

# national association of mathematicians



volume XXXVIII number 4 winter 2007

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## IN THE NEWS

Paulus Gerdes, the Mozambiquan expert on the Ethno-Mathematics of Africa, has published a new book: African Basketry: A Gallery of Twill-Plaited Designs and Patterns. It is available as download and in print from <http://stores.lulu.com/pgerdes> or from <http://www.lulu.com>.

Dr. Charles Brown, (Nana Kwadwo Amoah I) (1947 – October 2007) Chair and Professor, Department of Physics, Morehouse College.

Dr. Bennett Robinson, first black PhD (Physics) from Stanford. CEO/owner of a telecommunications company in Bangkok, Thailand.

The Claytor Lecture at the Joint Mathematics Meetings in San Diego will be given by Dr. Scott Williams, of SUNY at Buffalo. Title. The Box Product Problem 25 Years Later.

In November 2007, Spelman College hosted one of the largest NAM Math-Fests. Dr. Dawn Lott of Delaware State University gave the Wilkins Lecture: Diary of a MAD Black Woman.

Please Pay Your NAM Dues. This Newsletter and NAM's programs are financed by its dues paying membership. Please pay. See the end of the newsletter for the form.

### Error

During the Business meeting of 2007, NAM realized it must raise its yearly membership dues from \$25 to \$50. Unfortunately, due to a lapse of this editor, the dues change was not reflected in the first Newsletter issued this year, 38.1. To those of you who thankfully submitted your dues we ask you to consider sending an additional \$25.

We express our thanks to Dr. Dawn Lott for constructing and arranging the new official NAM website at <http://www.nam-math.org/>

## Candy Math and Ice 9

by Scott Williams

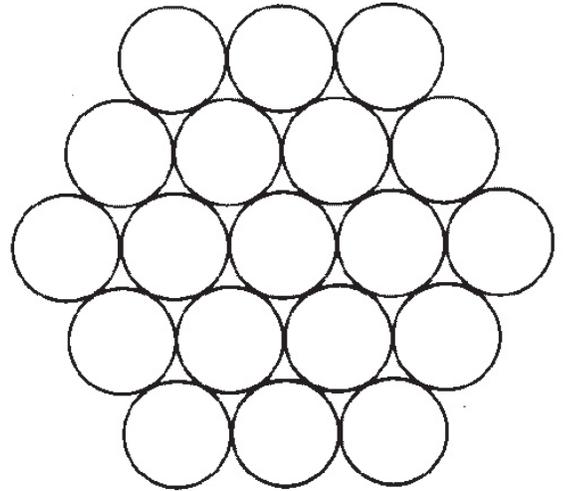
Kurt Vonnegut's acclaimed novel Cat's Cradle mentions a chemical Ice-9 which is made based on the principles of being able to stack cannon balls in different ways. When molecules of ice-9 are stacked in a certain way which makes it turn any water it touches into more ice-9. Dangerous! How can

you stack cannonballs, molecules, or oranges in an efficient manner? It is a problem of interest to Mathematicians, Physicists, and Chemists.

Imagine filling or packing your suitcase with small equal-sized oranges from southern California orange groves. The density of the packing is the ratio of the volume of the suitcase that is taken up by the oranges. In order to maximize the number of oranges in the suitcase, you need to find an arrangement with the highest possible density, so that the oranges are packed together as closely as possible.

The mathematics field of sphere packing is concerned arrangements of non-overlapping identical spheres which fill a space. Usually the space involved is a three-dimensional space Euclidean space. However, the general subject extends from the plane (where the spheres are circles) to n-dimensional space (where the “spheres” are called hyperspheres; e.g.) to even non-Euclidean space such as hyperbolic space.

One can pack with equal sized spheres or special patterns. Carl Gauss proved that in the plane, the regular arrangement of circles with the highest density is the arrangement in which the centres of the circles are arranged in a hexagonal lattice, and as in the picture shown to the right where the centers of each three circles in contact form an equilateral triangle like a honeycomb, therefore this arrangement is called a hexagonal packing. Gauss showed the density of such an arrangement is more than 90% or, more precisely,  $\pi$  divided by root 12.



Experiment shows that dropping same sized oranges in your suitcase randomly will achieve a density of around 65%. However, density in excess of 74% can be achieved by carefully arranging the spheres as follows. Start with a layer of spheres in a hexagonal lattice, then put the next layer of spheres in the lowest points you can find above the first layer, and so on - this is just the way you see oranges stacked in the grocery store. This natural method of stacking the spheres creates one of two similar patterns called cubic close packing and hexagonal close packing. Each of these two arrangements has an average density of  $\pi/\sqrt{18} \sim .74$ .

In 1611 Johannes Kepler conjectured  $\pi/\sqrt{18}$  is the maximum possible density for both regular and irregular arrangements — this became known as the Kepler conjecture. In 1953, László Tóth reduced the Kepler conjecture to an enormous calculation involving specific cases and later suggested that computers might be helpful for solving the problem. Hales recently. In 1998, Thomas Hales worked out a five-step strategy to implement the Tóth approach and so gave a computer-aided proof that the most efficient method to pack spheres was in a pyramid shape. In dimensions higher than three, the densest regular packings of hyperspheres are known up to 8 dimensions. [a 4-space hypersphere is the set  $\{<x,y,z,w> : x^2+y^2+z^2+w^2 = 1\}$ ].

