On April 13-14, 2012, Stevenson University Owings Mills Campus will host the Spring 2012 MD-DC-VA Section Meeting of the MAA. Highlights include:

**Friday:** David Kung from St. Mary's College of Maryland will be offering a late afternoon workshop entitled “Closer to Fair: Social Justice in Mathematics, Mathematics for Social Justice.” The workshop will focus on two specific ways mathematicians have worked to address issues of social justice both in our classrooms and in our world.

Later that evening, Peggy Aldrich Kidwell of the Smithsonian Institute will be giving the Friday evening banquet address, entitled “Mathematical Recreations and the History of American Mathematics.”

**Saturday:** In addition to the contributed paper sessions, there will be two invited addresses. The Saturday morning invited address will be given by Alissa Crans from Loyola Marymount. Her presentation is titled “Cracking the Cubic: Cardano, Controversy, and Creasing.” The Saturday afternoon invited address will be given by David Kung. He will speak on “How Math Made Modern Music Irrational.”

There also will be the annual Undergraduate Student Conference, featuring student paper and poster sessions and a Jeopardy competition and the Radical Dash. For more information please see The Spring Undergraduate Student Conference page (http://sections.maa.org/mddcva/Spring_UG_Student_Res.php).

Detailed information about the Spring meeting, including abstracts and biographies of the invited speakers, appeared on pages 4 - 5.

**Lodging**

- **Hampton Inn**
  3.1 miles from Owings Mills campus
  10521 Red Run Blvd.
  Owings Mills, MD 21117
  (410) 654-2780

- **Hilton Garden Inn**
  3.1 miles from Owings Mills campus
  4770 Owings Mills Blvd.
  Owings Mills, MD 21117
  (410) 654-0030

- **Hyatt Place**
  3.2 miles from Owings Mills campus
  4730 Painters Mill Rd.
  Owings Mills, MD 21117
  (410) 998-3630

To find maps, hotels, registration, and program information, visit the MD-DC-VA Section website at http://sections.maa.org/mddcva/
Spring is definitely in the air – which means that the spring section meeting is just around the corner. Please mark your calendars and join us at Stevenson University on April 13th and 14th. You can find all the information you need about the meeting at http://sections.maa.org/mdcva/Spring2012Meeting.php. It looks like we have another great meeting planned. The workshop and invited addresses will touch on some interesting relationships between mathematics and social justice, music, mathematical recreation and origami. Come and take in some great talks and, while you’re at it, give a presentation on what you have been working on. (The deadline for paper submission is April 3rd.)

In addition, our annual undergraduate conference will also take place concurrently. Encourage your students to come along and present their research or just see what other students are doing at colleges and universities around our region. They can also participate in fun activities like “Jeopardy” and the return of the very popular “Radical Dash.” (Students must register for Jeopardy and Radical Dash by April 6th and the deadline for student paper submissions is April 3rd.) This is a great opportunity for our students to be exposed to the larger mathematical community.

The MAA’s financial position continues to be a concern. As mentioned in prior reports in this newsletter, the MAA ran substantial deficits in the operating budgets for 2010 and 2011, and although the organization has sufficient financial resources to cover these deficits, it is generally recognized that continued deficits of a similar magnitude cannot be sustained. Final numbers were not available in January on the actual 2011 deficit, but staff projections available at the end of the year indicated that the earlier predictions of about $150K looked to be pretty accurate. It is noteworthy that the 2010 and 2011 budgets approved by the board of governors included planned deficits, whereas the approved 2012 budget is in balance. It should also be remembered that the deficits are small relative to the total operating budget (about $8 million), and that the MAA has a net worth in excess of $12 million.

To put our financial picture in a slightly different perspective, new treasurer Jim Daniel discussed the MAA’s cash reserve – liquid assets that are immediately available for use. He told the board that for an organization of our size, financial professionals advise a cash reserve of $5 to $10 million. The MAA currently has a cash reserve of about half a million dollars. He noted that we should be working toward replenishing the reserve through surpluses in the operating budget and unrestricted donations, and indicated that guiding the officers and board toward this goal would be one of his primary foci as treasurer.

The board also received reports from staff and officers about several initiatives that are hoped to contribute to improved financial performance. For example, there will be new marketing approaches to better identify the MAA’s mission and contributions to mathematics and education, for members and nonmembers alike. These will be highlighted with the phrase Participate, Investigate, Educate which members will soon see whenever MAA publications, meetings, and programs are promoted. Another example is the new look of the MAA Storefront (see http://maa-store.hostedbywebstore.com), where books and other products are sold online. The new site is
hosted in partnership with Amazon, providing additional functionality to members and other visitors.

