

JPBM Communications Award

The 2010 Communications Award of the Joint Policy Board for Mathematics (JPBM) was presented at the Joint Mathematics Meetings in San Francisco, California, in January 2010.

The JPBM Communications Award is presented annually to reward and encourage journalists

and other communicators who, on a sustained basis, bring mathematical ideas and information to nonmathematical audiences. JPBM represents the American Mathematical Society, the American Statistical Association, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics. The award carries a cash prize of US\$1,000.



Marcus du Sautoy

Previous recipients of the JPBM Communications Award are: James Gleick (1988), Hugh Whitmore (1990), Ivars Peterson (1991), Joel Schneider (1993), Martin Gardner (1994), Gina Kolata (1996), Philip J. Davis (1997), Constance Reid (1998), Ian Stewart (1999), John Lynch and Simon Singh (special award, 1999), Sylvia Nasar (2000), Keith J. Devlin (2001), Claire and Helaman Ferguson (2002), Robert Osserman (2003), Barry Cipra (2005), Roger Penrose (2006), Steven H. Strogatz (2007), Carl Bialik (2008), and George Csicsery (2009).

The 2010 JPBM Communications Award was presented to MARCUS DU SAUTOY. The text that follows presents the selection committee's citation, a brief biographical sketch, and the recipient's response on receiving the award.

Citation

The 2010 JPBM Communications Award is made to MARCUS DU SAUTOY, the Simonyi Professor for the Public Understanding of Science and a professor of mathematics at the University of Oxford.

For the past fifteen years du Sautoy has complemented his love of mathematical discovery with a passion for communicating mathematics to a broad public. He has reached hundreds of thousands through his books, television shows, and hundreds of articles and appearances in newspapers, magazines, television, and radio. His 2003 book on

the Riemann hypothesis, entitled *The Music of the Primes*, is a best seller which has been translated into ten languages. In his 2008 book, *Symmetry: A Journey into the Patterns of Nature*, du Sautoy guides the reader through groups and symmetry, from Babylonia to Moonshine theory, while at the same time giving an engaging glimpse into mathematicians' minds. His four-part television series, *The Story of Maths*, presents a fascinating look at the development of mathematics from the design of the pyramids in Egypt to Perelman's proof of Poincaré's conjecture. Whether it is talking about Beckham's choice of number on a sports radio program, explaining the work of the Abel prize winner on Norwegian television, writing a weekly math column for the *London Times*, hosting a television game show based on math puzzles, or delivering the Royal Institution Christmas Lectures, Marcus du Sautoy invariably seizes opportunities to make mathematics more accessible and more appealing.

Biographical Sketch

Marcus du Sautoy is the Charles Simonyi Professor for the Public Understanding of Science and professor of mathematics at the University of Oxford and a Fellow of New College. His research seeks to understand the world of symmetry by using the concept of a zeta function, a classical tool from number theory, and involves a wide spectrum of techniques, from p -adic Lie groups to model theory, from algebraic geometry to analytic methods. In 2001 he won the Berwick Prize of the London Mathematical Society, which is awarded every two years to reward the best mathematical research made by a mathematician under the age of forty. In 2009 he was awarded the Royal Society's Faraday Prize, the United Kingdom's premier award for excellence in communicating science. He is the author of numerous academic articles and books on mathematics and has been a visiting professor at the École Normale Supérieure in Paris, the Max Planck Institute in Bonn, the Hebrew University in Jerusalem, and the Australian National University in Canberra. His presentations on mathematics, which include "Why Beckham chose the 23 shirt", have played to a wide range of audiences: from theater directors to bankers, from diplomats to

prison inmates. Marcus du Sautoy plays the trumpet and football. Like Beckham, he also plays in a prime number shirt, no. 17, for Recreativo FC, based in the Hackney Marshes. Born in 1965, he lives in London with his wife, three children, and cat Freddie Ljungberg.

Response

Mathematics is about discovery, but it is also about communication. Those new discoveries don't begin to breathe until you bring them alive in the minds of others. The more minds that appreciate the beauty of our discoveries, the more vibrant and healthy our subject will be. I was inspired to become a mathematician because of people in the past like Martin Gardner, Christopher Zeeman, and George Gamow, who were keen to communicate beyond the confines of our research community. My efforts to spread the excitement and beauty of mathematics to as wide an audience as possible is my way of paying back those who made the effort to excite me.