Curiously, though irregular packed gumballs are inefficient (65%), irregular packed ellipsoids like M&Ms pack more densely than spheres. To more fully understand particle behavior, in 2004, physicists developed a computer simulation that allowed them to test any shape, from a flattened M&M-like shape to a sphere to an elongated cigar-like shape. The standard M&M shape packed irregularly yields a density of 73.5%. The computer model yielded a further surprise when they stretched the M&M shape so it looked elliptical from the top as well as from the side. That shape achieved a random packed density of nearly 77%.

Why is random packing denser for ellipsoids than for spheres? The team proposes that the asymmetric ellipsoids can tip and rotate in ways that spheres can't, so an ellipsoid nestles close to more neighbors than a sphere does. Indeed, the team finds that as many as 11 neighbors touch an ellipsoid, whereas each tight-packed sphere typically has only 6 adjacent neighbors.

In 1940 László Tóth proved the hexagonal lattice is the densest of all possible regular or irregular circle packings. Still, very little is known about irregular hypersphere packings — it is possible that in some dimensions the densest packing may be irregular. Some support for this conjecture comes from the fact that in dimension 10 the densest known irregular packing is better than the densest known regular packing. However, the densest packings in any hyperbolic space are almost always irregular.

The NPR radio program Science Friday has had several discussions in this topic. You can hear one at <http://www.npr.org/templates/story/story.php?storyId=1703595>.

#### References:

1. Conway, J.H. & Sloane, N.J.H. (1998) Sphere Packings, Lattices and Groups.
2. [http://www.sciencenews.org/pages/sn\\_arc98/8\\_15\\_98/fob7.htm](http://www.sciencenews.org/pages/sn_arc98/8_15_98/fob7.htm)
3. <ftp://ftp.ma.utexas.edu/pub/papers/radin/hyper.pdf>
4. Phil Schewe and Ben Stein, Physics New Update, Number 685 #2, May 12, 2004
5. Peter Weiss, Candy Science: M&Ms pack more tightly than spheres, Science Feb 14, 2004.
6. [www.chem.ox.ac.uk/icl/heyes/structure\\_of\\_solids/Lecture1/Lec1.html](http://www.chem.ox.ac.uk/icl/heyes/structure_of_solids/Lecture1/Lec1.html)

## Tilings

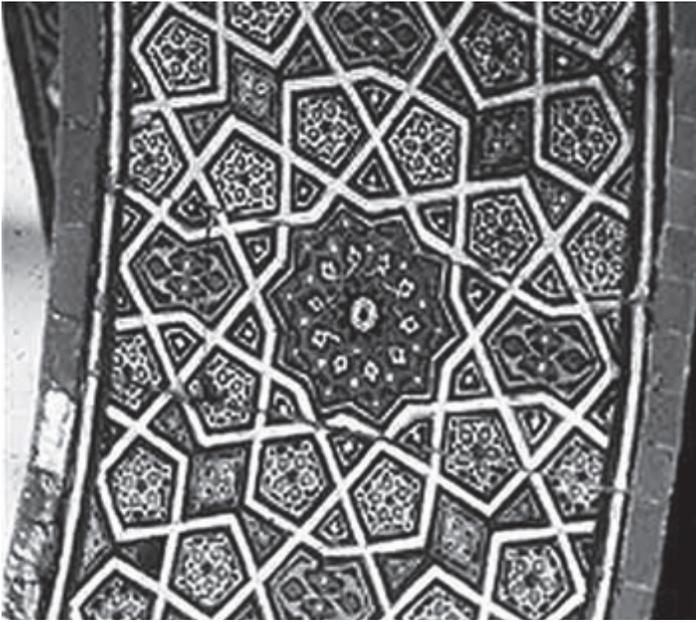
A physicist Peter J. Lu, while a doctoral student at Harvard, was mesmerized by the geometric pattern on a wall in Uzbekistan. The blue design (shown below) with 10-pointed stars reminded Lu of what mathematicians call quasi-crystalline designs or the Penrose tilings which were demonstrated in the early 1970s by Roger Penrose, a mathematician and cosmologist at the University of Oxford. Working with Paul J. Steinhardt, a Princeton cosmologist, Lu set about examining pictures of other tile mosaics throughout the middle east.

To find out, Lu consulted a rare 15th century scroll. The scroll's panels show the bare outlines of different patterns, five-fold pentagons, 10-fold stars. Further, there were some faint red marks in five shapes. Lu realized they were basic building blocks, templates used by the artists – an instruction manual of sorts – for medieval artists, who carefully guarded their secret techniques..

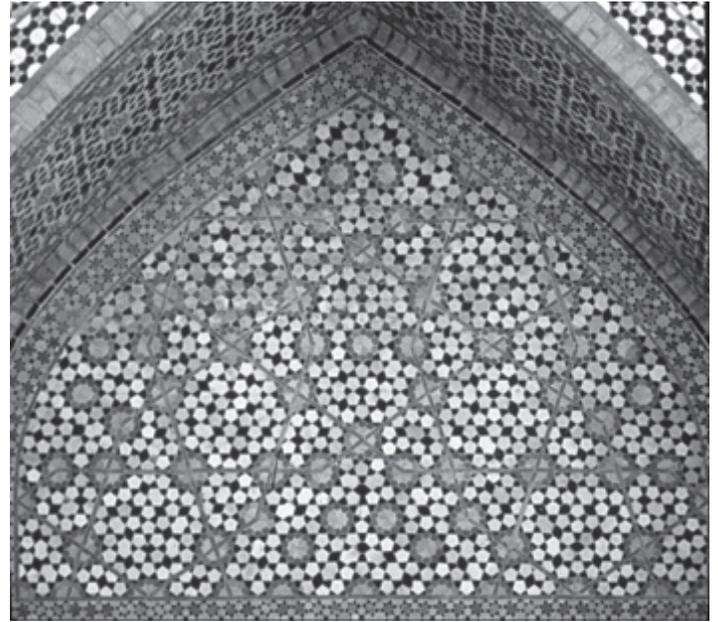
Lu describes the templates as a set of “universal puzzle pieces.” He thinks they may have been assembled to build different types of tile patterns. Once artists had these building blocks, Lu says, they could start drawing increasingly sophisticated patterns. In at least one case, the artists generated the kind of advanced mathematical patterns like Penrose tilings.

