

FOCUS is published by the Mathematical Association of America in January, February, March, April, May/June, August/September, October, November, and December.

Editor: Fernando Gouvêa, Colby College; fgouvea@colby.edu

Managing Editor: Carol Baxter, MAA cbaxter@maa.org

Senior Writer: Harry Waldman, MAA hwaldman@maa.org

Please address advertising inquiries to: Rebecca Hall RHall@MarketingGeneral.com

President: Ronald L. Graham

President-Elect: Carl C. Cowen

First Vice-President: Barbara T. Faires, **Second Vice-President:** Jean Bee Chan, **Secretary:** Martha J. Siegel, **Associate Secretary:** James J. Tattersall, **Treasurer:** John W. Kenelly

Executive Director: Tina H. Straley

Associate Executive Director and Director of Publications: Donald J. Albers

FOCUS Editorial Board: Rob Bradley; J. Kevin Colligan; Sharon Cutler Ross; Joe Gallian; Jackie Giles; Maeve McCarthy; Colm Mulcahy; Peter Renz; Annie Selden; Hortensia Soto-Johnson; Ravi Vakil.

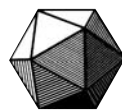
Letters to the editor should be addressed to Fernando Gouvêa, Colby College, Dept. of Mathematics, Waterville, ME 04901, or by email to fgouvea@colby.edu.

Subscription and membership questions should be directed to the MAA Customer Service Center, 800-331-1622; e-mail: maahq@maa.org; (301) 617-7800 (outside U.S. and Canada); fax: (301) 206-9789. MAA Headquarters: (202) 387-5200.

Copyright © 2005 by the Mathematical Association of America (Incorporated). Educational institutions may reproduce articles for their own use, but not for sale, provided that the following citation is used: "Reprinted with permission of FOCUS, the newsletter of the Mathematical Association of America (Incorporated)."

Periodicals postage paid at Washington, DC and additional mailing offices. **Postmaster:** Send address changes to FOCUS, Mathematical Association of America, P.O. Box 90973, Washington, DC 20090-0973.

ISSN: 0731-2040; Printed in the United States of America.



Inside

- 4 The Quaternions Quilts**
By Gwen L. Fisher
- 6 Math Circles: An Outreach Program at the University of Utah**
By Renzo Cavalieri and David Hartenstine
- 9 2005 NSF-CBMS Regional Research Conferences in the Mathematical Sciences**
- 10 Archives of American Mathematics Spotlight: Addition to the Mathematical Association of America Records**
By Kristy Sorensen
- 12 The Youngstown State University Undergraduate Mathematics Conference**
By Angela Spalsbury
- 14 In Memoriam: Shiing-Shen Chern, 1911–2004**
By Thomas F. Banchoff
- 15 NSF Beat**
By Sharon Cutler Ross
- 16 Short Takes**
By Fernando Q. Gouvêa
- 18 MAA-NSF Undergraduate Student Conferences Program**
By Doug Faires
- 20 Employment Opportunities**

On the cover: Gwen Fisher's "Quaternions Quilt." See page 4–5 for her article.

FOCUS Deadlines			
	April	May/June	August/September
Editorial Copy		March 10	June 10
Display Ads	February 11	March 10	June 10
Employment Ads	February 25	March 24	June 17

New Award for Research in Undergraduate Mathematics Education

By Ann Watkins

In November, the MAA Board of Governors approved a new award, the *Annie and John Selden Prize for Research in Undergraduate Mathematics Education*. Annie and John Selden gave the MAA funds sufficient to support this prize, which will honor a researcher who has established a significant record of published research in undergraduate mathematics education and who has been in the field at most ten years. The prize is meant to be an encouragement to such researchers and one prize of \$500 will be awarded every other year.



John and Annie Selden

Please make a nomination if you know a worthy candidate. The nominee must have a significant record of published research in collegiate mathematics education. The research can be quantitative or qualitative on topics such as cognition, affect, gender, effects of technology, teaching and learning of specific mathematical topics, motivation, writing and reading of mathematics, influence of the social structure of mathematics departments upon teaching and learning, and assessment. The subjects may be post-

secondary students, pre-service teachers, teaching assistants, or the faculty who teach them.

For more information and nomination forms, go to <http://www.maa.org/awards/selden.html>.

Annie and John Selden worked in topological semigroups before turning to research in undergraduate mathematics education late in their careers. After long careers at various universities in the U.S.

and abroad, they are now Adjunct Professors of Mathematics, New Mexico State University. In 2002, Annie Selden received the Association for Women in Mathematics Louise Hay Award for Contributions to Mathematics Education for being “a visionary for the promotion of research in collegiate mathematics education” and for providing “leadership for the professional community of mathematics educators.” In 2003, she was elected a Fellow of the AAAS. Before turning to research in mathematics education, John Selden directed nine Ph.D.’s in mathematics. For samples of their

research in undergraduate mathematics education, read “Validations of Proofs Considered as Texts: Can Undergraduates Tell Whether an Argument Proves a Theorem?” *Journal for Research in Mathematics Education*, 34(1), 2003, 4–36 and “Can Average Calculus Students Solve Nonroutine Problems?” (with A. Mason), *Journal of Mathematical Behavior*, 8, 1989, 45–50.

Online Voting for National Officers and Governors in 2005

Following the success of the electronic voting option for the 2003 National Election of Officers, this option will be available again for the 2005 election. In addition, members of the following Sections will have the option of voting electronically for a new Section Governor for a three year term beginning July 1, 2005: Allegheny Mountain, Indiana, Kentucky, Metropolitan New York, Nebraska/SE South Dakota, Northern California/Nevada/Hawaii, Oklahoma/Arkansas, Rocky Mountain, and Wisconsin.

A mailing in early February 2005 to these Sections will contain information on all the Governor candidates, a paper ballot, and a reply envelope for those who opt to use the U.S. mail instead of the web to cast their vote. An April mailing will contain the information on the National Officers election.

Voting online will be easy, secure, and fun. You simply click on your choices as you would in any voting procedure and hit a button to register your vote. That’s all there is to it!

HOMSIGMAA Contest

The **History Of Mathematics Special Interest Group** of the MAA is pleased to announce its second annual **Student Writing Contest in the History of Mathematics**.

The deadline for submissions is March 30, 2005. Information and submission guidelines can be found on the HOM SIGMAA website at <http://www.maa.org/homsigmaa> or by contacting Amy Shell-Gellasch at amy.shellgellasch@us.army.mil.

The Quaternions Quilts

By Gwen L. Fisher

The quilt pictured on the cover of this issue is one of a series meant to bring together two sides of my life: as Assistant Professor of mathematics and as a quilter. I synthesize traditional quilt patterns with the Cayley tables of H (also known as Q_8), the *quaternions group* with eight elements, and of D_4 , the *dihedral group* on 4 elements. In place of alphabetic symbols, I use quilt blocks with pattern and color to represent the elements of the groups.

The *Quaternions Quilt* (on the cover, and reproduced to the right) displays a multiplication table of the quaternions group H . The quaternions group contains the 8 elements $1, -1, i, -i, j, -j, k,$ and $-k$ with the multiplication identities $i^2 = j^2 = k^2 = -1, ij = -ji = k, jk = -kj = i,$ and $ki = -ik = j$. The quilt contains a multiplication “star” in the top left corner, as well as labels for the table in the top row and the left column. The elements in the *Quaternions Quilt* are displayed in order as $1, -1, i, -i, j, -j, k,$ and $-k$. Of course, this labeling is also unique only up to automorphisms.



Detail view of the H intersect D_4 Quilt, top left.



Detail view of the H intersect D_4 Quilt, bottom middle.



Detail view of the H intersect D_4 Quilt, bottom right.

In designing a quilt, an artist has two attributes to consider: block pattern and color. For the Quaternions Quilt, the identity element has a unique block pattern, the *Moon over the Mountain* block. Since the elements $i, j,$ and k are unique only up to automorphisms, the same block pattern is used for each. As for color, each element is the same color as its corresponding negative element: 1 and -1 are both blue, i and $-i$ are red, j and $-j$ are green, and k and $-k$ are both gold and black. The ordering and coloring of the elements in the *Quaternions Quilt* shows the normal subgroup $\{1, -1\}$ and its four cosets, represented by the four colors. This, in turn shows a factor group of H isomorphic to Klein 4-subgroup (also known as the elementary abelian subgroup of order 4), again represented by the four colors. One last property that is easily seen in this representation is that the quaternions group is not commutative, since the table does not have reflection symmetry across the main diagonal from the top left to the bottom right.



