenbo Li (J. Kuelbs), Small ball estimates for Gaussian measures with applications to strong limit theorems, University of Delaware at Newark.

Karl Peters (G. Benkart), Non-restricted representations of classical Lie algebras, Loyola University in Chicago.

Tammo Reisewitz (T. Millar), Hyperarithmetical relations and existentially decidable models in recurvise model theory, Japan.

Dongho Shin (J. Strikwerda), Fast solvers for finite difference approximations for the Stokes and Navier-Stokes equations, Seoul, Korea.

Chik How Tan (R.A. Brualdi), Codes in affine matrix schemes, Defence Science Organization, Singapore.

Jinhua Tao (P. Ney), Multi-type branching random walk, Central Missouri State University in Warrensberg.

Sze-Ping Wong (S. Parter), Preconditioning of nonconforming finite element methods for second-order elliptic boundary value problems, Computer Science Department, University of Wisconsin in Madison.

Ende Zhang (F. Brauer), Functional differential equation models in epidemiology with theoretical and numerical studies, Washington State College in Ohio.

We wish all of them good fortune as they begin their careers as professional mathematicians and educators, and we hope to see them in Van Vleck again before too long.

13 Undergraduate News

The following undergraduates were selected as recipients of Mathematics Department Awards for this year. Their names and the names of the awards they received are:

Edward J. Burns, Professor Linnaeus Wayland Dowling Scholarship;

Laura Ann (Ariel) Glenn, Professor Linnaeus Wayland Dowling Scholarship and Frank D. Cady Scholarship;

David Allen Larson, Irma L. Newman Scholarship;

Jason L. Maron, Mark Ingraham Scholarship;

Robert Jacob Peters, Irma L. Newman Scholarship;

Kelly Lynne Wieand, Mark Ingraham Scholarship.

Congratulations to these very bright and promising undergraduates!

The Math Club last year was organized by *Jason Maron* who did a great job in arranging interesting (and well attended) talks. The organizers this year are *Kelly Wieand* and *Ariel Glenn*, and they can be seen wandering the halls of Van Vleck scheduling talks for this semester. The first talk was given by *Josh Chover* on 'A connected random walk through elementary topics.'

Ariel Glenn and *Alex Nagel* have received a 1992 Wisconsin/Hilldale Undergraduate/Faculty Research award. The purpose of these awards is to encourage undergraduates to participate in the research mission of the university. Recipients were honored by Chancellor

Donna E. Shalala at a reception and awards ceremony on May 4, 1992 at the Elvehjem Museum of Art.

14 Undergraduate Summer Research Program

From June 14 to August 8, 1992 five undergraduates participated in the *University of Wisconsin Summer Research Program for Minority Undergraduates.* This program was initiated by Steve Bauman who spent a semester in 1990 teaching at Spelman College in Atlanta and Terry Millar. The five students spent the eight weeks on research projects in probability and geometry which were directed by Josh Chover and Don Crowe. These minority students, who came from Puerto Rico, Spelman College, North Carolina A. and T. and Jackson State University in Mississippi, worked on a variety of projects according to their abilities and interests. One of the projects was a study, using cardboard and plastic models, of trivalent polyhedra whose faces are pentagons and hexagons ('fullerenes' to the chemists). As a byproduct the department now has substantially more model-making materials to use in undergraduate geometry classes.

15 Mathematics Computer Lab

The Mathematics Computer Lab has now become part of the campus wide undergraduate computing labs. Our lab is now open to all students, but students with mathematics homework assignments have priority. According to co-director of the Lab, *Rod Smart*, many standard wordprocessing and spread sheet packages have been added to the software collection. The Mathematics software available includes GASP (for probability), Logic, Matlab, Minimat, Derive, Maple, Mathematica, and Cabri. Academic Computing now takes care of hardware maintenance and has added 7 NeXTstations and a server, 7 Macintosh IIsi, 3 486 computers and 2 laser printers to our hardware inventory. We now have 17 NeXTstations, 16 Macintosh II cx or si, and 8 386-486 computers in the Lab. Mathematics graduate students use the NeXTs for mail and TeX. The computers are more heavily used now, but according to Rod they haven't yet been swamped with word processing applications.
We hear that plans are being made for all undergraduates to be given accounts for email and access to various information data bases (e.g. University Libraries catalogue). Once this happens we will probably see quite a bit more activity in the Lab.