These pattern pattern appears over an archway (shown below) at the Darb-i Imam shrine in Isfahan, Iran. There are silver stars surrounded by black and gold shapes.

When some people first look at these patterns, they immediately notice repeating motifs. These people assume the pattern is repeating in a regular way, like the tiles on a bathroom floor. Others see that the pattern repeats but not in a regular way, and they assume that it is random. In fact, the pattern isn't random. Steinhardt says if you do the math, you see that it all fits together in predictable way. But intuitively, it's hard for some people to see. “It is hard to picture,” he says, “and it's hard for humans to process these patterns and interpret them.”



From a Turkish mosque



Shrine in Iran

Which raises the question of whether the medieval artists really understood the math behind their creation. This has yet been verified. “That is a much stronger claim and that would be much more difficult to establish,” computer scientist Craig Kaplan says. “We know that they were good mathematicians, we know that they studied Euclid, but we don’t know exactly how they worked.” People are still trying to figure out the secrets hidden in these geometric patterns. Kaplan says they are so appealing and mysterious that researchers will keep trying to unravel them, using all of the modern tools at their disposal.

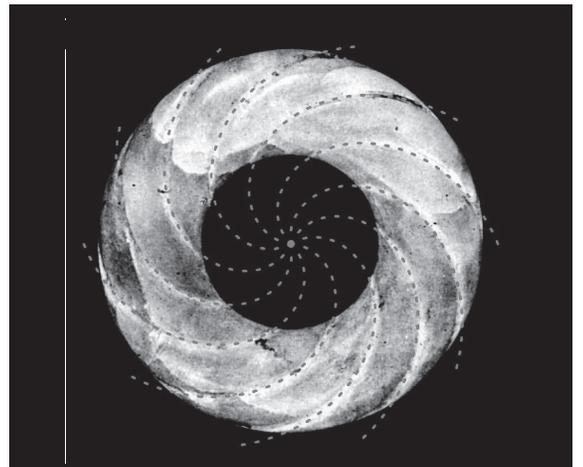
In any case it is clear that 15th century, Islamic designers and artisans had developed techniques to construct nearly perfect quasi-crystalline Penrose patterns, five centuries before discovery in the West.

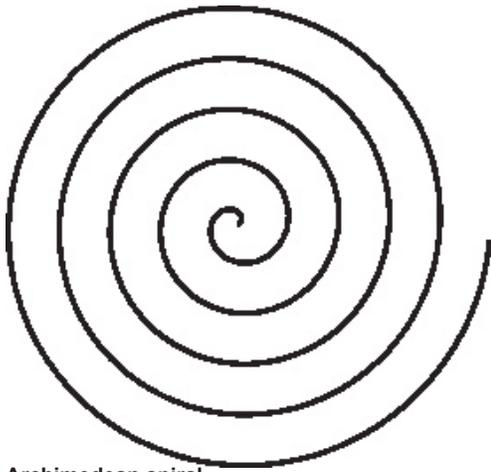
see the article published in the New York Times: <http://www.nytimes.com/2007/02/27/science/27math.html>

## Archimedean Before Archimedes

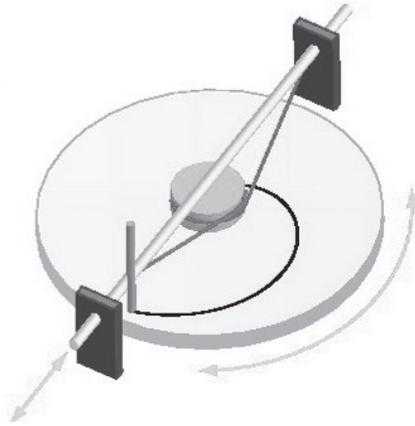
In 2004 some jade rings were unearthed in China. The rings, which vary in size from a quarter to the size of a bracelet, are dated 770 BC and were seen to bear the so-called Archimedean spirals (shown below). The construction of the spirals required a complex ancient device, shown below, thought to only exist 300 later.

An *Archimedean spiral*, not to be confused with the logarithmic spiral, is the locus of points corresponding to the locations over time of a point moving away from a fixed point with a constant speed along a line which rotates with constant angular velocity - for example in polar coordinates, the equation  $r = a + b\theta$ . The separation distance is a constant  $2\pi b$ . In nature this curve appears on the pine cone. Archimedean spiral curves on the ring to the right are all of the same equation and share the same center, differing only in rotation.





Archimedean spiral



Device

## A Congressman and Science Legislation

by Jacqueline Giles

Congressman Al Green (TX-9), along with the support of several House Science Committee Democrats, introduced legislation aimed at increasing math and science interest and opportunities for inner city students. HR 5458, a bill to authorize a National Science Foundation (NSF) competitive grant program for establishing or expanding math and science camps in urban areas, would allow middle and high school students the opportunity to participate in these all expenses paid camps during the summer.