One of the books that inspired me as a student was G. H. Hardy's beautiful book *A Mathematician's*

Apology. It is a book I love but also hate because his opening sentence has cast a shadow over those who might want to communicate the joy of doing mathematics. He writes: "It is a melancholy experience for a professional mathematician to find himself writing about mathematics. The function of mathematicians is to do something, to prove new theorems, to add to mathematics and not to talk about what he or other mathematicians have done." It is important that mathematicians prove Hardy wrong, and indeed Hardy himself is the counterexample to his own statement, being a brilliant mathematician and communicator.

I would like to thank all those in the mathematical community who have been extraordinarily supportive over the years in my efforts to excite people about mathematics. It is really important to know that your community is supportive of what you do. Prizes like the JPBM Communications Award are important in sending out the message that our community values communication, and I am very honored to have received the award for 2010.

MAA Prizes Presented in San Francisco

At the Joint Mathematics Meetings in San Francisco, California, in January 2010, the Mathematical Association of America (MAA) presented several prizes.

Gung and Hu Award for Distinguished Service

The Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics is the most prestigious award made by the MAA. It honors distinguished contributions to mathematics and mathematical education, in one particular aspect or many, whether in a short period or over a career.

KENNETH A. ROSS, professor emeritus at the University of Oregon, received the 2010 Gung and Hu Award. Ross has made many contributions to mathematics over a long career. From 1971 to 1980 he served the American Mathematical Society (AMS) as associate secretary for the Western Section, and in 1984 he was elected secretary of the Mathematical Association of America (MAA). When the responsibilities of the secretary of the MAA were split in 1989, he became the MAA's first

associate secretary and continued to be responsible for the MAA presence in the national joint AMS-MAA meetings.

He was elected president of the MAA in 1994 and later became chair of the Response Group on the NCTM Standards, furnishing insightful reports to NCTM that reflected a consensus of opinion among mathematicians. He is skilled at bringing people together to talk and iron out their differences. He cochaired the advisory board on renovating part of MAA headquarters for use as a conference center and set the agenda for the facility. He has been editor of the Carus Monograph Series for the MAA and is currently a member of the editorial board of the MAA's Spectrum Series. He served on the Board of Governors for many years, as well as on many committees concerned with finance, publications, meetings, membership, awards, and prizes. Recently he served as associate editor of *Mathematics Magazine* and on committees on the Silver and Gold Banquets, on Bylaws Revision, and on the MAA Centennial in 2015. He has also been active in the MAA's Pacific Northwest Section. He gave invited

talks to at least twenty-one MAA sections as a national officer of MAA.

Ross's publications include *Abstract Harmonic Analysis* (with Edwin Hewitt); *Elementary Analysis: The Theory of Calculus*; *Discrete Mathematics* (with Charles Wright); *Sidon Sets* (with Jorge M. Lopez); and *A Mathematician at the Ball Park*, which demonstrates his lifelong passion for baseball. He received his Ph.D. from the University of Washington in 1960. His mathematical interests include abstract commutative harmonic analysis, elementary probability, and expository writing.

Haimo Awards for Teaching

The Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching were established in 1991. These awards honor college or university teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions.

The 2010 Haimo Awards were presented to CURTIS BENNETT, MICHAEL DORFF, and ALLAN J. ROSSMAN.