16 Talent Search

On May 12, 1992 the Mathematics Department hosted 23 Wisconsin high school students who distinguished themselves by their performance in the *Wisconsin Mathematics, Science and Engineering Talent Search*, sponsored by the College of Engineering and the Department of Mathematics, and funded by the Van Vleck bequest. The students, who were accompanied by their teachers, were treated to a interesting program. Professor G.L. Kulcinski of the Department of Nuclear Engineering spoke on "Energy from the moon for the 21st century," and our own *Rod Smart* spoke on "Discovering Number Theory." At noon there was the usual luncheon and presentation of awards by *Marty Isaacs* and *Melinda Certain.* The highlight of the award ceremony was the presentation of the $16,000 Van Vleck Scholarship for undergraduate study at the University of Wisconsin at Madison to *David Corris*, an 11th grade student at Nicolet High School in Glendale, Wisconsin.

17 Ring them bells!

Wedding bells that is. There were two colleague marriages this past year. *Maury Bramson* and *Claudia Neuhauser* were married on January 2,

1992 in Madison. *Sigurd Angenent* and *Gloria Mari-Beffa* were married on July 15, 1992 in Malaga, Spain. In addition *Jean-Marc Vanden-Broeck* and *Mirna Dzamonja* (Mirna is a current Ph. D. student of Ken Kunen) are being married on October 10, 1992 in Madison. *Bryan L. Shader* (UW Ph.D. 1990, R. Brualdi) and *Chanyoung Lee* (UW Ph.D. 1992, G. Benkart) were married in Madison on August 14, 1992. The best man at the wedding was *Shon Katzenberger* (UW Ph.D. 1990, T. Kurtz), and *Paul Schuette* (UW Ph.D. 1991, P. Ney) was groomsman and usher. Don't mathematicians marry sociologists any more?

18 Poet's corner

Argimiro Arratia-Quesada, a 2nd year graduate student, whose country of origin is Venezuela, gave me the following poem in spanish about pi that he wrote during his undergraduate days in Venezuela. It has the property that if you count the letters of each word that compose this poem you will get the digits that compose pi (up to the 31st since the poem consist of 31 words). He tells me that this is how he remembers the first 31 digits of pi.

Pi a modo de enigma

Dos
o tres
o tanto necesites de
repite
estas tan rasas palabras
perimetro
circulo
Dibujante
has de ser
paciente
para trazar su medida
pero sin tus compases
Has de existir fracasado.

If you count the letters of each word, you'll get 3 14159265358979323846264338327 9. Here is the rough translation.

Pi as an enigma

Two
or three
or as much as you need to
repeat
these so plain words
perimeter
circle
Drawer
you have to be
patient
to sketch its measure
but without your compasses
Your existence will be failure.

19 CMS has a new Home

After many years in the WARF building on the edge of campus, the Center for Mathematical Sciences has moved to a more central campus location at 1308 West Dayton Street. The building now occupied by CMS is just south of Union South and west of the Computer Sciences Building. *Tom Kurtz*, the director of CMS, expects that the new location will increase the visibility of CMS on campus, leading to more interaction between the mathematical scientists in various departments throughout the UW.

20 Book News

Peter Orlik and *Hiroaki Terao* are authors of the book 'ARRANGEMENTS OF HYPERPLANES' published in 1992 by Springer Verlag in their Grundlehren series.