The whole H intersect D_4 quilt

In the *H Intersect D_4 Quilt*, The eight elements of D_4 are displayed across the top and down the left as (1) vertical line of reflection, (2) diagonal line of reflection, (3) horizontal line of reflection, (4) second diagonal line of reflection, (5) identity, (6) clockwise quarter turn, (7) half turn, and (8) counter clockwise quarter turn. The elements of H can be labeled across the bottom and down the right side as the 1, $i, -1, -i, j, k, -j,$ and $-k$. However, any automorphism of H would produce a different labeling that fits this same design (i.e., using two block patterns in each of 3 colors).

The pattern for each element was chosen to represent the attributes of the element. For example, in D_4 , the designs for the four reflections all incorporate the line of reflection, the identity element looks like a zero, and the quarter turn elements are represented by blocks with

quarter-turn rotation symmetry. As in the *Quaternions Quilt*, $i, j,$ and k all have the same block pattern. Also, each element in the quaternions has the same coloring as its negative element: i and $-i$ are both colored red on orange, j and $-j$ are both cream on navy, and k and $-k$ are both black on purple. Notice that the identity elements in both groups correspond with each other. Similarly, the clockwise quarter turn corresponds with i , and the counter clockwise quarter turn corresponds with $-i$, but this labeling is, again, unique only up to automorphisms. In any case, the half turn in D_4 always corresponds with -1 in H , which is a plain black square in the quilt.

The ordering of the elements of D_4 and H was chosen so that a cyclic subgroup K of order four forms the intersections of the two multiplication tables. Here, K is generated by the quarter turn in D_4

and by i in H . The two-by-two substructures in each of D_4 and H show the cosets of the normal subgroup K of each of the two groups.

Acknowledgments. The author would like to thank Florence Newberger of California State University, Long Beach for her help with the conceptualization of the *H Intersect D_4 Quilt*. Thanks also to James Hamblin of Shippensburg University and Anton Kaul of Cal Poly, San Luis Obispo for their help in a clear written presentation of the algebraic ideas embedded in the quilt designs.

Gwen L. Fisher teaches at the California Polytechnic State University in San Luis Obispo. She can be reached by email at glfisher@calpoly.edu.

Math Circle An Outreach Program at the University of Utah

By Renzo Cavalieri and David Hartenstine

Math Circle at the University of Utah is a weekly two-hour program for high school (and some middle school) students. The participants are exposed to interesting mathematics or more advanced topics that they would not normally see in high school, and have the opportunity to explore these by working on problems with faculty and graduate students (and each other).



University of Utah Math Circle participants, May 2002.

In Math Circle, a lecture format is avoided and instead mathematics is developed through exploration, discovery, and discussion. The first author of this note is a graduate student at Utah and the second recently completed a postdoctoral appointment there. Each of us has contributed to the planning and conducting of this program, under the direction of a faculty coordinator. This position has been (and currently is) held by Peter Trapa and also by Nick Korevaar.

The Utah Math Circle originated in October 2001 in the outreach component of the department's VIGRE program. The involvement of faculty, postdocs, and graduate students with high school students exhibits the vertical integration that lies at the heart of the VIGRE program. (For more information about VIGRE program at Utah, visit <http://www.math.utah.edu/vigre/>.)

The idea of these mathematical interactions between high schoolers and mathematicians is not original to Utah. The first Math Circle met in Hungary in the 1800s, and Math Circles have been set up in many places, including Berkeley and Harvard. Those programs have been particularly influential in the development of Utah's Math Circle.

The primary goal of Math Circle is to generate and cultivate interest in mathematics in younger students. The program also establishes a link between the high schools and our department. Some of the Math Circle sessions and activities have been successfully used in math clubs by high school teachers.

We feel that the program has been successful in creating an enrichment opportunity for mathematically-minded high school students. Student responses on evaluation forms have been uniformly positive. Many Math Circle participants have signed up for our department's summer high school program. Several Math Circlers have gone on to attend the University of Utah or to major in mathematics or a related field elsewhere.

So, what happens in Math Circle?

Some examples of topics covered are hyperbolic geometry, algebraic curves, group theory by way of Rubik's cube, and genetic selection; a full list of topics including detailed notes from most sessions can be found online at <http://www.math.utah.edu/mathcircle/>. Most session leaders (usually faculty members, but sometimes graduate students) conduct two consecutive sessions on a single

topic. This framework provides enough time to achieve some depth.

On the other hand, no matter how interesting the topic or dynamic the presenter, spending too much time on a single subject or with a single leader risks losing the interest of some of the students. About every fifth session, there

is a contest, with problems related to the preceding weeks' material, and the top scorers win their choice of mathematically-themed prizes (books, games, puzzles, etc.). These contests give the students the opportunity to apply what they have learned, and they enjoy the competition.

The best Math Circles are those in which the students experiment, discuss ideas, make conjectures, try to prove them, and explain their discoveries and solutions of problems to their peers. Ideally, Math Circle is conducted in an environment in which students are encouraged to lead their own exploration into the mathematical world.

There is no standard recipe that guarantees a successful session, but after much trial and error, we did develop a rough format that often led to enjoyable and successful sessions. After beginning by developing new material, the students are given problems to work on, questions to think about, or other activities. During this time, the students can work in small groups and the presenter and the other facilitators are available to answer questions, give hints or pose additional questions, and work one-on-one with the students. Volunteers then present their so-

lutions to the group. Following this, new material (building on the discussed problems) is presented, followed by more activities, and so on.

For example, an introduction to two-dimensional topology had as its ultimate aim the understanding of the classification theorem for compact surfaces with no boundary. The mathematical content is conceptually more sophisticated than anything the participants have seen in their formal education. To capture the essence of a torus, the videogame “Asteroids,” in which both spaceships and asteroids exit the screen both on the horizontal and vertical side to reappear from the opposite side, was invoked. The mathematization of something from their recreational experience provoked the students’ curiosity and amazement. This served as great motivation for some of the difficult conceptual work to come.

One challenge was to define (or negotiate the region between a rigorous definition and a hazy, more intuitive notion of) a topological surface and a homeomorphism. The participants were asked for examples of surfaces, the presenters added some of their own, and then the students were asked to decide which were homeomorphic and which were not. It then became clear that the task of classifying surfaces was not to be underestimated.

The concept of identification of sides of a polygon as a tool to generate surfaces was then introduced. As an activity, the students used paper and scissors to build cylinders and Möbius strips. This naturally led to the notion of orientability and a number of exciting discoveries. It was surprising to the students that there are surfaces with only one side and only one boundary circle.



One-on-one interaction is a big part of the Math Circle experience.

The Möbius strip offers a wealth of interesting and accessible problems. This experimentation led to many conjectures. Through identification of sides of a polygon a library of “familiar” surfaces was built: the sphere, torus, and the

amazing projective plane. The next step was to convince the students that any compact surface could be represented by a polygon, and, finally, through cutting and pasting, that any such polygon could be reduced to the canonical polygon representing a connected sum of tori and projective planes. This last part turned out to be quite hard for a fair number of younger students, but very exciting for the more advanced ones.

As is often the case with Math Circle, the experience can still be very rewarding even if not all of the material is grasped by all of the students. Throughout this session, informal language was purposefully adopted; some standard mathematical concepts were even renamed. For example, non-orientability became the HSRP (Han Solo Reversing Property), by the fact that Starship Captain Han Solo has a chance to go on a mission and return to his original position upside down without ever having changed the direction of his spaceship.

Care was also taken in striking a balance between mathematical rigor and intuitive notions. Some terms and concepts needed to be carefully defined, while for others it was sufficient to work with a more imprecise idea.

Who comes to Math Circle and how does it work?

The students are self-selected. Near the beginning of the school year, a program brochure and a letter indicating how to apply are mailed to heads of math departments at local schools and to school district mathematics specialists as well as to students who participated the previous year and are still in high school.

