1996 AMS-MAA-SIAM Morgan Prize

Manjul Bhargava

The 1996 AMS-MAA-SIAM Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student was presented to MANJUL BHARGAVA. The prize was presented during the Seattle Mathfest in August. LENHARD L. NG was named Honorable Mention. Both Bhargava and Ng were undergraduates at Harvard and finished their degrees there this year.

The Morgan Prize Committee consists of Kelly Black, Don Chakerian, Frank Morgan, Martha Siegel (chair), John Ryff, and Lee Zia. Their citation for Bhargava follows.

Manjul Bhargava was an undergraduate at Harvard University when he wrote the four papers that were submitted to the Morgan Prize Committee. His Senior Honors Thesis, written under the direction of Barry Mazur, was suggested to Bhargava by Joseph Gallian at a summer REU. Bhargava completely solved the problem posed in the summer of 1995 in his paper "Congruence preservation and polynomial functions from Z^n to Z^m", which has been accepted for publication in *Discrete Mathematics*. This research ultimately led to his thesis, "On P-orderings and polynomial functions on arbitrary subsets of Dedekind-type rings", which unifies and generalizes the results of about twenty previous papers, many by well-known mathematicians. In addition, Bhargava has settled several long-standing conjectures in the theory of polynomial functions on various types of rings.

His paper "Generalizing the factorial functions: Sequence of ideals associated with a subset of an algebraic field", submitted to the *Journal of Number Theory*, contains a generalization of the factorial function and work on fixed divisors. Under the supervision of Gallian, Bhargava also has resolved a conjecture, gives significant new results, and unifies and generalizes all previous results in mistilings with rectangular tiles in his "Mistilings of the plane with rectangles", submitted recently to *Discrete Mathematics*.

The many letters the committee received from his mentors, as well as from other mathematicians whose work he has generalized, reinforced our judgment that Bhargava has done truly outstanding mathematical research, and we are pleased to award him the 1996 Morgan Prize.