Following a hearing regarding the National Science Foundation's role in these all expenses paid camps during the summer.

Following a hearing regarding the National Science Foundation's role in providing math and science education, Green, a member of the House Science Committee, expressed his commitment to expanding opportunities for the underprivileged: "Just as we took steps to fill a need, ensuring that women excelled in math and science, we must also use that same enthusiasm to facilitate inner city students in their efforts to shine in math

In an attempt to ensure that disadvantaged students were included in the Administration's new American Competitiveness Initiative that was unveiled at the 2006 State of the Union Address, Green felt extracurricular activities focused on math and science enrichment would be a first-step towards reducing the divide in participation and achievement in the science, technology, math, and engineering (STEM) professions.

Green explained, "When Albert Einstein was a child, he was considered a slow learner, not the genius destined for greatness that he is remembered as today. This legislation gives us a greater chance not only to leave no child behind but also to reveal the hidden talents of the next genius child waiting to make a difference, if just given the opportunity."

HR 5458 will be referred to the House Science Committee. Green hopes that he can work with his colleagues both on the Committee and throughout the distinguished body to ensure passage of this vital piece of legislation.



Congressman Al Green and NAM Board member Jacqueline Giles 2007 *America's Table Thanksgiving Breakfast*

## **NAM Calendar**

You can find NAM's Online Conference Calendar and the most recent links to relevant conferences announcements at NAM's official website <http://www.nam-math.org/>

Many details concerning NAM's events are posted on the NAM headquarters website <http://jewel.morgan.edu/~nam/>

## **NAM Board, Elections and Terms**

For Nominations to the NAM Board, Elections and Terms please contact NAM's Majority Institution member (the election supervisor) by August 1. Make certain the nominated individual agrees to run, and serve if elected. Send vita data such as Name, email address, School, position, and date of last degree.

All members of the Board shall be elected to a term of office for a period of two years and elections shall be staggered for continuity. Regular elections shall occur in the fall of each year and the persons elected shall be duly installed at the first Annual NAM meeting following the election. The term of each elected position is three (3) years. The editor will be an appointed position for a period of three years. The Editor shall be responsible for the production of the Newsletter and shall perform such other duties as the Board of Directors may specify. The Executive Secretary shall be selected to serve for a period of five (5) years and shall begin the term of office at the Spring Board Meeting. His/her selection must be the unanimous choice of the existing Board of Directors.

The election of the members of the Board of Directors shall be by official ballots and shall be supervised by the Board of Director's Committee on Legislation-Nomination when the election is by mail, all current members in good standing in NAM shall be provided a ballot and given reasonable time to return it.

The election cycle is shown below :

- 2007: Secretary/Treasurer; Region C Representative; Community College Representative.
- 2008: President; Region A Representative; Government/Industry Representative.
- 2009: Vice President; Region B representative; Majority Institution Representative.
- 2010: Secretary/Treasurer; Region C Representative; Community College Representative.
- 2011: President; Region A Representative; Government/Industry Representative
- 2012: Vice President; Region B representative; Majority Institution Representative.

## **Job Openings**

Recall that for several years, NAM has had a web site with listings of open positions. This process is open to advertisers in the Newsletter. Advertisements too late for the publication date appear there. The remainder of the advertisements appear there six or more weeks before they appear in print in the Newsletter. See the editor's web site within MAD: <http://www.math.buffalo.edu/mad/NAM/>

### **University of North Carolina Greensboro**

Tenure Track and Open Rank

Applications are invited for three tenure-track assistant/associate professorships in mathematics, to start in Fall 2008. Preference will be given to applicants in computational number theory, computational algebra, computational topology, discrete mathematics, or modeling.

The application should include an AMS cover sheet, curriculum vitae, description of current research, statement of teaching philosophy, and three letters of recommendation, including one letter addressing the candidate's teaching abilities. Hard copies of

these materials must be sent to: Chair, Mathematics Search Committee, Department of Mathematics and Statistics, University of North Carolina at Greensboro, Greensboro NC 27402. Applications received by January 15, 2008 will be guaranteed full consideration. We are unable to process email applications.

UNC Greensboro is especially proud of the diversity of its student body and we seek to attract an equally diverse applicant pool for these positions, including women and members of minority groups. We are an EEO/AA employer with a strong commitment to increasing faculty diversity and will respond creatively to the needs of dual-career couples.

### **Open Rank**

Applications are invited for a tenure-track open rank professorship in mathematics education to start in fall 2008. Applicants must have or anticipate a Ph.D. in mathematics or in mathematics education by August 2008. The person in this position will serve as coordinator for the Department's teacher education programs, will be the Department's primary liaison to the School of Education, will be responsible for advising and teaching courses for prospective mathematics teachers, and will be expected to maintain an active research program.

The application should include an AMS cover sheet, curriculum vitae, description of current research, statement of teaching philosophy, and three letters of recommendation, including one letter addressing the candidate's teaching abilities. Hard copies of these materials must be sent to: Chair, Mathematics Search Committee, Department of Mathematics and Statistics, University of North Carolina at Greensboro, Greensboro NC 27402. Applications received by January 15, 2008 will be guaranteed full consideration. We are unable to process email applications.