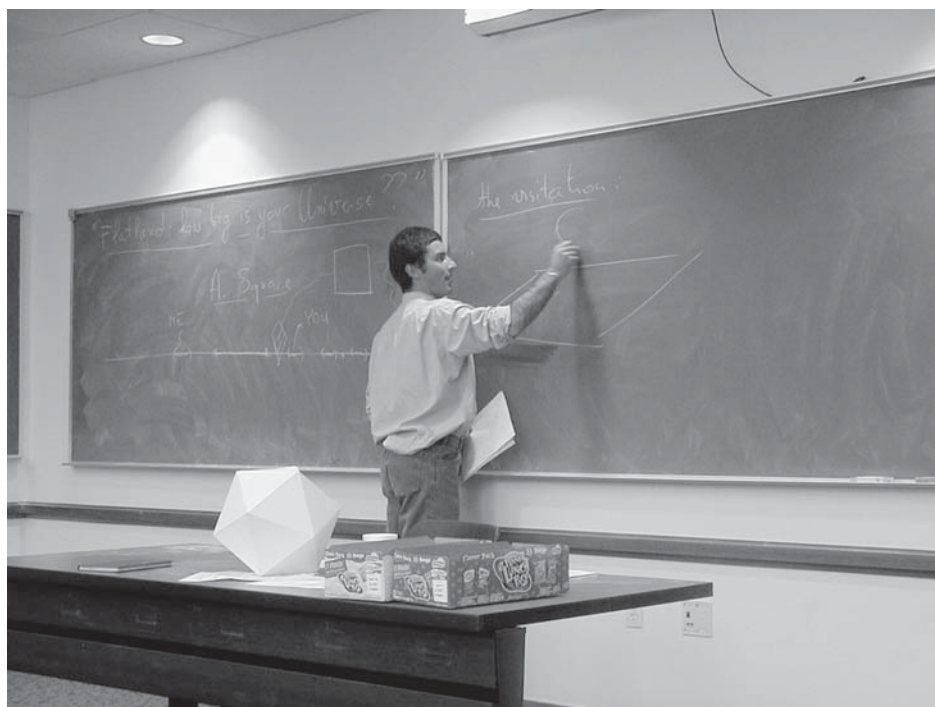
A faculty member is the coordinator of the program. His re-

sponsibilities include planning the sessions, locating presenters, and generally being the official figure of the group. This person receives a teaching reduction (this is the largest cost to the department in running the program). There is also at least one other department member who together with the coordinator constitute a core team. This group attends all of the Math Circle meetings, gets to know the regular participants personally, and gives the program continuity from presenter to presenter. They know when it's a good time to interrupt to give the students something to think about or to gauge student understanding.

It is also very helpful to have a person with extensive high school teaching experience contribute to the program. Such a person's knowledge of what students have seen in school and what students would be interested in and able to handle mathematically adds another perspective to that of university faculty. Three or four postdocs and graduate students also attend the sessions. These assistants, along with the core team and the presenter, assist the students as they work individually or in small groups. Administrative duties, such as designing brochures and contacting participants and schools among others, are handled by the department's VIGRE program coordinator.

Other than the faculty coordinator, no speaker has led more than three sessions in a single year. Varying the speakers allows the utilization of the differing areas of expertise of the faculty, and helps in the selection of topics. This changing cast of characters also keeps the program fresh and prevents Math Circle from resembling a weekly class. In addition, having many people from the department involved in Math Circle broadens the exposure of the students to the faculty.

The number of participants varies from week to week, but is usually between fifteen and twenty-five students. It seems that a group of about twenty is optimal. If the group is too large, the informal at-



Renzo Cavalieri leading a Math Circle on dimension and Flatland.

mosphere can break down, there are not enough facilitators to assist students, and the group can become unruly. On the other hand, if the number of students is too small, it is harder to get discussions started.

Observations and Conclusions

First and foremost, Math Circle should be fun. It is best when students are actively engaged throughout the session and not just when working on or presenting solutions to problems. Activities and problems need to be selected that are appropriate for the wide range of ability and mathematical experience found in the students. Some of the questions or problems should be accessible to all of the participants, while at the same time, it is important to keep the most advanced students challenged.

Since attendance in general varied from week-to-week, and many students are too busy with school and other activities to devote much thought to Math Circle between sessions, it is best to make each session as self-contained as possible. An informal atmosphere creates an environment in which students are not afraid to

make mistakes or make their own conjectures.

Many presenters have found that conducting a Math Circle is an invigorating experience. It is very satisfying to work with a group of students all of whom are interested in and excited by mathematics. The participants are very bright and often ask excellent, unexpected, and thought-provoking questions.

Finally, the journey is often more important than the destination. While it is great to finish with a beautiful or surprising result (like the classification of surfaces), a session can suffer when the presenter speeds up (and loses many of the students) in order to get to such a goal.

Renzo Cavalieri is a graduate student at the University of Utah. David Hartenstine recently completed a postdoctoral appointment there and is now teaching at Western Washington University.

Photographs taken by Sarah Strong.

Announcement of the 2005 NSF-CBMS Regional Research Conferences in the Mathematical Sciences

The National Science Foundation has funded three NSF-CBMS Regional Research Conferences to be held during the spring and summer of 2005. These three will bring to 302 the total number of such conferences since the NSF-CBMS Regional Research Conference Series began in 1969.

These conferences are intended to stimulate interest and activity in mathematical research. Each five day conference features a distinguished lecturer who delivers ten lectures on a topic of important current research in one sharply focused area of the mathematical sciences. The lecturer subsequently prepares an expository monograph based upon these lectures, which is normally published as a

part of a regional conference series. Depending upon the conference topic, the monograph is published by the American Mathematical Society, the Society for Industrial and Applied Mathematics, or jointly by the American Statistical Association and the Institute of Mathematical Statistics.

Support for about 30 participants is provided and the conference organizer invites both established researchers and interested newcomers, including postdoctoral fellows and graduate students, to attend.

Information about an individual conference may be obtained by contacting the conference organizers. Information

about the series and guidelines for submitting proposals for future conferences are found in the Call for Proposals for the 2006 NSF-CBMS Regional Research Conferences. Questions should be directed to:

CBMS
1529 18th St. NW
Washington DC 20036-1385
(202) 293-1170
Fax: (202) 293-3412
Email: rosier@math.georgetown.edu or kolbe@math.georgetown.edu.

For more information visit the CBMS website at: <http://www.cbmsweb.org>.

2005 NSF-CBMS Conferences

New Perspectives for Boundary Value Problems

May 16-20

University of Texas - Pan American

Athanassios Fokas, lecturer

Organizers: Lokenath Debnath and Andras Balogh, 956-381-3459, debnathl@utpa.edu 956-381-2119 and abalogh@utpa.edu <http://www.math.panam.edu/cbms2005.html>.

Nonlinear Dispersive and Wave Equations

June 13-18

New Mexico State University

Terence Tao, lecturer

Organizers: Joseph Lakey, 505-646-2417, jlakey@nmsu.edu; Tiziana Giorgi, 505-646-2323, tgiorgi@nmsu.edu; Cristina Pereyra, 505-277-4147, crisp@math.unm.edu; Adam Sikora, 505-646-6269, asikora@nmsu.edu; Robert Smits, 505-646-2884, rsmits@nmsu.edu, <http://www.math.nmsu.edu/~jlakey/cbms.html>.

Algebraic and Topological Combinatorics of Ordered Sets

August 8-12

San Francisco State University

Anders Björner, lecturer

Organizers: Joseph Gubeladze and Serkan Hosten, 415-338-7722, soso@math.sfsu.edu (Gubeladze); 415-338-7723, serkan@math.sfsu.edu (Hosten); <http://math.sfsu.edu/gubeladze/cbms.html>.

Archives of American Mathematics Spotlight: Addition to the Mathematical Association of America Records

By Kristy Sorensen

Almost two linear feet of historical materials from the Mathematical Association of America Headquarters have recently been donated to the Archives of American Mathematics as part of the Mathematical Association of America Records. The materials range in date from the late 1890s to the 1960s, and primarily consist of files from H. E. Slaught, H. M. Gehman, Walter B. Carver, and W. D. Cairns.

These papers were found almost a year ago by Executive Director Tina Straley in the basement of the MAA Headquarters building as it was being cleaned out for some planned renovation work. Dr. Straley immediately recognized the importance of the records and arranged with Don Albers to have them sent to the Archives of American Mathematics.

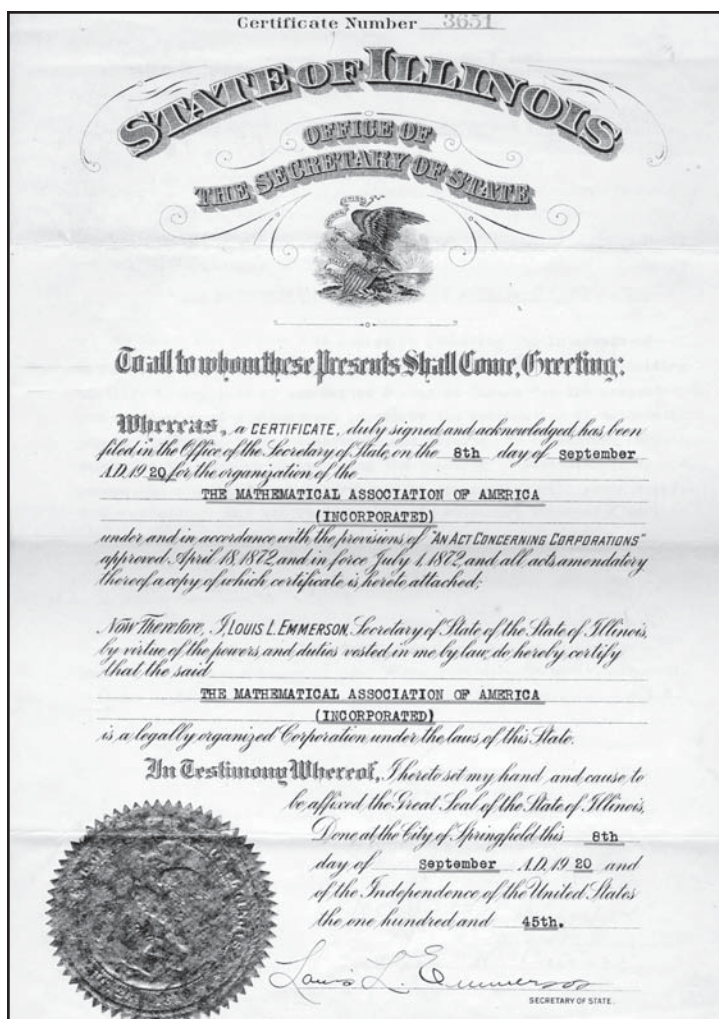
Highlights of the records include:

- Original charter of incorporation, state of Illinois (1920)
- Pre-MAA correspondence relating to the *American Mathematical Monthly*, including correspondence between founder B. F. Finkel and managing editor H. E. Slaught
- Correspondence debating and establishing the Mathematical Association of America as a distinct organization from the American Mathematical Society
- Early meeting minutes from the Board of Governors (1920-1928)
- Membership lists and lists of officers

A brief history lesson may help put this addition in context. The *American Mathematical Monthly* was established in 1894 by Benjamin F. Finkel as a journal for teachers of mathematics, primarily at

the high school level. By 1913, he had teamed up with H. E. Slaught of Chicago and gained the financial support of a consortium of fourteen Midwestern universities. Because this financial support was not permanent, Slaught raised the possibility of the *Monthly* becoming an official journal of the American Mathematical Society in 1915. This was a hotly contested issue at the time, as many felt expanding the mission

of the AMS was a bad idea. The AMS eventually declined to sponsor the *Monthly*, but gave their support to the creation of a new professional organization that would focus on broader mathematical issues. The Mathematical Association of America was established at a December 1915 meeting of 108 interested persons in Columbus, Ohio, presided over by E. R. Hedrick.



Charter of incorporation, for the Mathematical Association of America with the Secretary of State of Illinois September 8, 1920. From the Mathematical Association of America Records, Archives of American Mathematics, Center for American History, The University of Texas at Austin.

Please make drafts or money orders payable to B. F. FINKEL, returning this bill with the remittance.

SPRINGFIELD, MISSOURI, Feb. 10 1897

Lewis Newkirk

To **The American Mathematical Monthly**, Dr.

To Subscription from Jan 1897, To Jan 1898 \$ 2.00

Received payment this 19th day of July 1897

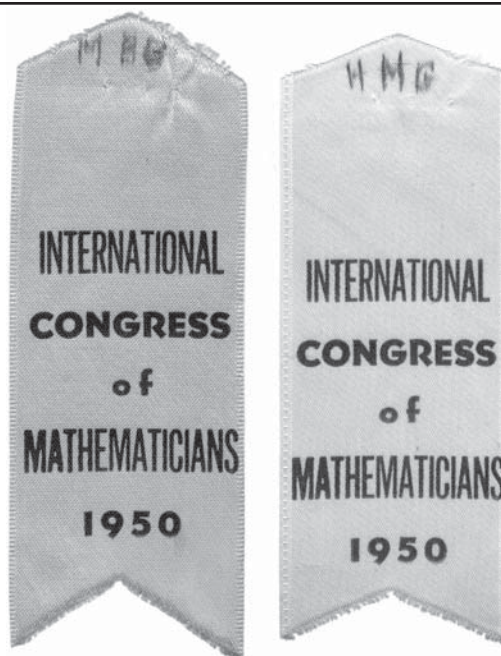
many thanks, B. F. Finkel Treasurer.

Receipt for a subscription to the American Mathematical Monthly, dated February 10, 1897 made out to Lewis Newkirk, and signed by the journal's founder, B.F. Finkel. From the Mathematical Association of America Records, Archives of American Mathematics, Center for American History, The University of Texas at Austin.

In 1920 the MAA was incorporated under the laws of the state of Illinois. The MAA has certainly expanded and evolved over the years, but the *Monthly* is still an integral part of the organization. These records help to document the early history of the Mathematical Association of America, and will be critical in our understanding of the history of the organization.

These papers will be inventoried and incorporated into the general finding aid for the Mathematical Association of America Records, available online at: <http://www.lib.utexas.edu/taro/utcah/00328/cah-00328.html>.

The Archives of American Mathematics is located at the Research and Collections division of the Center for American History on the University of Texas at Austin campus. Persons interested in conducting research or donating materials or who have general questions about the Archives of American Mathematics should contact Kristy Sorensen, Archivist, k.sorensen@mail.utexas.edu, (512) 495-4539. The Archives web page is located at: <http://www.cah.utexas.edu/collectioncomponents/math.html>



Ribbons from the 1950 ICM, which was held at Harvard. The initials, HMG and MBG, at the tops of the ribbons suggest that they belonged to Harry M. Gehman and his wife Marion B. Gehman. Harry Gehman was elected Secretary-Treasurer of the MAA in 1948, and served in that capacity until 1960 when he was appointed the MAA's first Executive Director. At that time, the MAA office was located in Gehman's office on the campus of SUNY Buffalo. Given Gehman's leadership position within the MAA in 1950, it seems likely that the ribbons belonged to him and his wife, who were in constant attendance at mathematics meetings. Marion Gehman also worked for the MAA in that early period processing (by hand) membership forms. Sources: The Mathematical Association of America: Its first Fifty Years, by Kenneth O. May; *Conversation with Raoul Hailpern on December 2, 2004* — Don Albers. From the Mathematical Association of America Records, Archives of American Mathematics, Center for American History, The University of Texas at Austin.

The Youngstown State University Undergraduate Mathematics Conference

By Angela Spalsbury

Youngstown State University has hosted an undergraduate mathematics conference for the past six years. For the first five years, the conference was financed totally by the local chapter of Pi Mu Epsilon and contributions of some local merchants. Last year it was supported by a grant from the MAA that was made possible by the NSF Grant DMS-0241090 (see page 18). This article describes how we run a conference that has been of great benefit to undergraduate students interested in mathematics, and at very little cost. The philosophy of the YSU conference is to have a mathematics conference for students run totally by students.

The YSU conference is held on the third Saturday in February. This time is chosen because it closely follows the COMAP Mathematical Competition in Modeling, which many students in the region enter, and is about 6 weeks before the Ohio and Allegheny Mountain MAA Section meetings that students at our conference are encouraged to attend. Our conference serves as a training stage for the presentations that will be given at the Section meetings.

We invite students from approximately 40 colleges and universities within a 150-mile radius of YSU. We do not start the conference until 10:00 AM; this permits students to drive to YSU on the morning of the conference and not incur lodging expenses. The conference provides breakfast as well as a pizza lunch, so the only expense to students attending the conference is transportation. The MAA-NSF funding last year was used primarily to support travel expenses for visiting students.

The conference has grown in attendance from about 70 students from 6 schools to more than 100 students from 15 schools. This represents less than half the schools in the region, so we still have ample room to grow.

Since we started this conference without external (or much internal) funding, we had to find ways to minimize the cost while maximizing the benefit. The first decision was to do all of the communication electronically. A contact faculty member is found at each regional school to, hopefully, encourage students to attend and speak. Students who attended from the previous year are also on the contact list. With the MAA-NSF funding we were also able to send letters and posters advertising the conference several months prior to the conference, but it is not clear that this significantly increased the attendance. Personal contact seems like the best approach. The obvious advice (but the hardest to follow) is to start planning early! It takes a lot of time to convince students that they can give a talk, and getting them ready to present a good one cannot be rushed.

Last year 35 students gave presentations on a wide variety of topics and levels, ranging from REU experiences and senior projects to statistics and calculus-level projects. One of the more popular sessions involved the COMAP Mathematical Competition in Modeling, which is held the first weekend in February. In addition to the talks, we had a room set up with space for graduate school recruitment and REU information, as well as demonstrations of educational technology.

Our conference is probably different from other conferences of this type in that we do not invite faculty or well-known mathematicians to give presentations. We want the students to have the experience of giving talks in front of their colleagues and to organize the conference in such a way that they, not the faculty, think is of most interest.

The organization and planning is done by YSU undergraduate students, with a bit of supervision by faculty, providing a valuable learning experience for dealing with administration at various levels.



Faculty and students hanging around and eating pizza at the YSU conference. Photo courtesy of Douglas Faires.