The Board of Governors also received reports on the operation of MAA Special Interest Groups (MAA SIGMAAs) (see http://www.maa.org/EbusPPRO/StrategicPlanning/SIGMAA_Report.pdf) and a study of implicit bias in the selection of award winners in STEM fields. In the latter, the MAA was one of several professional organizations that participated in the Recognition of Women in Science, Technology, Engineering and Mathematics project (see http://awis.org/avoiding_bias.pdf).

**Upcoming Events and Opportunities**

- The MAA is again offering a series of summer professional development workshops through the PREP program http://www.maa.org/prep/2012/.
- MathFest will be in Madison WI, August 2-4. The deadline for submission of abstracts for all Contributed Paper Sessions is April 30. The deadline for Student Paper Sessions is June 8. See http://www.maa.org/mathfest/.
- The 2013 Joint Mathematics Meetings will be in San Diego, CA, January 9-12 (Wednesday-Saturday) at the San Diego Convention Center.

We hope to see you in April. As always if you have any questions or suggestions please do not hesitate to contact us.

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**A Pioneer in Mathematics: First Woman Math PhD in America** (http://www.ams.org/news/inthenews)

Winifred Edgerton Merrill (1862-1951) was the first woman to receive a PhD in mathematics in the United States. She received her degree from Columbia University in 1886 for her thesis, Multiple Integrals (1) Their Geometrical Interpretation in Cartesian Geometry, in Trilinears and Triplanars, in Tangentials, in Quaternions, and in Modern Geometry; (2) Their Analytical Interpretations in the Theory of Equations, Using Determinants, Invariants and Covariants as Instruments in the Investigation.

Throughout her life, she worked to advance women in a male-dominated society. She helped to found Barnard College, the renowned women's college affiliated with Columbia University, and she founded a college preparatory school for girls. As March is National Women's History Month, it is a fitting moment to look back on the life of this outstanding pioneer. Merrill's compelling story is told in an article appearing in the April 2012 issue of the Notices of the American Mathematical Society, "Winifred Edgerton Merrill: 'She Opened the Door'", by Susan E. Kelly and Sarah A. Rozner (http://www.ams.org/notices/201204/rtx120400504p.pdf).

Nowadays it is difficult to imagine a time when women were not permitted to attend university lectures. And yet this is the stricture Merrill faced as a doctoral student at Columbia University. Therefore, most women studied from course textbooks. The men in one of the courses Merrill wanted to take persuaded the instructor to adopt an especially difficult text, with the hope that Merrill would then fail. Unbeknownst to them, she had already studied the text as an undergraduate at Wellesley. When she received her PhD from Columbia in 1886, the event was so extraordinary it was covered in the New York Times.

The article, full of such eye-opening anecdotes, makes for inspiring reading for Women's History Month. The article is available free of charge in the online April issue of Notices of the AMS.
**Spring Meeting - Featured Speakers**


David Kung  
*St. Mary's College of Maryland*

**Abstract:** The world is an unfair, unjust place. What can math teachers do about it? This talk will focus on two specific ways mathematicians have worked to address issues of social justice both in our classrooms and in our world. The first half of the workshop will focus on the inequalities that pervade mathematics and science classrooms and what people have done to help level the playing field, especially in college math classrooms. In the second half, we will look at how math teachers are using innovative curricula to raise awareness of social justice issues while simultaneously teaching math content. These courses ask students to use the tools of mathematics to study, understand, and even address issues ranging from economic inequity to environmental impacts. Sample classroom activities will illustrate the types of content that might replace the algebra-intensive curriculum for many humanities students.

**Biographical Sketch:** Dave Kung fell in love with both mathematics and music at a very early age. More successful with one than the other, he completed three degrees from the University of Wisconsin - Madison, none in music, before joining the faculty at St. Mary's College of Maryland. Now chair of the Mathematics and Computer Science Department, he still enjoys playing violin with students and in the local community orchestra. He has authored a variety of articles on topics in harmonic analysis and mathematics education, and is the recipient of numerous awards including the 2006 Teaching Award from the MD/VA/DC section of the MAA. He is co-writing a book about college math teaching entitled, "What Could They Possibly Be Thinking? Understanding Your College Math Students."

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**Banquet Address: Mathematical Recreations and the History of American Mathematics**

Peggy Aldrich Kidwell  
*Smithsonian Institute*

**Abstract:** A museum curator sees objects as part of stories. Over the past few years, I have been working to place mathematical recreations within the larger context of the history of American mathematics and of the history more generally. The stories of three recreations first produced in the United States in the nineteenth century - word problems posed in journals, the Chinese tangram, and the fifteen puzzle - suggest the enduring influence of puzzles and reveal aspects of American mathematical practice and mathematical communities.

**Biographical Sketch:** Peggy Aldrich Kidwell is the Curator of Mathematics at the Smithsonian's National Museum of American History. In this capacity, she watches over a collection of geometric models, calculating machines, slide rules, cash registers, and miscellaneous computers. Her PhD. in history of science is from Yale University, and she has published extensively on the history of mathematical instruments and mathematics education.