UNC Greensboro is especially proud of the diversity of its student body and we seek to attract an equally diverse applicant pool for this position, including women and members of minority groups. We are an EEO/AA employer with a strong commitment to increasing faculty diversity and will respond creatively to the needs of dual-career couples.

### **Mercer University, Macon, GA**

Assistant Professor, Department of Mathematics

The Department of Mathematics at Mercer University invites applications for two positions at the level of Assistant Professor of Mathematics to begin August 2008. A Ph.D. in mathematics from an accredited university/college is required. Duties include teaching 21 semester hours per year – usually 6 courses – plus departmental duties as assigned by the Chair and college duties as assigned by the Dean. The successful candidate will show potential for excellence in teaching mathematics at a liberal arts college, show potential for ongoing scholarship, and demonstrate an ability to contribute to the development of programs in the department (e.g., curriculum development and undergraduate research). A lively interest in teaching an interdisciplinary course outside of the department will be considered a plus in evaluating candidates. For full description and to apply online, please access [www.mercerjobs.com](http://www.mercerjobs.com). AA/EOE/ADA

### **York University, Category Theory**

Applications are invited for one tenure-track appointment at the Assistant Professor level in the Department of Mathematics and Statistics to commence July 1, 2008. Candidates in the area of Category Theory and its applications to mathematics, computer science or physics will be considered. The successful candidate must have a Ph.D. in hand or near completion (expected in 2008), a proven record of independent research excellence, and superior teaching ability. The successful candidate must be eligible for prompt appointment to the Faculty of Graduate Studies. Preference will be given to candidates who can strengthen existing areas of present and ongoing research activity.

Applications must be received by January 15, 2008. Applicants should send resumes and arrange for three signed letters of recommendation (one of which should address

teaching) to be sent directly to:

Pure Mathematics Search Committee; Department of Mathematics and Statistics  
N520 Ross, York University; 4700 Keele Street; Toronto, Ontario; Canada M3J 1P3  
E-mail: [puremath.recruit@mathstat.yorku.ca](mailto:puremath.recruit@mathstat.yorku.ca), Website: [www.math.yorku.ca/Hiring](http://www.math.yorku.ca/Hiring)

All positions at York are subject to budgetary approval.

York University is an Affirmative Action Employer. The Affirmative Action Program can be found on York's website at [www.yorku.ca/acadjobs](http://www.yorku.ca/acadjobs) or a copy can be obtained by calling the affirmative action office at 416-736-5713. All qualified candidates are encouraged to apply; however, Canadian citizens and Permanent Residents will be given priority.

### **York University - Operations Research**

Applications are invited for one tenure-track appointment in the Department of Mathematics and Statistics at the Assistant Professor level in the area of Operations Research to commence July 1, 2008. The successful candidate must have a Ph.D. in hand or near completion (expected in 2008), a proven record of independent research excellence, and superior teaching ability. Preference will be given to candidates who can strengthen existing areas of present and ongoing research activity. The successful candidate must be eligible for prompt appointment to the Faculty of Graduate Studies.

Applications must be received by January 15, 2008. Applicants should send resumes and arrange for three signed letters of recommendation (one of which should address teaching) to be sent directly to:

Operations Research Search Committee; Department of Mathematics and Statistics  
N520 Ross, York University; 4700 Keele Street; Toronto, Ontario; Canada M3J 1P3  
E-mail: [or.recruit@mathstat.yorku.ca](mailto:or.recruit@mathstat.yorku.ca), Website: [www.math.yorku.ca/Hiring](http://www.math.yorku.ca/Hiring)

All positions at York are subject to budgetary approval.

York University is an Affirmative Action Employer. The Affirmative Action Program can be found on York's website at [www.yorku.ca/acadjobs](http://www.yorku.ca/acadjobs) or a copy can be obtained by calling the affirmative action office at 416-736-5713. All qualified candidates are encouraged to apply; however, Canadian citizens and Permanent Residents will be given priority.

### **York University - Mathematical Research**

Applications are invited for one tenure-track appointment in the Department of Mathematics and Statistics at the Assistant Professor level in the area of Mathematical Finance to commence July 1, 2008. The successful candidate must have a Ph.D. in hand or near completion (expected in 2008), a proven record of independent research excellence, and superior teaching ability. Preference will be given to candidates who can strengthen existing areas of present and ongoing research activity. The successful candidate must be eligible for prompt appointment to the Faculty of Graduate Studies.

Applications must be received by January 15, 2008. Applicants should send resumes and arrange for three signed letters of recommendation (one of which should address teaching) to be sent directly to:

Mathematical Finance Search Committee; Department of Mathematics and Statistics  
N520 Ross, York University; 4700 Keele Street; Toronto, Ontario; Canada M3J 1P3  
E-mail: [or.recruit@mathstat.yorku.ca](mailto:or.recruit@mathstat.yorku.ca), Website: [www.math.yorku.ca/Hiring](http://www.math.yorku.ca/Hiring)

All positions at York are subject to budgetary approval.

York University is an Affirmative Action Employer. The Affirmative Action Program can be found on York's website at [www.yorku.ca/acadjobs](http://www.yorku.ca/acadjobs) or a copy can be obtained by calling the affirmative action office at 416-736-5713. All qualified candidates are encouraged to apply; however, Canadian citizens and Permanent Residents will be given priority.