Some of their responsibilities include reserving the classrooms and appropriate audio visual machines used for the talks; securing donations of donuts and juice for breakfast and pizza and soda for lunch; updating the website with current information, including directions to campus and parking instructions; processing the online registration forms and abstracts; designing the time table for the talks and notifying students when and where they will be presenting; creating and printing the programs, name tags, and speaker certificates; checking that the classrooms are clean and that the desks are arranged in an orderly fashion; and sending handwritten thank you cards to every donor and every school that sends students.

In summary, the conference is run very inexpensively and provides good experience in mathematical presentations for all of the students. For the YSU students it is truly a remarkable experience; they develop the life-long organizational skills that are required of anyone in a responsible position, and at the same time share the wonder and beauty of mathematics with students from other institutions.

For information on the conference and its organization, please see <http://www.as.yzu.edu/~math/pme/conferences/ysu2005.html>. If you are considering planning a conference and I can be of any assistance, please contact me at angie@math.yzu.edu.



If you know, become an outstanding high school math teacher through the Newton Fellowship Program. You'll expand the minds of New York City kids and earn \$90,000 in stipends.

Newton Fellowships are designed to train mathematically talented individuals to be outstanding high school math teachers and support them in the early years of their careers.

- > Year 1: Full tuition scholarship toward a Master's Degree in Education and living stipend
- > Years 2-5: Position as New York City high school math teacher plus MfA stipend
- > Mentoring, coaching, and professional development
- > Camaraderie with a group of talented math teachers

To learn more visit www.mathforamerica.org



In Memoriam: Shiing-Shen Chern, 1911–2004

By Thomas F. Banchoff

One of the great ones is gone.

Professor Shiing-Shen Chern, one of the outstanding mathematicians of the twentieth century, died at age 93 in Tianjin, China, on December 3, 2004 at the Nankai Institute that he helped to found on the campus of Tianjin University where he received his undergraduate degree in 1930. He received the National Medal of Science in 1975 and the Wolf Prize in 1983/4. He edited a volume on *Global Geometry and Analysis* in the MAA Studies in Mathematics Series in

directed 47 Ph.D. theses, and, by latest count, had 467 mathematical descendants.

In his “retirement,” he spent his efforts in two research institutes that he helped to found. He served as the first director of the Mathematical Sciences Research Institute in Berkeley from 1981 to 1984. In 1985, he was one the chief founders of the Nankai Institute in Tianjin, China, for which he served as honorary director until his death. The MSRI produced

lection of personal statements and articles compiled in 1992 by his student, Fields medalist S. T. Yau. (The 1998 expanded edition is available through the AMS Bookstore.) That volume includes many reminiscences that “reflect the wisdom of this great mathematician and his warmth in interacting with young geometers.” My contribution, “On Becoming and Being a Chern Student” chronicles my personal debt of gratitude for his support throughout my career, even when I moved away from his favorite differential forms approach in the direction of polyhedral differential geometry and computer visualization of surfaces. Another good resource is the biographical statement in the History of Mathematics site at St. Andrew’s College:



Banchoff and Chern at MSRI in the 1980s.



S.S. Chern in 2002.

1967; his article “Curves and Surfaces in Euclidean Space,” in that volume, was awarded the Chauvenet Prize in 1970. He was a member of the MAA for 55 years.

Prof. Chern earned his Ph.D. in 1936 in Hamburg with Wilhelm Blaschke. He spent a post-doctoral year with Elie Cartan in Paris, and returned to teach in China. He visited the Institute for Advanced Study in 1943-5, and returned to the US in 1949 for another short stay at the IAS. He taught at the University of Chicago until 1960 when he came to the University of California, Berkeley, where he remained until he retired in 1979. He

an excellent tribute to him in 1998; see http://www.msri.org/chern_04.pdf.

His work influenced a broad range of fields, primarily global differential geometry. His undergraduate differential geometry courses at Chicago and Berkeley was legendary. For the past several years, he and I have been preparing a new edition of the full set of notes for that course, hopefully to be published soon.

There is impressive testimony of his influence on his students and on geometers throughout the world in *Chern, A Great Geometer of the Twentieth Century*, a col-

<http://www-groups.dcs.st-and.ac.uk/~history/Mathematicians/Chern.html>.

My final visit with Prof. Chern took place in August, 2002. His driver brought me from Beijing to Tianjin where he lived in a house especially built for him at the Nankai Institute. When I arrived, he told me I was invited to go with him for a luncheon at the newly opened Tianjin Science and Technology Museum, and I was surprised when we got there to see the entire staff lined up to welcome him. I was even more surprised when we were ushered into a museum wing featuring a golden bust of Prof. Chern and a large wall engraved with his sayings. He took

it all in stride. I later learned he was the one who originally came up with the idea of that excellent science museum. (For more on the museum, see <http://www.china.org.cn/english/scitech/39898.htm>.)

The following day, at the opening of the International Congress of Mathematicians in Beijing, Prof. Chern was honorary chair. Next to him on the platform was China's President Jiang Zemin, who

personally helped him adjust his microphone. In his introductory remarks, Prof. Chern stated "Mathematics used to be individual work. But now we have a public. In such a situation a prime duty seems to be to make our progress available to the people. There is clearly room for popular expositions. I also wonder if it is possible for research articles to be preceded by a historical and popular introduction."

Noting that modern science has become very competitive, he recalled the Confucian doctrine centered on human relationship, and called for "an injection of the human element that will make our subject more healthy and enjoyable." That is a worthy challenge for all of us who revere the memory of this great man.

Photos provided by Thomas F. Banchoff.

NSF Beat

By Sharon Cutler Ross

The Math and Science Partnership (MSP) program of the National Science Foundation seeks to increase the capacity of preK-12 systems to supply the prerequisites for learning to higher standards in mathematics and science. MSP was developed in conjunction with the No Child Left Behind initiative. Funding is provided to support collaborations of school systems, higher education institutions, and other partners. Seven new Teacher Institutes for the 21st Century were funded this fall. A prototype of these institutes was funded last year at the Institute for Advanced Study at Park City, Utah. The Park City Mathematics Institute (P. Griffiths, PI) has extended its ongoing work with high school faculty to include middle school teachers in three quite different school systems: Cincinnati OH, McAllen TX, and Seattle WA. PCMI partners with a collegiate mathematics department in each district to provide local resources that complement PCMI summer institutes.

"Preparing Virginia's Mathematics Specialists" (Virginia Commonwealth University, lead partner, W. Haver et al.) will give two cohorts of 25 K-5 teachers residential summer programs, extensive academic year follow-up, a distance-learning class, and a practicum course. These activities will lead to a Masters degree in mathematical content and educational leadership and will encompass the work needed for licensure as a Mathematics Specialist. Specialists will be leaders assisting colleagues in teaching the math-

ematics needed for mathematics and sciences curricula in the higher grades.

The project, led by Florida Atlantic University (H.-O. Peitgen et al.), will create and deliver a unique curriculum for middle school teachers as an extension of the existing Master in Science Teaching degree. The project's ambitious goal is to eliminate the many crucial gaps in content and pedagogy between teachers' university preparation and the real world requirements of a diverse standards-driven classroom. Over the five years of the partnership more than 50% of the middle grades mathematics teachers in the Broward County School District will participate in classes, summer institutes, conferences, and an online community.

Another MSP project is also working with grades 5-8 teachers. The University of Nebraska – Lincoln (W. J. Lewis et al.) will lead a collaboration with the Lincoln public schools, 15 rural school districts, and three Educational Service Units. A commitment to rural teachers and schools is a focus of the project. There are three major components: a multi-year institute designed to deepen mathematical knowledge for teaching and to develop leadership skills, mathematics learning teams, and a research initiative to investigate means of educational improvement and innovation.

The Mathematics Leadership Institute (Rice University, lead partner, J. Polking

et al.) is designed for high school teachers. A cadre of 80 lead teachers from two Houston area school systems will be trained to provide mathematical content and pedagogical support for their home departments. Two summer institutes will focus on increasing teachers' knowledge of mathematics and pedagogy, leadership development, research in mathematics education, classroom use of technology, and diversity issues.

A broader vision drives the Oregon project (Oregon State University, lead partner, T. Dick et al.). The partnership of Oregon State, ten school districts, five community colleges, the Teachers Development Group, and two other universities seeks to create a sustainable and generative leadership capacity within the core partners' K-20 institutions. It plans to do this by developing a cadre of teacher leaders in mathematics as part of a larger community that includes college and university faculty, school administrators, and other mathematics education professionals. Residential summer institutes will be held for K-5 mathematics specialists and middle school and high school mathematics teachers. These programs will emphasize rigorous and relevant mathematics, leadership development, and effective pedagogy. Both online and on-site academic-year activities will support the construction of a statewide learning community of K-20 professionals.