Curtis Bennett has been teaching at the collegiate level for almost twenty years, the last six at Loyola Marymount University and earlier at Bowling Green State University and Michigan State University, where he developed some of his ideas about teaching. Students at all levels and with a variety of career goals credit him not only with helping them increase their mathematical skills but also with giving them increased self-confidence. His approaches and methods encourage students to “think like mathematicians.” To accomplish this, he designs or selects problems, projects, and exercises with a particular educational goal in mind. He embraces and experiments with technology. At Loyola Marymount, Bowling Green State, and Michigan State, he developed courses to help future high school teachers deepen their understanding of secondary mathematics and draw clear connections between the high school mathematics topics and upper-level collegiate courses in algebra, analysis, and geometry. As an academic advisor, he helps students discover new passion for mathematics and to recognize and have more confidence in their abilities in mathematics. Bennett is also passionate about collaborating with colleagues and sharing his work related to teaching with others across the country. This is evidenced by his work as a two-time Carnegie Scholar; by his work in MAA's workshops on Preparing Mathematicians to Educate Teachers (PMET) in 2004 and 2005; by his work in helping young scholars and mathematicians at other institutions develop their ideas about teaching; and by his minicourses, presentations, and organization of special sessions at national meetings of the MAA. He was a cofounder of the Young Mathematicians Network and served

on its editorial board for three years. He works in a variety of fields, including the study of geometries associated to groups of Lie type, combinatorics, and the scholarship of teaching and learning.

Michael Dorff has made many contributions to the teaching and learning of mathematics in his classrooms at Brigham Young University (BYU), regionally in public education, and nationally through his work with students and faculty related to research by undergraduates in mathematics. His undergraduate teaching at BYU is characterized by his care for the students while having high expectations for them, even in large lecture classes of beginning calculus, and by efforts to help the students see the bigger picture. For example, in his large lecture calculus classes, he often has “commercial breaks” in which he makes a short presentation about something designed to help students get excited about mathematics, such as a presentation about “soap bubbles and the universe” or a contest in which the students make proposals for the “most beautiful mathematical equation”. Recently he has been organizing seminars for math majors, minors, and prospective majors to learn about career opportunities in the mathematical sciences, and his department has reported a 22 percent increase in the number of majors since he began the seminars. Regionally, he has worked with BYU's Center for the Improvement of Teaching Education and Schooling, which brings public school teachers and university faculty together with the goal of improving numeracy among young children. He has developed a funded program with other faculty for professional development of K-6 teachers in local school districts. For several years, he has been leading an REU program at BYU to bring undergraduates from across the country to do research in mathematics. Nearly all of the students have gone on to graduate school. Even more important, however, is his founding of the Center for Undergraduate Research in Mathematics (CURM), in which fifteen faculty members go to BYU to help them learn to mentor undergraduates in doing research in mathematics on their own campuses. He is chair of the MAA Committee on Early Career Mathematicians and Subcommittee on Research by Undergraduates.

Allan Rossman is professor of statistics at California Polytechnic State University, San Luis Obispo. His excellence as a teacher is exemplified by his student-centered approach, his innovation, his endless enthusiasm for the subject, and his desire for his students to obtain the deepest understanding and appreciation possible of the subjects they are studying. His teaching is described as providing just the right amount of guidance in classroom activities, thereby empowering students to discover important ideas and connections for themselves. He has created innovative curricular changes in statistics courses and in the major overall. He

helped develop an orientation course for incoming statistics majors, providing them with an overview of the statistics discipline, examples of statistical practice, and broad understanding of statistical ideas, while developing their communication skills. He helped develop a more advanced two-course, data-oriented sequence for mathematics and statistics majors. The changes he helped bring about have contributed to Cal Poly's reputation as having a unique undergraduate statistics major. He provides extensive support material and opportunities for success while demanding deep understanding. He has strong rapport with the students, who give him outstanding evaluations and who appreciate his passion and contagious love for the subject. Nationally, through many workshops for faculty, including the MAA's Statistical Thinking with Active Teaching Strategies (STATS) workshops, he has reached hundreds of statistics educators, primarily mathematicians, and given them tools to rethink their own statistics courses. In addition to helping faculty develop effective pedagogical strategies, he has participated in developing recommendations for curriculum and assessment in statistics education, including the recent GAISE reports from the American Statistical Association (ASA). He is a Fellow of the American Statistical Association and served as program chair for the Joint Statistical Meetings in 2007. He has been coeditor of *Stats: The Magazine for Students of Statistics* and chaired the ASA-MAA Joint Committee on Undergraduate Statistics. He is past president of the International Association for Statistical Education and recently began to serve as chief reader for the Advanced Placement Program in Statistics.

Chauvenet Prize

The Chauvenet Prize recognizes a member of the MAA who has written an outstanding expository article. First awarded in 1925, the prize is named for William Chauvenet, who was a professor of mathematics at the United States Naval Academy.