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**Plan now for the Fall Meeting at Virginia Military Institute, October 26 - 27, 2012!**
Invited Address: Cracking the Cube: Cardano, Controversy and Creasing

Alissa Crans
Loyola Marymount

Abstract: We are all familiar with the solution to a general quadratic equation—some of us even learn songs or mnemonics in school to help us remember the famous formula. But have you heard about analogous formulas for the cubic, quadratic, or quintic equations? It turns out that the solution of the cubic didn’t become familiar to mathematicians quite so easily! There’s a real story here, filled with challenges, drama, and controversy! After hearing this tale and learning a bit about the solution, we will see how the Italian mathematician Margherita Beloch solved the cubic using origami in the 1930's.

Biographical Sketch: Alissa S. Crans earned her B.S. in mathematics from the University of Redlands in 1999 and her Ph.D. in mathematics from the University of California at Riverside in 2004, under the guidance of John Baez. She is currently an Associate Professor of mathematics at Loyola Marymount University and has held positions at Pomona College, The Ohio State University, and the University of Chicago. Alissa’s research is in the field of higher-dimensional algebra and her current work, funded by an NSA Young Investigator Grant, involves categorifying algebraic structures called quandles with the goal of defining new knot and knotted surface invariants. She is also interested in the connections between mathematics and music, and enjoys playing the clarinet with the Santa Monica College wind ensemble. Alissa is extremely active in helping students increase their appreciation and enthusiasm for mathematics through co-organizing the Pacific Coast Undergraduate Mathematics Conference together with Naiomi Cameron and Kendra Killpatrick, and her mentoring of young women in the Summer Mathematics Program (SMP) at Carleton College, the EDGE program, the Summer Program for Women in Mathematics at George Washington University, the Southern California Women in Mathematics Symposium, and the Career Mentoring Workshop. In addition, Alissa was an invited speaker at the MAA Spring Sectional Meeting of the So Cal/Nevada Section and the keynote speaker at the University of Oklahoma Math Day and the UCSD Undergraduate Math Day. She is a recipient of the 2011 Merten M. Hasse Prize for expository writing and the Henry L. Alder Award for distinguished teaching.

Invited Address: How Math Made Modern Music Mad Irrational

David Kung
St. Mary’s College of Maryland

Abstract: The scale used by 20th century classical musicians is strikingly different from that used in Bach’s time. In fact, over the past 500 years, a wide variety of scales have permeated Western music. Amazingly, none of them was “in tune”! In fact, in some sense, no piano is ever in tune. The reason for this is purely mathematical. Starting with a single vibrating string, we'll use some physics and some advanced mathematics to make sense of the various sounds a violin can make. Add to the mix a little music theory and some basic arithmetic, and we'll be able to construct several different scales and see what’s "wrong" with each one. Finally, by constructing the modern scale, we'll be able to answer the question posed in the title. Throughout the talk, these concepts will be illuminated with excerpts played on the violin, including passages from Bach, Mendelssohn, and a few more modern composers.

Biographical Sketch: David Kung also is scheduled to conduct the Friday evening workshop. His biographical sketch appeared on page 4.
**Section News**

**New Faculty, Programs and Conferences**

**Hood College** is pleased to welcome Gwyneth Whieldon as an Assistant Professor. Gwyneth received her Ph.D. from Cornell in 2011 and previously was an undergraduate student at St. Mary’s College of Maryland. The specific focus of her work is on the combinatorial properties associated to modules over polynomial rings. Her current work is on bounding invariants of resolutions of powers of Stanley-Reisner ideals via Rees Algebras.

The seventh annual Shenandoah Undergraduate Mathematics and Statistics (SUMS) Conference was held on October 22, 2011 at James Madison University. SUMS is an annual one day conference promoting undergraduate research in mathematics, statistics, and their applications. The conference featured contributed undergraduate research talks, invited talks aimed at a general undergraduate math audience, a poster session, a graduate school and math careers panel, and a math competition workshop for high school students. Invited speakers were Colin Adams from Williams College and Ruth Chaney from Brandeis University.

The Undergraduate Mathematics Research Conference at Towson is a one-day meeting that will be held on March 31, 2012, from 9am to 5:30pm on the campus of Towson University. This will be a friendly venue for undergraduate students to present the results of completed original research or partial results of an ongoing research project. The organizers also hope to offer the beginning mathematics students career-related information and positive examples of senior students’ research projects. In addition to student presentations and two invited talks, the conference will feature a short tutorial on LaTeX as well as information sessions on graduate schools, summer research opportunities, and industry employment. There will be two invited talks, by Dr. Lawrence Washington, Professor and Mathematics Graduate Director at University of Maryland, College Park, on “Cannonballs, Donuts, and Secrets: From Idle Questions to Cryptographic Applications” and Dr. Thomas Mifflin and Dr. Jeffrey Silver, mathematicians working for the Metron Corporation, on “Ship of Gold: Mathematical Treasure Hunting and the Search for the SS Central America.” Visit the conference website at http://www.towson.edu/math/umrc_2012 to read more, register, and submit a student presentation.