### **Harvey Mudd College**

Harvey Mudd College invites applications for a tenure-track position; candidates from all areas of Mathematics and Applied Mathematics, including statistics, biostatistics, mathematical biology and mathematical finance, are encouraged to apply. The rank will be at the assistant or associate professor level. Excellence in teaching is essential, as is evidence of a strong and ongoing research program. Candidates must be willing to supervise undergraduate research, and work with others in departmental programs, such as

the industrial projects-based Clinic program. Candidates with a demonstrated success in working with diverse student populations are particularly encouraged to apply.

The Mathematics Department at Harvey Mudd College has been recognized nationally as a leader in teaching, research, mentoring undergraduate research, and educational outreach to local high schools. In 2006, the American Mathematical Society recognized the department with its inaugural award for Exemplary Program or Achievement in a Mathematics Department.

Harvey Mudd College is a highly selective undergraduate institution of science, engineering and mathematics. A quarter of our students are National Merit Scholars, a fifth are high school valedictorians and one year of high school calculus is required for admission. Each year there are about 40 graduates in mathematics, mathematical biology and mathematics/computer science with roughly half going to graduate school. The College enrolls about 750 students and is a member of the Claremont Colleges consortium, comprising five undergraduate colleges, the Claremont Graduate University, and the Keck Graduate Institute of Applied Life Sciences, forming together an academic community of about 5000 students. There is an active research community of over 50 mathematicians and statisticians in the consortium.

Claremont is situated approximately 35 miles east of downtown Los Angeles, at the foot of the San Gabriel mountains. The community is known for its tree-lined streets and village charm. It is an easy drive from Claremont to cultural attractions of the greater Los Angeles area, as well as the ocean, mountains and deserts of Southern California.

Strong preference will be given to applications submitted through <http://www.mathjobs.org/jobs/>. Applicants should submit a cover letter; a curriculum vitae; a synopsis of their current research program; and a teaching portfolio, including a description of their teaching philosophy and experience. They should also arrange to have three letters of recommendation submitted through the mathjobs.org website. Candidates are also welcome to include in the cover letter a statement about their personal efforts working in and promoting diverse academic environments.

Further information about the college and department may be found at <http://www.math.hmc.edu/> Preference will be given to applications completed by December 10, 2007.

Harvey Mudd College is an equal opportunity employer and is committed to the recruitment of candidates historically underrepresented on college faculties. Experience with or demonstrated ability to effectively teach students from diverse backgrounds will be considered among the criteria for appointment.

## **University of North Carolina at Chapel Hill Distinguished Professor**

The Department of Mathematics at the University of North Carolina at Chapel Hill seeks to fill a distinguished chaired position, the Linker Professorship. An exceptional research record is the fundamental criterion for this position. Applications are invited from mathematicians working in the areas of analysis and geometry.

The search will continue in earnest until the position is filled. We expect interviews to commence after February 1, 2008. Applicants should send a letter of application and a complete curriculum vitae to: Linker Professor Search Committee, Department of Mathematics, University of North Carolina at Chapel Hill, CB # 3250, Phillips Hall, Chapel Hill, NC 27599-3250.

For further information on the Department, please visit our website at : <http://www.math.unc.edu> or contact Professor Patrick Eberlein by email at [pbe@email.unc.edu](mailto:pbe@email.unc.edu) or by telephone at 919-962-9624. UNC-CH is an Equal Opportunity Employer.

## **Purdue University Faculty Positions in Statistics**

The Department of Statistics at Purdue University invites applications in all areas of statistics and probability for tenure-track positions beginning August 2008. A number of positions are available at the Assistant Professor level; senior positions will be considered for highly qualified applicants. Additional positions are available for candidates also in applications areas designated in COALESCE II, a College of Science-wide multidisciplinary hiring effort. Two separate COALESCE II positions in Statistics are available, one with applications in the social sciences, and one with applications in applied mathematics.

The Department of Statistics offers a stimulating and nurturing academic environment. More than thirty tenured and tenure-track faculty members direct research programs in a broad range of areas. Further information about the department is available at: <http://www.stat.purdue.edu>.

All applicants should hold a PhD in Statistics, or a related field, be committed to excellence in teaching, and have demonstrated strong potential for excellence in research. Salary and benefits are highly competitive.

Applicants matching one search may be considered in other relevant searches when appropriate. Review of applications will begin on December 1, 2007, and will continue until the positions are filled.

For all positions in Statistics, please visit <http://www.stat.purdue.edu/hiring/> to apply.

Purdue University is an Equal Opportunity/Equal Access/Affirmative Action employer fully committed to achieving a diverse workforce.

### **Miami University Middletown Campus**

Miami University Middletown invites applications for a tenure-track assistant professor position in mathematics beginning Fall 2008.

A doctorate by August 2008 in a mathematical science or mathematics education and strong credentials or demonstrated potential for high quality teaching is required.

The ability and willingness to teach mathematics service courses for education and/or computer science majors is desired.

Miami University Middletown is primarily a teaching campus with courses at the first and second year levels; however, there will be opportunities to teach in the area of specialty.

Service and scholarly activity required at appropriate levels.

Salary is competitive, excellent benefits package (visit [www.muohio.edu/benefits](http://www.muohio.edu/benefits) for more details). The Middletown campus has a vibrant, interdisciplinary, and diverse faculty community actively engaged in research; institutional, disciplinary, and community service; and continuous improvement of teaching. Our university values campus diversity; we particularly encourage members of historically underrepresented groups to apply.

Send letter of application, AMS cover sheet, curriculum vitae, description of current research, statement of teaching philosophy, and three letters of recommendation (at least one should address teaching) to: Mathematics Search Committee, Miami University Middletown, 4200 East University Boulevard, Middletown, Ohio 45042.

