initially planned this book to be a 100-page-long summer school proceeding, and in the end it was a 1000-page-long reference book. This quick growth and change of ambition was the book's decision, not mine. The state of obsession which I arrived at while working on it is almost unparalleled in my personal history. After it was finished, I would often open it at a random page and read it, like a father proudly contemplating his newborn. Fortunately it was not only to his father's taste, since the book has been doing well and has become a classical reference in the field of optimal transport. That it is rewarded with the Doob Prize is a great honor for me; I especially like the reference to Doob, who had the same care for details and presentation as I try to have—always thinking hard about the best way to present and convey messages to the readers' minds, without sacrificing the rigor in the least. But this prize is also for me a mere joy, and the occasion to commemorate what I consider as one of the happy events in my life.

About the Prize

The Doob Prize was established by the AMS in 2003 and endowed in 2005 by Paul and Virginia Halmos in honor of Joseph L. Doob (1910–2004). Paul Halmos (1916–2006) was Doob's first Ph.D. student. Doob received his Ph.D. from Harvard in 1932 and three years later joined the faculty at the University of Illinois, where he remained until his retirement in 1978. He worked in probability theory and measure theory, served as AMS president in 1963–1964, and received the AMS Steele Prize in 1984 "for his fundamental work in establishing probability as a branch of mathematics and for his continuing profound influence on its development." The Doob Prize recognizes a single, relatively recent, outstanding research book that makes a seminal contribution to the research literature, reflects the highest standards of research exposition, and promises to have a deep and long-term impact in its area. The book must have been published within the six calendar years preceding the year in which it is nominated. Books may be nominated by members of the Society, by members of the selection committee, by members of AMS editorial committees, or by publishers. The prize of US$5,000 is given every three years.

The Doob Prize is awarded by the AMS Council acting on the recommendation of a selection committee. For the 2014 prize, the members of the selection committee were Harold P. Boas, William Fulton, Philip J. Holmes, Neal I. Koblitz, and John H. McCleary.

The previous recipients of the Doob Prize are William P. Thurston (2005), Enrico Bombieri and Walter Gubler (2008), and Peter Kronheimer and Tomasz Mrowka (2011).

—Elaine Kehoe

2014 Morgan Prize

ERIC LARSON was awarded the 2014 AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student at the 120th Annual Meeting of the AMS in Baltimore, Maryland, in January 2014.

Citation

Eric Larson is awarded the 2014 AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research by an Undergraduate Student for his truly exceptional record of research. He has so far authored or coauthored eight papers, two as sole author, two with Dmitry Vaintrob, three with Larry Rolen, and one with David Jordan. His papers have appeared in a wide spectrum of research journals, including *Advances in Geometry, Bulletin of the London Mathematical Society, Forum Mathematicum*, the *Journal of Noncommutative Geometry*, and *Proceedings of the American Mathematical Society*.

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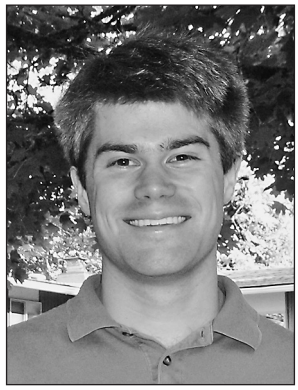

Eric Larson

Eric began his research work while still in high school, working in the REU program at Penn State University under Sergei Tabachnikov and then at the Research Science Institute at the Massachusetts Institute of Technology under Pavel Etinghof. In 2010, after his first year at Harvard, Eric participated in Ken Ono's REU program at the University of Wisconsin. This led to his collaboration with Dmitry Vaintrob. Eric continued in Ono's REU, now at Emory University, in 2011 and again in 2013. His work in this program resulted in five papers. In 2012 Eric received a summer research fellowship to work with Joe Harris at Harvard, producing another paper.

