2011 Morgan Prize

MARIA MONKS received the 2011 AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student at the Joint Mathematics Meetings in New Orleans in January 2011. Receiving honorable mentions were MICHAEL VISCARDI and YUFEI ZHAO.

Citation: Maria Monks

Maria Monks is the winner of the 2011 Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student. The award is based on her impressive work in combinatorics and number theory, which has appeared in *Advances in Applied Mathematics, Proceedings of the AMS, Electronic Journal of Combinatorics, Discrete Mathematics*, and *Journal of Combinatorial Theory, Series A*.

One of her recommenders wrote, "Although Maria has just finished her bachelor's degree, her accomplishments are what you might expect from someone in the second year of a postdoctoral position." Another wrote that her work "reveals a broad knowledge of relevant methods as well as startling insight, and it is in the mainstream of a really 'hot' area."

Monks is a Churchill Scholar, a Goldwater Scholar, a Hertz Fellow, and an NSF Graduate Research Fellowship recipient. She received the Alice T. Schafer Prize for Women in Mathematics in 2009 and a Morgan Prize Honorable Mention in 2010. She is also an NCAA All-American cross-country runner. She graduated from MIT in 2010.

Biographical Sketch: Maria Monks

Maria Monks grew up in Hazleton, Pennsylvania, with her parents and two brothers. Her interest in mathematics began in elementary school, when her father, Ken Monks, began to home school her in mathematics. In middle school and high school, she became involved in mathematical problem solving through her MATHCOUNTS team, the Lehigh Valley ARML team, and the Math Olympiad Summer Program. She also began mathematical research as a high school student, writing a paper on the $3x+1$ conjecture and coauthoring another on a conjecture of Erdős and Straus.

As an undergraduate, Maria participated in the Duluth mathematics REU under the direction of Joe Gallian, and she worked with Richard Stanley and Mia Minnes at MIT, writing a total of five more research papers over the course of her undergraduate career. She also discovered her passion for teaching in college; she was a coach of the 2008 USA team for the Girls' Math Olympiad in China and became involved in local educational programs, such as Girls' Angle and Idea Math. She is a dedicated distance runner, earning All-American honors at the NCAA Cross-Country National Championships during her last year as a varsity athlete at MIT.

Maria Monks

Maria is currently in a one-year master's program in mathematics at the University of Cambridge. She will pursue a Ph.D. at the University of California, Berkeley, in the fall, where she plans to study combinatorics.

Response: Maria Monks

I am very honored to have been named the winner of the 2011 Frank and Brennie Morgan Prize, and I thank the AMS, MAA, and SIAM Morgan Prize Committee for selecting me for this award.

I would like to thank the people who have had the most impact on my mathematical education thus far. I thank Joe Gallian for nominating me for this prize and for serving as a wonderful advisor at the Duluth REU. I also express my gratitude to Ken Ono, Richard Stanley, and Mia Minnes for their

help, advice, and mentorship in various research projects. Finally, I thank my father, Ken Monks, and the rest of my family for providing a wonderful environment in which to grow up and for fostering my interest in mathematics.

Citation for Honorable Mention: Michael Viscardi

The Morgan Prize Committee is pleased to award Honorable Mention for the 2011 Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student to Michael Viscardi.

The award recognizes in particular his impressive senior thesis, "Alternate Compactifications of the Moduli Space of Genus One Maps". Concerning his thesis, one recommender wrote, "If this were a doctoral thesis, it would secure an entry-level position for him at one of the top departments in the country." In addition to his mathematical talents, Viscardi is an accomplished pianist and violinist.

Biographical Sketch: Michael Viscardi

Michael Viscardi graduated summa cum laude from Harvard in 2010, where he was awarded the Thomas T. Hoopes Prize for Outstanding Research or Scholarly Work by a Senior and the David Mumford Mathematics Prize. He is currently finishing the Harvard/New England Conservatory five-year A.B./M.M. joint program in violin performance and will begin his Ph.D. in mathematics at MIT this fall.

Response: Michael Viscardi

I want to thank my advisor, Professor Joe Harris, for his invaluable guidance, support, and humor throughout the course of this research.

Citation for Honorable Mention: Yufei Zhao

The Morgan Prize Committee is pleased to award Honorable Mention for the 2011 Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student to Yufei Zhao.

The award recognizes his excellent work in combinatorics and number theory. One of his recommenders wrote, "Zhao is extraordinarily strong at research, functioning more like an established mathematician than an undergraduate." Zhao is a three-time Putnam Fellow and the recipient of a Gates Cambridge Scholarship. He graduated from MIT in 2010.

Biographical Sketch: Yufei Zhao

Yufei Zhao was born in Wuhan, China, and moved to Toronto at the age of eleven. In high school Yufei developed his interest in mathematics through competitions. He competed for the Canadian team three times at the International Mathematics Olympiad, where he received a gold medal, and he also subsequently coached the team as a Deputy Leader. As an undergraduate at MIT Yufei studied mathematics and computer science, and he worked with Richard Stanley and Michel Goemans on various problems in combinatorics. In the summer of 2009 Yufei attended the Duluth REU directed by Joe Gallian and spent a very productive summer working on problems in additive combinatorics and graph theory. After graduating from MIT, Yufei did a summer internship at Microsoft Research New England working with Henry Cohn on theoretical problems in coding theory. Yufei is currently studying at the University of Cambridge pursuing a one-year Master of Advanced Study in Mathematics. Afterward he plans to return to MIT to start his Ph.D. in mathematics.

Response: Yufei Zhao

I am very honored to receive this recognition, and I would like to thank AMS, MAA, and SIAM for selecting me for this award. I would like to express my gratitude to my parents for their constant support. I am indebted to all my teachers and mentors for educating me and furthering my interests in mathematics. There are too many of them to list, but in particular, I am grateful to Joe Gallian for running an incredible REU program and to Richard Stanley, Michel Goemans, and Henry Cohn for being wonderful mentors and taking the time to supervise me on various projects. And finally, I thank my friends and classmates for creating a wonderfully supportive environment for doing mathematics.

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 2011 prize, the members of the selection committee were Georgia Benkart, Anna L. Mazzucato, Maeve L. McCarthy, Michael E. Orrison, Kannan Soundararajan, and Sergei Tabachnikov.

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), and Scott Duke Kominers (2010).