Two books by members of the Mathematics Department are expected to be published in the spring of 1993. *Joel Robbin's* book 'MATRIX ALGEBRA using MINImal MATlab' will be published by Jones and Bartlett. It is intended as a text for a first course in linear and matrix algebra. *Marty Isaac's* book 'ALGEBRA: A GRADUATE COURSE' will be published by Van Nostrand Reinhold. This book

evolved out of the lectures that Marty has given in Math 741-742 for many years and in addition contains some supplementary material. Look for these books at your local bookstore!

21 The Rest of the News

Included among the many talks given this past year by *Richard Askey* are talks at the following meetings: the 7th Spanish meeting on orthogonal polynomials in Granada, the Canadian Mathematical Society's Annual meeting (at a special session on the occasion of Tim Rooney's 65th birthday), the meeting in honor of W. Magnus at the Polytechnic University of New York, the meeting in Kentucky on the occasion of the retirement of W. Royster and the meeting of the Actuary Club of Southern Wisconsin (an after-dinner talk on Ramanujuan). Dick also gave the annual Turán Memorial lectures in Budapest.

Alejandro Adem was co-organizer of the Joint AMS-IMS-SIAM Summer Research Conference on 'Cohomology of Groups' at Mt. Holyoke, Mass. in June of this year.

The University of Wisconsin has begun a new 1-credit course called 'Ways of Knowing' for first year students. Lectures to the whole group and small seminars alternate each week. *Richard Askey* gave one of the lectures this past year. *Georgia Benkart* ran a seminar in the spring while *Marty Isaacs* ran one in the fall.

Steffen Lempp, *Donald Passman* and *Robert Turner* each spent a month in China at the beginning of the summer. Steffen, who was accompanied by his wife Brenda, lectured at the Academia Sinica in Beijing, at Nanjing University and at Guizhou University (in Guiyang). In between they went sightseeing to a dozen cities. Don, accompanied by his wife Marjorie, visited five universities: Beijing Normal University, Peking University, Hebei Normal University, Jilin Normal University and Shanghai Normal University in the four cities Beijing, Shijiazhuang, Changchun, and Shanghai. He gave about 25 hours of lectures on his work and related topics. Since Marjorie is an elementary school teacher, they also visited some 'rather impressive primary schools', and they did a good deal of sightseeing. In a post card Don sent to a friend, he said about China "This is a great country, with great people, great food, and great walls." After getting back form China, Don was soon off again: to a Ring Theory conference at Durham University in England for 10 days (where he gave an hour talk) to a Reforms in Calculus conference at Bowdoin University in Maine for 5 days, and to a Hopf Algebras conference at DePaul University in Chicago for 5 days (where he also gave an hour talk). Bob, accompanied by his wife Rosine, lectured at Fudan University, Beijing University and the Academia Sinica. According to Bob, one of the most striking things about China was the amazing pace of economic activity. When he returned to Madison, a former student of his told him that she had seen Bob on the TV news in Hong Kong. Unknown to Bob, some footage has been taken at the main gate of Beijing University on the third anniversary of Tienanman Square while he was there!

Fred Brauer participated in the Third International Conference on Mathematical Population Dynamics in Pau, France on June 1-5, 1992 and the First World Congress of Nonlinear Analysts in Tampa on August 19-26, 1992.

Louis Rall is now Louis Rall, C. Math., FIMA. The reason is that the Queen of England granted a Royal Charter to the British SIAM, The Institute for Mathematics and its Applications. All the Fellows of the Institute, including Lou, were thus given the title "Chartered Mathematician." This fall Lou is teaching a special undergraduate course on the introduction to chaos and fractals (Math 491).

Hiroaki Terao is organizing an 'Arrangements Workshop' in Madison on October 10, 1992. Approximately 25 researchers from around the country are expected to participate, including former students *Bill Arvola* (UW Ph.D. 1991, P. Orlik) of the University of North Texas, *Keith Brandt* (UW Ph.D. 1992, H. Terao) of the Uni-

versity of Kansas, *Mike Falk* (UW Ph.D. 1983, P. Orlik), of Northern Arizona University, and *Dick Randell* (UW Ph.D. 1973, P. Orlik), of the University of Iowa.