Short Takes

By Fernando Q. Gouvêa

Effectiveness of Mathematics Curricula

The November 24 issue of *Education Week* reports that a broad review by the government's What Works Clearinghouse has concluded that most of the mathematics curricula used in American middle schools cannot be proved to be effective. The review considered 44 curricula currently in use and reviewed the record of research on their effectiveness. For only five programs did they feel that there was adequate data on effectiveness: *I CAN Learn Mathematics*, *Cognitive Tutor*, *Connected Mathematics*, *The Expert Mathematician*, and *Saxon Math*.

The Clearinghouse report focuses less on the quality of the curricula than on the quality of the research done to assess the curricula. To be considered adequate documentation, the studies had to have used randomized research trials so that the test group of students could be compared to a control group. Of 77 studies, the report found that only four fully met these standards, while seven others "meet evidence standards with reservations." For the full report, visit What Works web site: <http://www.whatworks.ed.gov/Topic.asp?tid=03&ReturnPage=default.asp>.

RUME Conference

The Special Interest Group of the Mathematical Association of America on Research in Undergraduate Mathematics Education (SIGMAA on RUME) will be holding its eighth Conference on Research in Undergraduate Mathematics Education on February 24 to 27. The conference, which is part of the SIGMAA's ongoing work to foster research in undergraduate mathematics education and the dissemination of such research, hopes to be a forum for researchers in collegiate mathematics education. The program includes the following themes: results of current research, contemporary theoretical perspectives and research paradigms, and general issues in the psychology of mathematics education as it pertains to the study of

undergraduate mathematics. For more information, including the full program and a registration form, visit <http://www.mathstat.gsu.edu/~matdnv/rume2005/rume2005.html>.

Proof Release Delayed

The release of the movie *Proof*, based on David Auburn's play reviewed in FOCUS in August/September 2000, p. 8, has been delayed. Instead of being released at the end of 2004 as originally planned, the film will be released in middle-to-late 2005, possibly at the Cannes Film Festival.

The movie is the story of the daughter of a great mathematician who may or may not be the author of a remarkable proof discovered among her father's papers after his death. The cast features Gwyneth Paltrow, who played the role of Catherine on stage in London's West End, Jake Gyllenhaal as Hal, and Anthony Hopkins as Catherine's father. David Auburn and Rebecca Miller wrote the screenplay; John Madden directed. The movie will be featured in the September 2005 issue of *Math Horizons*. For more about the play, see <http://www.maa.org/features/proof.html>.

Math for America Announces Newton Fellowships

The *Math for America Foundation* announced that it has created the Newton Fellowship Program to support the training of more high school mathematics teachers. The program currently operates only in New York City, but there are plans to expand it to other cities. The Fellowships include a stipend of \$90,000 spread over five years, a full tuition scholarship for a Master's program, New York State certification, and a teaching position in the New York City school system. For current teachers, MfA has the Newton Master Teacher Fellowship, which supports professional development. It too, is currently limited to New York City teachers.

Math for America describes itself as "the brainchild of mathematician and investment banker Jim Simons." Its board of directors includes mathematicians David Eisenbud and Philip A. Griffiths; Irwin Kra is the executive director. For more information, visit their web site at <http://www.mathforamerica.org/>.

National High School Calculus Award

The sixth annual National High School Calculus Award, from Calculus.org, will award \$1000 to the winning student. A teacher may nominate any U.S. junior high or high school student for this award. Information about last year's award winner is available at <http://www.math.ucdavis.edu/~calculus/2004prize.html>. Nominations for this year's award are due by February 28, 2005. See <http://www.Calculus.org> for further information.

National Survey of Student Engagement

The National Survey of Student Engagement's 2004 report, released in November, includes several interesting findings about how intensely students in American colleges invest themselves in their education. The press release about the report leads off by noting that many students seem seriously engaged in civic activities, discussion of social issues, and community service. On the other hand, the report signals a fairly low level of academic engagement, noting that "Students spend only about half the time preparing for class as faculty expect" and that "Two-fifths of first-year students and 25% of seniors 'never' discussed ideas from their classes or readings with a faculty member outside of class."

The authors of the report believe that colleges should do more to help students by "clearly marking paths that students should take to get involved in activities that matter to them and their learning." For more information, including the full report, see <http://www.indiana.edu/~nsse>.

Two Mathematicians Receive Packard Fellowships

The recipients of the 2004 Packard Fellowships in Science and Engineering include two mathematicians: Manjul Bhargava of Princeton University and Alexandru D. Ionescu of the University of Wisconsin at Madison. Bhargava is well-known to members of the MAA as the recipient the Morgan Prize for Research by Undergraduates and the Hasse Prize for Exposition. (See <http://www.maa.org/news/bhargava.html> for more on the latter.) Ionescu got his Ph.D. from Princeton in 1999 and is now at Madison after spending some years at MIT and at the Institute for Advanced Study. The Packard Fellowships, awarded by the David and Lucille Packard Foundation, include an unrestricted research grant of \$625,000 over five years. For more information on the Packard Fellowship, including a complete list of this year's winners, visit their web site <http://www.packard.org/index.cgi?page=news&aid=0043&year=2004>.

A "College Readiness Crisis"

In October, the college entrance exam organization ACT released a report entitled *Crisis at the Core* which argues that "our nation is in a college readiness crisis." After testing students for what they call "College Readiness Benchmarks," they found, for example, that only 40% of high school seniors were "ready for their first course in College Algebra." Things were even worse in Biology, and slightly better in English. Minority students were found to be less likely to be ready for college. ACT argues that the result is a large number of first-year students dropping out of college: one in four at four-year colleges, and one in two at two-year colleges.

The report also argues that their results also apply to students not headed for College. Most graduating high school students are not ready for the workplace, where increasingly the same skill set is becoming necessary.

ACT notes that having taken certain specific courses — Biology, Chemistry, and Algebra II — has a "startling" positive

effect on student readiness. Students seem to gain from taking these and other more rigorous courses regardless of how they actually perform in them. Naming these three the "Courses for Success," ACT recommends that every student, whether heading for college or for the workplace, take these courses. For more information, including the full text of the report, visit <http://www.act.org/path/policy/index.html>.

Another MAA Member in the Brilliant 10

James D. Walker, Staff Scientist at Southwest Research Institute (SwRI), was included among *Popular Science* magazine's third annual list of the "Brilliant 10" young scientists. The article appeared in the magazine's October issue. Walker, who works in the Engineering Dynamics Department of the SwRI, was selected for his work in the field of impact physics. Walker has been a member of the Association since 1989.

Also on the "Brilliant 10" list is Maria Chudnovsky of Princeton University, who is cited in particular for her work on the proof of the perfect graph conjecture. For the full list, see the magazine's press release at http://www.eurekalert.org/pub_releases/2004-09/ps-psa091604.php. For the original magazine article, visit <http://www.popsci.com/popsci/science/article/0,20967,703342,00.html>.

12th International Mathematics Competition for University Students

The 12th IMC, to be held on July 22-28 in Blagoevgrad, Bulgaria, is being co-organized by University College London and the host institution, the American University in Bulgaria. Universities are invited to send several students and one teacher. Individual students are welcome. The competition is planned for students completing their first, second, third or fourth year of university education and will consist of 2 Sessions of 5 hours each. Problems will be from the fields of Algebra, Analysis (Real and Complex), and Combinatorics. The working language will be English. Participants should confirm their intention to participate by the end of May, online or by email to John

Jayne at j.jayne@imc-math.org. For more information, visit <http://www.imc-math.org/>.

2004 National Academies Communication Awards

The winners of the National Academies' 2004 Communications Awards for science journalism published in 2003 were honored at the Keck *Futures* conference in November. Receiving their awards were Matt Ridley, for his book *The Agile Gene: How Nature Turns on Nurture*, Robert Lee Hotz, a reporter with the *L.A. Times*, and Sue Norton and David Clark, producers of the Science Channel's *Science of the Deep: Mid-Water Mysteries*. Among the finalists in the book category was Marcus du Sautoy of Oxford University, for his book *The Music of the Primes*, one of three recent popular accounts of the Riemann Hypothesis and its role in number theory.

The Communication Awards honor "excellence in reporting and communicating science, engineering, technology, medicine, or interdisciplinary research to the general public." Three \$20,000 dollar prizes are given each year, one for a book author, one for a newspaper, magazine, or online journalist, and the third for a TV or radio correspondent or producer. Nominations for this year's award will be accepted between February 1 and April 8. See the NAS website <http://www7.nationalacademies.org/keck/Awards.html> for more information.