**Spring Puzzle: Sudoku XXX — Laura Taalman**

**Rules:** Fill in the grid so that each row, column, and 3 x 3 block, and the main diagonal contains the numbers 1 through 9 exactly once, and no numbers are repeated in the remaining diagonals. To see the solution go to page 5.

![Sudoku XXX](image)

**Future National MAA Meetings**

<table>
<thead>
<tr>
<th><strong>MathFest</strong></th>
<th><strong>MAA-AMS Joint Mathematics Meetings</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2012: Madison, WI - August 2-4</td>
<td>2013: San Diego, CA - January 9-12</td>
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<tr>
<td>2013: Hartford, CT—August 1-3</td>
<td>2014: Baltimore, MD - January 15-18</td>
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<td>2014: Portland, OR August 7-9</td>
<td>2015: San Antonio, TX - January 10-13</td>
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<td>2017: Atlanta, GA - January 4-7</td>
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<tr>
<td></td>
<td>2018: San Diego, CA - January 10-13</td>
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**Publications**

Jason Rosenhouse and Laura Taalman of James Madison University co-authored the book "Taking Sudoku Seriously: The Math Behind the World's Most Popular Pencil Puzzle," published by Oxford University Press. The book uses Sudoku puzzles as a vehicle for exploring topics in higher mathematics. The book contains a large number of color diagrams and original puzzles. It should appeal to anyone with an interest in either mathematics or Sudoku, from interested high school students to professional mathematicians.

Jason Rosenhouse of James Madison University is the author of the new book "Among the Creationists: Dispatches From the Anti-Evolutionist Front Line," published by Oxford University Press. It uses the author's extensive experiences socializing with creationists and attending their conferences to discuss topics in science, pseudoscience, religion and philosophy. It should appeal to anyone with an interest in why the science of evolutionary biology remains so controversial among a certain segment of the population.

Carla D. Martin and Anthony Tongen at James Madison University co-authored the book "Keeping it R.E.A.L.: Research Experiences for All Learners" published by the MAA and is available as an eBook through www.maa.org. "Keeping it R.E.A.L." is a collection of computational classroom projects carefully designed to inspire critical thinking and mathematical inquiry. R.E.A.L. projects are suitable for a wide range of college students and includes further directions for undergraduate research projects.

Adrian Rice of Randolph-Macon College has recently co-edited a 500-page book entitled Mathematics in Victorian Britain with two colleagues from England (Raymond Flood and Robin Wilson). The book was published by Oxford University Press in September 2011 and has already received rave reviews, being described as both “unputdownable” (!) and “a must for anyone interested in this period”.

Eve Torrence of Randolph-Macon College has recently published, Cut and Assemble Icosahedra: Twelve Models in White and Color. This 2011 Dover publication allows anyone, regardless of mathematical knowledge, to make several models of stellations of the icosahedron. These models would make great props for high school or college geometry courses and are quite beautiful and fascinating to study.

**Math in the Media ...**

**Calculus Comes to the Rescue in Tylenol Poisoning**

When a patient is rushed into an emergency room with an overdose of Tylenol or another drug containing acetaminophen, the doctors have to make a fast life-or-death decision -- and a newly developed mathematical technique can now help them.

Researchers at the University of Utah have designed a mathematical technique to help doctors when dealing with patients who have overdosed on acetaminophen. (For full story go to http://www.insidescience.org/news-service/1-2535)
**Treasurer’s Report**

March 25, 2012

**General Account Balance, October 1, 2011**  
$4,058.12

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<td>MAA Subvention</td>
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<td>PayPal processing fee</td>
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**Total Receipts**  
$4,785.90  

**Total Expenses**  
$4,090.69

**General Account Balance, March 25, 2012**  
$4,753.33

**John G. Milcetich Memorial Student Achievement Fund, October 1, 2011**  
$1,380.25

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**Total Receipts**  
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**John G. Milcetich Memorial Student Achievement Fund, March 25, 2012**  
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**Section NExT Fund Balance, October 1, 2011**  
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**Section NExT Fund Balance, March 25, 2012**  
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**Project NExT Fund Balance, October 1, 2011**  
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**Project NExT Balance, March 25, 2012**  
$185.00

Brian Lins  
Treasurer
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For complete contact information, visit our website, http://sections.maa.org/mddcva/

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