In addition to his stellar research work, Eric also won the Intel Science Talent Search first place prize, took second place in the Siemens competition that same year, and won a gold medal at the

International Math Olympiad, all while still a high school student. He was also on Harvard's winning Putnam team in 2011 and a Putnam Fellow in 2012. Eric is one of the most accomplished students of mathematics that the mathematics community has ever seen. In the words of Ken Ono, "Eric is a phenomenon."

Biographical Sketch

Eric Larson is a graduate student at MIT in mathematics. He is from Eugene, Oregon, where, while in elementary school, he discovered his love of mathematics after seeing Euclid's proof of the infinitude of primes. Eric received his bachelor's degree in mathematics from Harvard University, with a secondary in physics. His research interests are concentrated in algebraic geometry and number theory. Currently, he is working on a couple of projects related to the geometry of general curves in projective space.

Response from Eric Larson

I am honored to receive the 2014 Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student, and would like to warmly thank AMS, MAA, and SIAM.

I am also grateful to the many people that have helped me get here. Especially, I would like to thank my research mentors Ken Ono, Joe Harris, and David Zureick-Brown, as well as my family and friends for their support and encouragement.

About the Prize

The Morgan Prize is awarded annually for outstanding research in mathematics by an undergraduate student (or students having submitted joint work). Students in Canada, Mexico, or the United States or its possessions are eligible for consideration for the prize. Established in 1995, the prize was endowed by Mrs. Frank (Brennie) Morgan of Allentown, Pennsylvania, and carries the name of her late husband. The prize is given jointly by the AMS, the Mathematical Association of America (MAA), and the Society for Industrial and Applied Mathematics (SIAM) and carries a cash award of US$1,200.

Recipients of the Morgan Prize are chosen by a joint AMS-MAA-SIAM selection committee. For the 2013 prize, the members of the selection committee were Colin C. Adams, Bela Bajnok, Johnny Guzman, Kathleen R. Fowler, Reza Malek Madani, and Susan E. Martonosi.

Previous recipients of the Morgan Prize are Kannan Soundararajan (1995), Manjul Bhargava (1996), Jade Vinson (1997), Daniel Biss (1998), Sean McLaughlin (1999), Jacob Lurie (2000), Ciprian Manolescu (2001), Joshua Greene (2002), Melanie Wood (2003), Reid Barton (2005), Jacob Fox (2006), Daniel Kane (2007), Nathan Kaplan (2008), Aaron Pixton (2009), Scott Duke Kominers (2010), Maria Monks (2011), John Pardon (2012), and Fan Wei (2013).

—Elaine Kehoe

2014 Conant Prize

Alex Kontorovich was awarded the 2014 Levi L. Conant Prize at the 120th Annual Meeting of the AMS in Baltimore, Maryland, in January 2014.

Citation

The 2014 Levi L. Conant Prize is awarded to Alex Kontorovich for his article, "From Apollonius to Zaremba: Local-global phenomena in thin orbits", *Bulletin of the American Mathematical Society* **50** (2013), no. 2, 187–228.

This article introduces us to a new field of number theory that has proven to be extremely fruitful, even in shedding light on some ancient problems. The author illustrates the new ideas by focusing on three problems, which at first glance seem totally unrelated, but each of which is an attractive mixture of algebra and geometry. The first problem (Zaremba's Conjecture) asks whether every integer is the denominator of a fraction which can be expressed as a continued fraction

$$x = \frac{1}{a_1 + \frac{1}{a_2 + \ldots}},$$

where the a^j are constrained to be 1,2,3,4,5. The second problem is more overtly geometric and asks whether all sufficiently large integers (not prohibited by congruence conditions) occur as curvatures in an integral Apollonian gasket, a configuration of circles with many tangencies. Finally, the third problem asks if there are infinitely many primes that occur as hypotenuses in a thin orbit of Pythagorean triples.

Kontorovich masterfully introduces the general reader to these problems and the ways in which they are connected through the concept of orbits of groups of matrices that are of infinite index in a

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