BRIAN J. MCCARTIN of Kettering University received the 2010 Chauvenet Prize for his article "e: The master of all", *Mathematical Intelligencer*, 28 (2006), no. 2, 10–21. This article is an engaging, expansive exposition of the ubiquity of the number e in mathematics. Whatever a reader's background, whether a beginning calculus student or a master versed in all manner of limits, series, transforms, and operators, everyone will find something new about e in this article. For example, did you know that the polar golden spiral, $r = e^{\cot(\alpha\theta)}$, $\alpha > 0$, has the peculiar property that each line through the origin meets the spiral in a common angle? Johann Bernoulli was so enamored with this property that he arranged to have the curve etched on his tombstone. With wit and clarity and long experience as an applied mathematician, McCartin has given the

mathematical community a well-crafted dossier for the number e .

Euler Book Prize

The Euler Book Prize is given to the author(s) of an outstanding book about mathematics. Mathematical monographs at the undergraduate level, histories, biographies, works of mathematical fiction, and anthologies are among those types of books eligible for the prize. The prize was given for the first time in 2007, the 300th anniversary of the birth of Leonhard Euler.

DAVID S. RICHESON of Dickinson College was awarded the 2010 Euler Prize for his book *Euler's Gem: The Polyhedron Formula and the Birth of Topology* (Princeton University Press, 2008). The renowned formula, $V - E + F = 2$, where V , E , and F are the numbers of vertices, edges, and faces of a polyhedron, is elegant, concise, and surprising. Previous attempts to explain the beauty of this simple formula and to explore its depth pale by comparison to Richeson's extraordinary narrative. It is entertaining, scholarly, and informative, not only to the general reader but also to professional mathematicians. It conveys an understanding of what the formula says and also addresses the question of what "polyhedron" means and what it suggests to those who explore "shapes" in general, and it leads eventually to questions addressed in the development of the vast subject of modern topology. The material is put into historical perspective, and an amazing amount of actual mathematics is included. With short chapters, lucid explanations, and descriptions that are related to ordinary everyday experience, the implications of the formula become clear to the reader. The exposition is amazingly friendly, and the prose is a joy to read. Tantalizing questions are raised and answered. And these questions go all the way up to questions answered by Thurston and Perelman. There are excellent notes and references, and the book clearly reflects careful research on the part of the author.

Certificates of Meritorious Service

Each year the MAA presents Certificates of Meritorious Service for service at the national level or for service to a section of the MAA. Those honored in 2010 are: Benjamin Freed (Clarion University), Allegheny Mountain Section; Michael Dorff (Brigham Young University), Intermountain Section; Elizabeth Mayfield (Hood College), Maryland-District of Columbia-Virginia Section; Amy Cohen (Rutgers University), New Jersey Section; John Watson (Arkansas Tech University), Oklahoma-Arkansas Section; and Janet Beery (University of Redlands), Southern California-Nevada Section.

—From MAA announcements

AWM Awards Given in San Francisco

The Association for Women in Mathematics (AWM) presented two awards at the Joint Mathematics Meetings in San Francisco, California, in January 2010.

Schafer Prize

The Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman was established in 1990. The prize is named in honor of Alice T. Schafer, one of the founders of AWM and one of its past presidents. Schafer passed away in September of 2009.

The 2010 Schafer Prize was awarded to HANNAH ALPERT of the University of Chicago and CHARMAINE SIA of the Massachusetts Institute of Technology. Alpert, a junior at the University of Chicago and a Goldwater Scholar, coauthored a paper on topological graph theory before she began college. After her freshman year, she attended the Willamette Valley Research Experience for Undergraduates (REU), and she spent the summer of 2009 at the REU in Duluth. Remarkably, she has written and submitted for publication three single-authored papers in three different areas based on her work there. In one, she determined the k -ranking numbers of 3-by- n grid graphs, using “innovative” methods that also “give tremendous insight into the general case.” She has been invited to present the results of another, on finite phase transitions in countable abelian groups, in a graduate seminar. Alpert’s mentors paint a consistent picture of a remarkably mature young mathematician, one who is a creative problem solver with a “formidable talent”. Over and over, she has solved challenging open problems in elegant and fully original ways. One letter writer compares her to a Nobel Prize winner he taught; others describe her as “incredible”, “fantastic”, and “destined to become a first-rate mathematician”.