Sources

Math Curricular NASSMC Briefing Service, What Works web site. RUME Conference: Annie Selden, conference web site. Proof movie: <http://www.imdb.com>, newspaper reports, Art Benjamin. Newton Fellowships: NASSMC Briefing Service, MfA web site. Calculus Award: email communication. Student Engagement: *Chronicle of Higher Education*, NASE web site. Packard Fellowships: email communication, Packard Foundation web site. College Readiness: NASSMC Briefing Service, ACT web site. Brilliant 10: SwRI press release, *Popular Science*. IMC: email communication. NAS Communications Award: National Academies web site.

The MAA-NSF Undergraduate Student Conferences Program

By Doug Faires

Most readers of FOCUS have experienced the rush to finish preparing a talk prior to a meeting, and the feeling of accomplishment that comes with a successful presentation. Sharing the results of our work with our peers is an essential part of an academic career, and we seek opportunities to do so through participation at regional and national meetings. Our students, on the other hand, have few chances to make formal presentations, and may at first be hesitant to stand up in front of their classmates and share their own work. Those of us who have guided students through their first public presentations have seen the corresponding growth in mathematical maturity. We believe it is an important part of our major's undergraduate experience.

In the spring of 2002, the MAA was awarded the National Science Foundation grant DMS-0241090 to support conferences in mathematics that had the aim of encouraging presentations on mathematical subjects by undergraduates. The primary objective of the grant was to give undergraduate students an opportunity to see how exciting our discipline is by providing a nurturing environment in which to present and listen to a broad range of talks on mathematical subjects. The expectation is that this experience will encourage more students to continue their education in mathematics at the graduate level. The awards were expected to be quite modest, in the range of \$1000 to \$4000, and were open to both new endeavors and to established conferences that wanted to attempt to expand their programs but were limited because of funding parameters.

The first call for proposals was announced in March of 2003 with a deadline date of June 1, 2003. These proposals were for the academic year 2003–2004. A committee consisting of Colin Adams, Doug Faires, Joe Gallian, and Dan Schaal reviewed the 11 proposals that were received and awarded a total of \$21,000 to 10 institutions. In total, the



Map of the United States with locations of supported undergraduate conferences marked by dots.

grants were expected to fund conferences in which there would be a total of 260 undergraduate speakers and 965 undergraduate attendees from approximately 160 institutions. The institutions receiving the initial grants were Arizona State University, Colorado State University-Pueblo, University of Dayton, Embry-Riddle Aeronautical University, University of Nebraska-Lincoln, Rose-Hulman Institute, Rowan University (for the MAA New Jersey Section) St. Norbert College, Western Kentucky University, and Youngstown State University.

One of the major goals of the grant was to encourage new conferences throughout the United States where students could have the opportunity to formally talk about mathematics, so a second round of proposals was solicited in August of 2003 to encourage new conferences in the spring of 2004. This resulted in the awarding of an additional 5 grants to conferences totaling \$11,900. These grants were awarded to conferences at Mount Holyoke (for the Hudson River Conference), Morehouse University, Boston University, Furman University, and Dordt College. These conferences ex-

pected to attract 190 undergraduate speakers and 500 undergraduate attendees from approximately 115 institutions.

The total funding for the first year to the grant was \$32,900 to support 15 conferences, at which nearly 1500 undergraduates were expected to attend and 450 undergraduates were expected to give presentations. It was expected that about 275 institutions would send students to one or more of the conferences.

The results from surveys received from the conferences indicated that these expectations were met in nearly each instance. In total there were approximately 1332 students from more than 230 institutions attending the conferences, of whom 463 were speakers.

During this second academic year of the three-year grant, the academic year 2004–2005, we are providing support to 27 conferences. Eleven of these were conferences that were supported in the initial year, and the remainder were new. We are now supporting 14 conferences that were not in existence before the NSF grant was awarded to the MAA.

You can obtain detailed information about the currently supported conferences by reviewing the reports from the first year of the grant at MAA Online: <http://www.maa.org/ugconf/report.html>. There have also been articles written about a number of the conferences and published this past year in FOCUS: Colorado State University at Pueblo in August-September, Embry-Riddle Aeronautical University in November, and Youngstown State University on page 12 of this issue. A review of these experiences should excite you with the possibilities.

We are hoping to expand the number of conferences for the final year of the grant. It is our goal to give every undergraduate an opportunity to attend and present a mathematical talk at a regional conference. The map shows the locations in the country that have conferences supported by the grant. If you are in an area that does not have a history of this type of activity, we encourage you to take the initiative and organize a conference in your area. Be prepared, however, to have a possible professional life-changing experience. You may find that your students are much better and more interested in mathematics than you thought they were.

The review deadline for conference proposals for the academic year 2005–2006 is May 1, 2005. Proposals may be considered later than this date if funds are available. The proposal process is quite simple and proposals for some of the currently funded conferences are available at <http://www.maa.org/ugconf/sample-proposals.html>. These proposals are provided only as guidelines; the review committee considers being innovative a positive trait. Simply keep in mind that the objective is to provide an opportunity for undergraduate students to give talks with mathematical content. The students need not be mathematics majors and the talks need not be on advanced or research subjects. However, all the talks should be accessible and interesting to the undergraduate audience.

Doug Faires is professor of mathematics at Youngstown State University.

Undergraduate Student Conferences Institutions

Institution

University of Dayton
 University of Nebraska-Lincoln
 St. Norbert College
 Western Kentucky University
 Youngstown State University
 Arizona State University
 Colorado State University-Pueblo
 Embry-Riddle Aeronautical University
 Furman University
 Rutgers University
 Morehouse College
 Mount Holyoke (HRC)
 Dordt College
 Boston University
 Colorado School of Mines
 Central Michigan University
 Denison University
 Southeast Missouri State University
 University of Arizona
 Western Kentucky University
 Mary Washington College
 Mercer University
 Morehouse College
 Ramapo College of New Jersey
 University of Portland
 Hendrix College
 Hood College
 Williams College
 Appalachian State University
 Davidson College
 Cameron University
 Francis Marion University
 Rose-Hulman Institute of Technology
 Simpson College
 Sonoma State University
 South Dakota State University
 Troy University
 Western Carolina University

Director

Aparna Higgins
 Mark Brittenham
 Rick Poss
 Tom Richmond
 Angela Spalsbury
 Glenn H. Hurlbert
 Hortensia Soto-Johnson
 Greg Spradlin
 John Harris / David Penniston
 Hieu D. Nguyen
 Steven Pederson
 Margaret M. Robinson
 Richard G. Faber
 Emma Previato
 Barbara Moskal
 Sivaram Narayan
 Matthew Kretchmar
 W.Y. Chan
 William Velez
 Tom Richmond
 Debra Hydorn
 Carolyn Yackel
 Brett Sims
 Lawrence D'Antonio
 Chris Hallstrom
 David Sutherland
 Kimberly Tysdal
 Allison Pacelli
 Mark Ginn
 Laurie Heyer
 Karla Oty
 William Fox
 Diane Evans
 Murphy Waggoner
 Izabela Kanaana
 Donna Flint
 Kenneth Roblee
 Sloan Despeaux

Daubechies Interviewed Online

The National Academy of Science has created, in collaboration with Science Matters, Inc., a web site called *InterViews*, which contains “first-person accounts of the lives and work of members of the National Academy of Science.”

The hour-long interviews are conducted by Dorian Devins, a New York radio producer whose credits include a weekly sci-

ence radio program called *The Green Room*.

So far, the only mathematician to have been interviewed is Ingrid Daubechies of Princeton University, but new interviews are posted regularly. The *InterViews* site is located at <http://www7.national-academies.org/interviews/>.

EMPLOYMENT OPPORTUNITIES

IDAHO

BOISE STATE UNIVERSITY

Assistant Professor

Boise, Idaho

Successful candidate to teach undergraduate and graduate students in the Department of Mathematics. Advise and mentor students. Conduct research and actively publish scholarly articles. Serve the University through committee assignments, participation in professional societies and organization, and involvement with professional presentations.

Qualified candidates must have a Ph.D. in Statistics plus knowledge and skill in semi-parametric and non-parametric regression, Bayesian analysis, modeling using wavelets and statistical computing.

To apply, send a letter of application containing a summary of research and teaching interests, a vita and graduate transcripts to:

Alan R. Hausrath, Chair
Department of Mathematics
Boise State University
1910 University Drive,
Boise, Idaho 83725-1555

and arrange to have three letters of recommendation, at least one of which addresses teaching, sent to the same address. The application period closes on January 15, 2005.

Boise State is an EEO/AA institution and applications from women and members of minority groups are especially encouraged. For more information call 208-426-1172 (tty 208-426-1436) (fax 208-426-1356) or send e-mail to hausrath@math.boisestate.edu.

MARYLAND

MONTGOMERY COLLEGE

Endless possibilities!

Consider Montgomery College for your next career move. Our new online application system is now live! Visit our website to view job vacancies and complete an online application at <https://jobs.montgomerycollege.edu>.