Electronic submissions may be sent to [MUMMathSearch@muohio.edu](mailto:MUMMathSearch@muohio.edu). Screening begins December 7, 2007 and continues until position is filled.

Miami University is an affirmative action, equal opportunity employer. For information regarding campus crime and safety, visit [www.muohio.edu/righttoknow](http://www.muohio.edu/righttoknow).

### **Nazareth College**

Nazareth College in Rochester, NY invites applications for a tenure-track position in mathematics effective Fall 2008. Ph.D. in mathematics or mathematics education and a demonstrated interest and excellence in teaching required. Responsibilities include teaching four courses per semester, to majors and non-majors, in a liberal arts environment. Interest in mathematical applications, directing student research, and/or K-12 teacher preparation preferred. Applications from candidates from diverse backgrounds are encouraged. (EOE/AA) Complete applications will be considered as received, although we will be interviewing at the Joint Mathematics Meetings in January. For more information, including how to apply, please see [http://www.naz.edu/dept/math/documents/ad\\_0708\\_000.pdf](http://www.naz.edu/dept/math/documents/ad_0708_000.pdf)

### **Randolph-Macon College**

Applications are invited for a tenure-track position in mathematics beginning Fall 2008. Preference will be given to applicants in analysis, applied mathematics, or statistics. ABD or PhD required.

The successful candidate must demonstrate a commitment to excellence in teaching at a residential liberal arts college and a strong interest in continued scholarship. To

apply, send a letter of application, AMS cover sheet, curriculum vitae, 3 letters of recommendation, statements of teaching philosophy and scholarship goals, and graduate transcripts to the address below. The review of applications will begin December 1; preliminary interviews will be given at the joint meetings. Applications from women and minorities are especially encouraged. EOE.

Dr. Bruce Torrence, Chair - Mathematics Search Committee, Randolph-Macon College, P.O. Box 5005, Ashland, VA 23005-5505.

## **Tufts University**

Tenure-Track Assistant Professorship Geometry and Dynamics

Applications are invited for a tenure-track Assistant Professorship to begin September 1, 2008. Applicants must show promise of outstanding research in the area of Geometry and Dynamics, that is, the study of dynamical aspects of geometric problems or applications of dynamical systems to geometry. Possible specialties include, but are not limited to, actions of the mapping-class group, Teichmüller flows, geodesic flows in nonpositive curvature, dynamics or rigidity of group actions, dynamics on the boundary at infinity. Preference will be given to candidates whose interests bridge those of Tufts faculty in Geometric Group Theory, Topology and Dynamical Systems. Applicants must also show evidence of excellent teaching. The teaching load will be two courses per semester.

Applications should include a cover letter, curriculum vitae, a research statement and a teaching statement. All of these documents should be submitted electronically through <http://www.mathjobs.org>. In addition, applicants should arrange for three letters of recommendation to be submitted electronically on their behalf through <http://www.mathjobs.org>. If a recommender cannot submit online, we will also accept signed PDF attachments sent to [Boris.Hasselblatt@tufts.edu](mailto:Boris.Hasselblatt@tufts.edu) or paper letters mailed to GD Search Committee Chair, Department of Mathematics, 503 Boston Avenue, Tufts University, Medford, MA 02155. Review of applications will begin on January 11, 2008 and will continue until the position is filled. Tufts University is an Affirmative Action / Equal Opportunity employer. We are committed to increasing the diversity of our faculty. Members of under-represented groups are strongly encouraged to apply.

## **Wright State University**

Department Chair – Mathematics and Statistics

Wright State University invites applications for the position of Chair, Department of Mathematics and Statistics. Housed in the College of Science and Mathematics, the department has thirty three professorial rank faculty lines (tenure and tenure track) and ten full time lecturers and instructors. It offers undergraduate and masters degree programs. A statistical consulting center is housed within the department. The department has strong outreach activities with the region's K-12 schools and operates a program to assist minority students at Wright State. Faculty research is emphasized and supported with specialties that include analysis, applied mathematics, discrete mathematics, mathematics education, probability, and statistics. More information is available at <http://www.math.wright.edu/>.

Candidates must have a Doctorate in Mathematics, Statistics, or a related area and a record that warrants appointment as a full professor. This record must include excellence in both research and teaching, and leadership experience in program development and administration. Preferred qualities include the ability to provide leadership in a cooperative, supportive collegial environment, experience with undergraduate and graduate programs, understanding and promoting ethnic and cultural diversity of students and faculty members, good interpersonal skills, and effective communication with scientific, industrial, and urban educational communities.

Review of applications will begin on January 11, 2008 and continue until the position is filled. Nominations are welcome. Applicants should submit a complete vita, a brief statement of academic leadership philosophy, and names, email-addresses, and telephone numbers of five references. Applications may be submitted either electronically (documents in PDF or MS Word format) at [chairapp@math.wright.edu](mailto:chairapp@math.wright.edu), or mailed to

M&S Chair Search Committee, 134 Oelman Hall, College of Science & Mathematics, Wright State University, Dayton OH 45435. WSU is AA/EOE.

### **UCLA Institute for Pure and Applied Mathematics**

The Institute for Pure and Applied Mathematics (IPAM) at UCLA is seeking a second Associate Director (AD), to begin a two-year appointment on July 1, 2008. The AD is expected to be an active and established research mathematician or scientist in a related field, with experience in conference organization. The primary responsibility of the AD will be running programs in coordination with the organizing committees.