Tom Kurtz has been elected Chair of the University Committee of the UW-Madison. Recall that the University Committee sets the agenda for Faculty Senate meetings and is the most influential faculty body on campus.

Si Hellerstein is Associate Chair of the U.W.-Madison Physical Sciences Divisional Committee and will be Chair in 1993-94. Si has also been appointed to the Ethics Committee of the American Mathematical Society.

Marshall Slemrod has been appointed by the Society for Industrial and Applied Mathematics to the Evaluation Panel for NSF Postdoctoral Fellowships in Mathematical Sciences for a three year term beginning July 1, 1992.

Hans Schneider continues as President of the International Linear Algebra Society (ILAS). The second meeting of ILAS was in Lisbon from August 3-7, 1992 with more than 150 participants from around the world. This conference was preceded by the workshop 'Computational linear algebra in algebraic and related problems' held from July 27 to 31, 1992 at the Institute for Experimental Mathematics of the University of Essen, jointly organized by Hans and UW friend (and Director of the Institute) Gerhard Michler. The Essen conference was preceded by a Workshop on Matrix Theory from July 24 to 25, 1992 at the University of Bielefeld which was organized by UW friend Volker Mehrmann. Hans spoke at all three meetings (giving the presidential address at the Lisbon) as did Richard Brualdi.

Richard A. Brualdi was one of two lecturers at a course/conference 'Topics in Combinatorics' jointly sponsored by the NSF and the Rocky Mountain Mathematics Consortium and held at the University of Wyoming from July 6 to 17, 1992. There were over 60 participants consisting of about 30 graduate students from around the country and 30 college teachers of mathematics. Included among the latter was *Shahriar Shahriari* (UW Ph.D. 1986, M. Isaacs) of Pomona College. Also among the participants was *Mike Engel* (UW Ph.D 1972, H. Schneider) of Linkabit, Inc. in San Diego.

22 Alumni News

Darrah Chavey (UW Ph.D. 1984, D. Crowe) of Beloit College has received a $47,000 grant from the NSF to improve the computer facilities in the Department of Mathematics and Computer Science at Beloit College.

Former colleagues *Jacob Korevaar* (University of Amsterdam) and *Marvin Knopp* (Temple University) will be back in Madison in October to speak in the Colloquium. Jaap will speak October 2, 1992 on "Chebyshev-type quadratures: Use of complex analysis and potential theory." Marvin will speak October 30, 1992 on "The failure of the 'Big Mac' theorem."

Two former graduate students are currently working in Thailand. *Mark Hall* (UW Ph.D. 1987, G. Benkart) is on the faculty of Chulalongkorn University in Bangkok. *John Goldwasser* (UW Ph.D. 1983, R. Brualdi) is on leave from the University of West Virginia and is at Chiang Mia University in Chiang Mai.

23 See you in San Antonio

At the annual meeting of the AMS and MAA last January in Baltimore, another Wisconsin Reunion was held. A great time was had by all who attended. Continuing with this new (since 1991) tradition, another Wisconsin Reunion is being planned for the annual meeting in January, 1993 in San Antonio. Watch for details in the mail. If you are in San Antonio in January, we would love to see you (and I will be looking for Alumni News for next year's Newsletter!).

[This newsletter was written and typeset using LaTeX by Richard A. Brualdi who can be reached at: brualdi@math.wisc.edu.]

Each year many people make contributions to the UW-Mathematics Department. We are very grateful to those who have done so. In these times of tight university budgets, such contributions allow the Mathematics Department to make available some services for faculty, students and staff which it would not otherwise be able to. Dick Askey, who is a member of the University Library Committee, reports that the library has serious budget problems so that if you are interested in making a contribution, you may wish to designate it for the Mathematics Library. Contributions should be sent to:

UW Foundation
150 East Gilman Street
P.O. Box 8860
Madison, WI 53708-8860.

Checks should be made payable to the UW Foundation: Math. Dept. Fund. If you wish, you can direct that your contribution be given to the Mathematics Library.