

2003 Satter Prize



Abigail Thompson

The 2003 Ruth Lyttle Satter Prize in Mathematics was awarded at the 109th Annual Meeting of the AMS in Baltimore in January 2003.

The Satter Prize is awarded every two years to recognize an outstanding contribution to mathematics research by a woman in the previous five years. Established in 1990 with funds donated by Joan S. Birman, the prize honors the memory of Birman's sister, Ruth Lyttle Satter. Satter earned a bachelor's degree in mathematics and then joined the research staff at AT&T Bell Laboratories during World War II. After raising a family, she received a Ph.D. in botany at the age of forty-three from the University of Connecticut at Storrs, where she later became a faculty member. Her research on the biological clocks in plants earned her recognition in the U.S. and abroad. Birman requested that the prize be established to honor her sister's commitment to research and to encouraging women in science. The prize carries a cash award of \$5,000.

The Satter Prize is awarded by the AMS Council acting on the recommendation of a selection committee. For the 2003 prize, the members of the selection committee were: Alexandra Bellow, Bhama Srinivasan (chair), and Jean E. Taylor.

Previous recipients of the Satter Prize are: Dusa McDuff (1991), Lai-Sang Young (1993), Sun-Yung Alice Chang (1995), Ingrid Daubechies (1997), Bernadette Perrin-Riou (1999), Karen E. Smith (2001), and Sijue Wu (2001).

The 2003 Satter Prize was awarded to ABIGAIL THOMPSON. The text that follows presents the

selection committee's citation, a brief biographical sketch, and the awardee's response upon receiving the prize.

Citation

The Ruth Lyttle Satter Prize is awarded to Abigail Thompson for her outstanding work in 3-dimensional topology. As a consequence of her work, the concept of thin position, first introduced by Gabai for the study of knots in the 3-sphere, has emerged as a major tool for attacking some of the fundamental problems in the study of 3-manifolds. Her paper "Thin position and the recognition problem for S^3 ", *Math. Res. Lett.* **1** (1994), 613-630, used the idea of thin position to reinterpret Rubenstein's solution to the recognition problem of the 3-sphere in a startling way. Her papers with Martin Scharlemann, "Thin position for 3-manifolds", *Geometric Topology* (Haifa, 1992), 231-238, *Contemp. Math.* **164**, Amer. Math. Soc., Providence, RI, 1994; and "Thin position and Heegaard splittings of the 3-sphere", *J. Differential Geom.* **39** (1994), 343-357, provide remarkable applications of thin position to Heegaard splittings of 3-manifolds. Her 1997 paper "Thin position and bridge number for knots in the 3-sphere", *Topology* **36** (1997), 505-507, gives a completely unexpected connection in the case of knots in 3-spheres between thin position and the much more classical notion of bridge position.

Biographical Sketch

Abigail Thompson was born on June 30, 1958, in Norwalk, Connecticut. She received her B.A. from Wellesley College in 1979 and her Ph.D. from Rutgers University in 1986. She held a Lady Davis Fellowship at Hebrew University (1986-87), a University of California President's Postdoctoral Fellowship at UC Berkeley (1987-88), a National Science Foundation Postdoctoral Fellowship

(1988–91), and a Sloan Foundation Fellowship (1991–93). In 1990–91 and 2000–01 she was a member of the Institute for Advanced Study. Since 1988 she has been on the faculty at the University of California at Davis. She is the director of the California State Summer School in Mathematics and Science at UC Davis, a month-long residential program for talented high school students. Her current research concerns structures of 3-dimensional manifolds. She is married and has three children.

Response

I am very grateful to the AMS and the Satter Prize Committee for awarding me this prize. I have been supported and encouraged throughout my career by many mathematicians, especially Ann Stehney, Bill Menasco, and Rob Kirby. I am also deeply indebted to my long-time collaborator, Marty Scharlemann. The Satter Prize is particularly meaningful to me, because Joan Birman, whose generosity funded the prize, has been a great inspiration to me in my field.