

For release

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MATHEMATICIAN WINS NSF AWARD FOR UNPROVABLE PROBLEMS

COLUMBUS, Ohio -- A young Ohio State University mathematician is this year's winner of the Alan T. Waterman Award, one of the most important honors bestowed on a researcher by the National Science Foundation.

Harvey M. Friedman, professor of mathematics, was chosen primarily for his research on a class of mathematical problems which can neither be proved nor disproved using conventional mathematical reasoning.

This work is important because these problems are unexpectedly close to the mainstream of mathematics, and researchers may be forced to rethink the standard way they understand mathematics.

Friedman's work follows in the footsteps of noted mathematician Kurt Godel who originally found certain statements that could be neither proved nor disproved using standard mathematical reasoning.

In a world where, up until that time, all mathematical statements could either be proved or disproved, this deviant discovery upset mathematical thought.

While Godel's discovery had "gigantic and monumental importance for the history of mathematics," Friedman said, the statements with which he dealt were extremely abstract compared to the bulk of mathematical thinking.

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Because of that, the impact of his work on the mathematics community has lessened over the years, Friedman said.

"What I have done is to place this (Godel's work) a bit more into the mainstream of mathematics," he said. Friedman's work is accepted as the most substantial research done in this vein.

The importance of this work, Friedman believes, is that it suggests that the usual framework of mathematics may have to be expanded.

"Mathematicians now feel very comfortable with the standard reasoning procedures. These new ideas are controversial in that researchers may have to decide whether these ideas will be accepted or not," Friedman said.

"By broadening mathematics, it brings in the possibility that things that we have not been able to deal with in the past may now be dealt with."

If the research continues to its logical conclusion, Friedman says that it could have a profound impact on the way mathematicians look at mathematics and on the way people think about the concept of objectivity, "of yes and no," in general.

Friedman was selected from a field of 132 candidates for the honor. He will receive the award during ceremonies at the National Academy of Sciences in Washington May 9. The award includes a medal and an NSF grant of up to \$50,000 for three years to continue his research. The award is given annually to an outstanding young researcher in any field of science, mathematics or engineering who has exhibited quality, innovation and potential for discovery.

He received his Ph.D. degree in 1967 from the Massachusetts

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Institute of Technology at the age of 18. He was named assistant professor of logic at Stanford University that same year, an appointment that landed him a listing in the Guinness Book of World Records as the youngest professor at an American university.

Since that time, he has served as associate professor of logic at Stanford, associate professor of mathematics at the University of Wisconsin, visiting professor and professor of mathematics at the State University of New York at Buffalo. Since 1977, he has held his present post at Ohio State.

Ohio State President Edward H. Jennings said: "We are naturally delighted with the National Science Foundation's recognition of one of our faculty colleagues. This prestigious award to Professor Friedman also reflects great credit on our mathematics department and the university as a whole.

"Ohio State singled out Professor Friedman as an example of excellence in 1982 when we presented him with the university's Distinguished Research Award. We applaud his research achievements and we are very proud to have him as a member of our faculty."

In announcing the award in Washington, Edward A. Knapp, director of NSF, said: "Dr. Friedman is known as a most energetic and imaginative young scientist. His work has profoundly changed the direction of contemporary research."

Lewis M. Branscomb, chairman of the National Science Board, said, "In an amazingly short period of time, Dr. Friedman has become universally regarded as one of the leading mathematical logicians."

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