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UC San Diego Professor Wins Major Prize in Mathematics

A professor at the University of California San Diego has won this year's John von Neumann Theory Prize, one of the most prestigious awards in mathematics, given annually for "fundamental and sustained contributions to theory in operations research and the management sciences."

Ruth Williams, a professor of mathematics at UC San Diego, shared the award with Martin Reiman of Columbia University's Department of Industrial Engineering and Operations Research. The two researchers were awarded their prize—which consists of \$5,000, a medallion and a citation—last night in Nashville at the annual meeting of the Institute for Operations Research and the Management Sciences (INFORMS), an international society for researchers in that discipline.



Ruth Williams, UC San Diego

"Their research, in which they have both influenced and built upon each other's work, has had a lasting theoretical and practical impact that stands the test of time," the society said in its citation of this year's prize.

Named after famed mathematician John von Neumann, the prize is regarded as the Nobel Prize in this branch of mathematics and has been awarded since its inception in 1975 to a number of individuals who later went on to win the Nobel Prize.

Williams, who holds the Charles Lee Powell Endowed Chair in Mathematics at UC San Diego, and Reiman were specifically cited for their pioneering research, over the past few decades, "on the theory and applications of stochastic networks and their diffusion approximations."

The citation added that Williams has had a “deep and lasting impact on the study of heavy traffic analysis.”

This is the mathematical subject which describes real-world systems running near maximum capacity, such as the Internet when congested, assembly lines, customer service centers and freeways at rush hour.

“Williams’ research is characterized by its mathematical depth and elegance,” the citation added. “She has greatly influenced researchers in operations research, stochastic processes and mathematics, doing so through survey lectures and articles that are exemplary in clarity and insight.”

A faculty member at UC San Diego since 1983, Williams received her PhD from Stanford University. In 2012, she was elected to membership in the National Academy of Sciences, a rare honor for a mathematician.

She is also a Fellow of the American Academy of Arts and Sciences, American Association for the Advancement of Science, American Mathematical Society, Institute of Mathematical Statistics and Institute for Operations Research and the Management Sciences. She was the president of the Institute of Mathematical Statistics from 2011 to 2012 and has received an Alfred P. Sloan Research Fellowship and a Guggenheim Fellowship.

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