For a detailed job description and application instructions, go to [www.ipam.ucla.edu/jobopenings/assocdirector.aspx](http://www.ipam.ucla.edu/jobopenings/assocdirector.aspx). Applications will receive fullest consideration if received by February 15, 2008. UCLA is an equal opportunity/affirmative action employer.

### **Berea College**

Berea College announces a full time, tenure-track position in the Mathematics and Computer Science Department, beginning September, 2008. Appointment will be at the assistant professor level. A Ph.D. in Computer Science and willingness to teach courses in mathematics or a Ph.D. in the mathematical sciences with a willingness to teach courses in computer science is required. A strong commitment to teaching is essential. Responsibilities center on mathematics and computer science teaching ranging from introductory to advanced undergraduate. Above all we are seeking candidates who can achieve excellence in teaching and who, in an undergraduate environment, will find ways to grow professionally. All faculty in the Department will be expected to interact with students on a one-on-one basis in the excitement and vitality of their growth through such activities as summer faculty/student research, independent studies, or senior capstone projects. The Department is supportive of all forms of scholarship. Applicants should send a cover letter, resume, transcripts of graduate and undergraduate work, a statement of personal teaching philosophy, and three letters of recommendation by January 21st to Professor James Blackburn-Lynch, Chair, Mathematics and Computer Science Department, CPO 2146, Berea College, Berea, KY 40404. More information about Berea College and the Mathematics and Computer Science Department is available at <http://www.berea.edu/mcs/>

Women and minority candidates are especially encouraged to apply.

*Berea College, in light of its mission in the tradition of impartial love and social equality, welcomes all people of the earth to learn and work here.*

### **University of South Carolina Sumter**

Asst. Prof. of Math, USC Sumter, tenure-track, begin Fall 2008. Ph.D. in Math. 12 hrs./sem. all undergrad.; expectations incl. excellence in teaching & commitment to research/scholarship. Ability to teach intro. stats. Submit vita, 3 current ltrs. of rec., copies of all undergrad. & grad. transcripts, & sum. of teaching evals., or other evidence of excellence in teaching. App. ltr. should incl. phil. of teaching & prof. goals & interests. Send materials to: Dr. James Privett, Div. of Sci., Math, & Engr., USC Sumter, 200 Miller Road, Sumter SC 29150-2498. Review of credentials will begin immediately & continued until position filled. Foreign nationals indicate current US immigration status. AA/EOE.

### **Hood College**

Hood College invites applications for an Assistant Professor in Mathematics. The successful candidate is committed to teaching undergraduate mathematics in the context of a liberal arts college and will be comfortable using reform teaching methods and appropriate technology. Applicants must hold a doctorate in mathematics by the time of appointment. Visit [www.hood.edu](http://www.hood.edu) for a complete position description. Qualified candidates should send a letter of application addressing teaching interests and scholarship goals, together with curriculum vitae and at least three letters of recommendation (one addressing teaching effectiveness) to: Mathematics Search Committee, Department of Mathematics, Hood College, 401 Rosemont Avenue, Frederick, MD 21701. Hood College is committed to diversity and subscribes to a policy of hiring only individuals legally eligible to work in the United States. EOE

## **University of Arkansas - Fayetteville**

The University of Arkansas - Fayetteville, Department of Mathematical Sciences invites applications for a tenure-track Assistant Professor. The position is in Analysis, in the general areas of Several Complex Variables, Harmonic Analysis, and CR Geometry. The position requires 1) Ph.D. in Mathematics; 2) demonstrated potential for excellence in research and teaching.

For more information see <http://math.uark.edu/2069.htm> The University of Arkansas is an equal opportunity, affirmative action institution. The selection process begins November 30, 2007; however, applications will continue to be accepted and considered after this date.

## **St. Olaf College**

The Department of Mathematics, Statistics, and Computer Science seeks an Assistant Professor. Responsibilities include teaching elementary, intermediate, and advanced mathematics courses and developing and maintaining a research program involving undergraduates. Applicants from fields related to algebra and analysis are particularly encouraged, but applications from all areas of pure mathematics will be considered. Appointment will be tenure-track beginning in September, 2008. Only on-line applications through [mathjobs.org](http://mathjobs.org) will be accepted. In addition, applicants must register with the Human Resources Office at <https://jobs.stolaf.edu>. Review of completed applications begins December 1, 2007.

A liberal arts college affiliated with the Lutheran Church (ELCA), St. Olaf College is an affirmative action/equal opportunity employer and actively seeks diversity in its students, faculty and staff.



# National Association of Mathematics Membership Form

(For New Applications and Annual Membership Renewal)

Membership Calendar Year: January 1 - December 31

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### Select Appropriate Membership Type

Student : \$30

Individual : \$50

Contributing : \$100

Institutional : \$150

Life : \$500

**PLEASE RETURN THIS COMPLETED FORM AND MEMBERSHIP DUES TO :**

**Dr. Roselyn Williams, Secretary-Treasurer**

**National Association of Mathematicians;**

**P.O. Box 5766**

**Tallahassee, Florida 32314-5766**

**Phone: (850) 412-5236 (O) E-mail: roselyn.williams@famuedu**

**Individuals and Students:** Please complete below if you did not send NAM this information within the past three years.

List all degrees you currently hold. Circle the correct degree.

B.S. or B.A.: Area \_\_\_\_\_ Institution \_\_\_\_\_

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**Scott W. Williams**  
**NAM Newsletter**

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