CHARMAINE SIA is a senior at the Massachusetts Institute of Technology, where she has excelled in both undergraduate and graduate classes. She has a perfect undergraduate transcript. To quote one of her recommenders, “Charmaine absorbs mathematics like a sponge.” Another one writes, “I have never seen a student with as voracious an appetite for knowledge.” She has won three bronze medals at the International Mathematical Olympiad (IMO) and a top-75 ranking in the Putnam Mathematical Competition. She has written four papers, two of

which are single-authored. She spent the past three summers in undergraduate research programs, starting with SPUR at MIT in 2007, where she won the prize for best research in the program for her work on zero-sum problems in finite group theory. The next summer she participated in the Duluth REU program, where she wrote two papers, one on classifying the orbits of special groups under the Hurwitz action and the other on game chromatic numbers of products of graphs. Both papers have been published in professional journals. In the summer of 2009, Sia participated in the SMALL research program at Williams College, where she coauthored two papers on knot theory. In the words of her teachers and mentors, Sia is an “astounding” student who “has distinguished herself in every possible way” and is “already a mature mathematician” with “immense potential”. She is expected to become an outstanding research mathematician.

Additionally, the accomplishments of four outstanding senior mathematics majors were recognized: ANNA LIEB, University of Colorado, Boulder, was runner-up for the prize. Honorable mentions were awarded to MEGAN BERNSTEIN, University of California, Berkeley; RUTHI HORTSCH, University of Michigan; and LAURA STARKSTON, Harvard University.

Louise Hay Award

Established in 1991, the Louise Hay Award for Contributions to Mathematics Education recognizes outstanding achievements in any area of mathematics education. Louise Hay was widely recognized for her contributions to mathematical logic and her devotion to students.

The 2010 award was presented to PHYLLIS Z. CHINN of Humboldt State University.

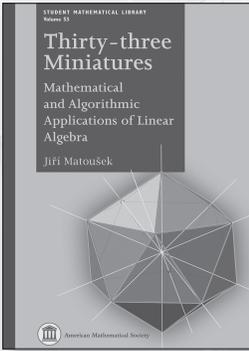
Chinn’s career has been marked by an eagerness to enliven students, teachers, undergraduates, and her colleagues with the excitement of mathematics and by a principled conviction that the best way to accomplish this is through discovery learning. At Humboldt State University she established the “Expanding Your Horizons” conference to introduce middle grades girls to mathematics, science, and engineering, and she coached high school students for the Mandelbrot Math Competition. She has developed courses for prospective and practicing elementary, middle, and high school teachers in

problem solving, school mathematics from an advanced standpoint, calculus, and graph theory. She directed two professional development programs for K-12 teachers, the Redwood Area Math Project and the North Coast Mathematics and Science Initiative. Perhaps her most influential work was through Project PROMPT, which engaged college and university faculty in rethinking the content and pedagogy for prospective elementary and middle school teachers. This project spawned similar projects in Louisiana, Texas, and Oklahoma.

Chinn's creative mathematical spark has led her to discover fascinating research questions in graph theory arising from Cuisenaire rods. She has an Erdős number of one. She is also a juggler, and she says that juggling teaches the merits of practice and persistence and illustrates the usefulness of algorithms. She has been an advocate for women in mathematics and science throughout her career. She developed and taught courses on women in science and mathematics. In the words of Diane Johnson, a professor of mathematics at Humboldt State University, Phyllis was a "proud and successful mother...the first woman tenured in our department, and...a mentor and inspiration to those of us who have followed her."

—From AWM announcements

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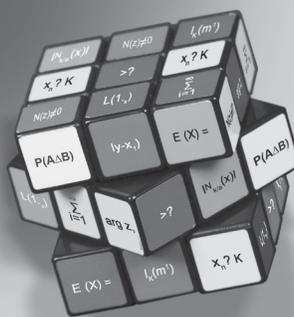
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