Montgomery College with three campuses located in Takoma Park, Rockville, and Germantown, as well as off-campus sites and a Workforce Development & Continuing Education division to serve residents throughout Montgomery County.

Employees enjoy an excellent benefits package.

Visit our website January 2005 for Faculty vacancies:

<https://jobs.montgomerycollege.edu>

Please note: Online applications accepted only.

Montgomery College is an equal opportunity employer committed to fostering a diverse academic community among its student body, faculty, and staff.

MASSACHUSETTS

WILLIAMS COLLEGE

The Williams College Department of Mathematics and Statistics invites applications for one tenure track position in mathematics, beginning fall 2005, at the rank of assistant professor (in an exceptional case, a more advanced appointment may be considered). We are seeking a highly qualified candidate who has demonstrated excellence in teaching and research, and who will have a Ph.D. by the time of appointment.

Williams College is a private, residential, highly selective liberal arts college with an undergraduate enrollment of approximately 2,000 students. The teaching load is two courses per 12-week semester and a winter term course every other January. In addition to excellence in teaching, an active and successful research program is expected.

To apply, please send a vita and have three letters of recommendation on teaching and research sent to the Hiring Committee, Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267. Teaching and research statements are also welcome. Evaluations of applications will begin on or after November 15 and will continue until the position is filled. Williams College is dedicated to providing a welcoming intellectual environment for all of its faculty, staff, and students; as an EEO/AA employer, Williams especially encourages applications from women and minorities. For more information on the Department of Mathematics and Statistics, visit <http://www.williams.edu/Mathematics>.

WILLIAMS COLLEGE

The Williams College Department of Mathematics and Statistics invites applications for one tenure track position in statistics, beginning fall 2005, at the rank of assistant professor (in an exceptional case, a more advanced appointment may be considered). We are seeking a highly qualified candidate who has demonstrated excellence in teaching and research, and who will have a Ph.D. by the time of appointment.

Williams College is a private, residential, highly selective liberal arts college with an undergraduate enrollment of approximately 2,000 students. The teaching load is two courses per 12-week semester and a winter term course every other January. In addition to excellence in teaching, an active and successful research program is expected.

To apply, please send a vita and have three letters of recommendation on teaching and research sent to the Hiring Committee, Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267. Teaching and research statements are also welcome. Evaluations of applications will begin on or after November 15 and will continue until the position is filled. Williams College is dedicated to providing a welcoming intellectual environment for all of its faculty, staff and students; as an EEO/AA employer, Williams especially encourages applications from women and minorities. For more information on the Department of Mathematics and Statistics, visit <http://www.williams.edu/Mathematics>.

NEW JERSEY

DIMACS RECONNECT '05 CONFERENCES:

Current Research Relevant to the Classroom

The Reconnect '05 Conferences sponsored by DIMACS (the Center for Discrete Mathematics and Theoretical Computer Science) are geared towards exposing faculty teaching undergraduates to current research topics relevant to the classroom, involving them in writing materials useful in the classroom, and reconnecting them to the mathematical sciences enterprise by exposing them to new research directions and questions. The two programs: "Mathematics of Elections and Decisions" at Montclair State University from June 12 - June 18, 2005 and "The Mathematics of Medical Imaging" at Spelman College from July 17 - July 23, 2005. Applicants accepted to participate will receive lodging and meals through NSF funding. For more information or an application form, visit our website at <http://dimacs.rutgers.edu/reconnect/>. Or, contact the Reconnect Program Coordinator, at reconnect@dimacs.rutgers.edu or (732) 445-4304.

NEW YORK

THE NYC TEACHING FELLOWS PROGRAM

The NYC Teaching Fellows program, an innovative path to the classroom, is accepting applications for its June 2005 program. Fellows will teach high need subject areas

such as math, science, special education or bilingual education in the NYC public schools. No degree in Education or previous teaching experience is required. Program includes a subsidized Master's degree in Education, 7 week intensive training and ongoing support. To apply please visit our website at <http://www.nycteachingfellows.org>.

ST. JOSEPH'S COLLEGE

Tenure-track position in mathematics beginning fall 2005. Must be committed to excellence in teaching. Ability to teach computer science a plus. Ph.D. preferred.

Send CV to V.P. for Academic Affairs, St. Joseph's College, 155 W. Roe Blvd. Patchogue, NY 11772.

UNITED STATES MERCHANT MARINE ACADEMY

Assistant Professor of Mathematics
The Department of Mathematics and Science is seeking a candidate for a tenure track position in mathematics at the Assistant Professor level to begin on July 25, 2005. A Ph.D. in mathematics is required as is college level experience teaching Calculus and evidence of ongoing scholarship. The applicant will also be expected to teach other undergraduate courses in mathematics. Salary will depend on qualifications and experience. The U.S. Merchant Marine Academy is a 4-year, 11 month Federal college. The position is in the Excepted service. U.S. citizenship required. All application materials are to be in by February 1, 2005. Application letter, resume, and three letters of reference are to be sent to: Dr. Howard Beim, Head, Dept. of Math & Science, U.S. Merchant Marine Academy, Kings Point, NY 11024-1699. 516-773-5461 M/F/H/V.

TENNESSEE

TENNESSEE TECHNOLOGICAL UNIVERSITY

Mathematics Department
Applications are invited for one tenure-track position at the rank of Assistant Professor, available August 2005. A Ph. D. in mathematics is required. Area of research must be in algebra or analysis. Preference will be given to candidates who can complement the research activities of current faculty. Evidence of excellent teaching ability and strong promise in research is required. Duties include teaching courses at the lower division, upper division, and graduate levels, scholarly activity, and service.

Initial screening begins January 15, 2005, but open until filled.

Complete position summary, including qualifications and application procedure, is available at <http://www.tntech.edu/jobs>. Apply to: Brian M. O'Connor, Box 5054 TTU, Cookeville, TN 38505

Email (inquiries only): BMOC@tntech.edu AA/EEO

TEXAS

SAM HOUSTON STATE UNIVERSITY

Mathematics Position in Mathematics Education
The Department of Mathematics and Statistics is seeking to fill two or more assistant/associate tenure-track positions in mathematics education. Candidates must have the equivalent of a master's degree in mathematics and hold a doctorate in mathematics education or equivalent. Teaching, service, and scholarly activities are required. The review will begin November 2004, and continue until the positions are filled. Submit a letter of interest, full curriculum vitae, transcripts, and three letters of reference to: Mathematics Education Search Committee, Department of Mathematics and Statistics, Sam Houston State University, Box 2206, Huntsville, TX 77341-2206.

Sam Houston State University is an EEO/AAP employer.

UTAH

UTAH STATE UNIVERSITY

Department of Mathematics and Statistics
Applications are invited for a tenure track assistant professor position in mathematics education, to begin August 2005. Applications for this position will be assessed relative to the following qualities: level and appropriateness of scholarly preparation to include a Ph.D. in one of the following: mathematics, mathematical sciences, statistics; or mathematics education including at least the equivalent of an M.S. in mathematics or statistics; evidence of excellence in teaching mathematics or statistics; willingness and ability to provide field-based instruction and supervision for preservice and inservice teachers of mathematics and statistics; commitment to providing equitable educational opportunities for all students. USU is an EOE institution with an NFS ADVANCE Gender Equity program. Full position announcement is at: <http://www.math.usu.edu>.

Research topic: Mathematical Biology	A three-week summer program for graduate students undergraduate students mathematics researchers
Education Theme: The Mathematics Education of Mathematics Teachers	undergraduate faculty secondary school teachers math education researchers
<u>IAS/Park City Mathematics Institute (PCMI)</u> June 26- July 16, 2005 Park City, Utah	
Organizers: Mark Chaplain, University of Dundee; James Keener, University of Utah; Mark Lewis, University of Alberta; Philip Maini, Oxford University.	
Graduate Summer School Lecturers: Paul Bressloff, University of Utah; Helen Byrne, University of Nottingham; James Cushing, University of Arizona; David Earn, McMaster University; Leon Glass, McGill University; James Keener, University of Utah; Mark Lewis, University of Alberta; Alex Mogilner, University of California Davis	
Clay Senior Scholars in Residence: Simon A. Levin, Princeton University; Charles S. Peskin, Courant Institute	
Other Organizers: Secondary School Teachers Program: Gail Burrill, Michigan State University; Carol Hattan, Vancouver, WA; James King, University of Washington. Mathematics Education Research Program: Joan Ferrini-Mundy, Michigan State University. Undergraduate Students Program: William Barker, Bowdoin College; Roger Howe, Yale University. Undergraduate Faculty Program: Daniel Goroff, Harvard University.	
Applications: www.ias.edu/parkcity Deadline: February 15, 2005 IAS/ Park City Mathematics Institute Institute for Advanced Study, Princeton, NJ 08540 Financial Support Available	