

UCSD scientist Thomas O'Neil wins Maxwell Prize in plasma physics

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UCSD SCIENTIST WINS MAXWELL PRIZE IN PLASMA PHYSICS

Thomas M. O'Neil, professor of physics at the University of California, San Diego, has won the 1996 James Clerk Maxwell Prize in plasma physics from the American Physical Society.

The prize, which consists of a certificate and \$5,000, is sponsored by Maxwell Laboratories, Inc.

O'Neil will receive the award during ceremonies at a November meeting of the Division of Plasma Physics in Denver, Colorado.

"His theoretical work and active guidance of experiments with trapped, non-neutral plasmas provide much of the foundation for this branch of plasma physics," according to the award citation.

A plasma is the fourth state of matter, with solids, liquids and gases making up the other three. Most of the matter in the Universe is in the plasma state; for example, the matter of stars is composed of plasmas.

In his research, O'Neil has been focusing on pure electron, ion and positron plasmas that are trapped in magnetic bottles. Such non-neutral plasmas are rare in nature.

With UCSD colleagues C. Fred Driscoll, Dan Dubin and John Malmberg, who died in 1992, O'Neil has conducted a variety of experiments to test basic principles of plasma physics. Greater understanding of these principles could offer insights into how stars work and how to ignite and control thermonuclear reactions to produce fusion energy--the power that drives the stars.

Among other things, O'Neil's work has included nonlinear studies of a phenomenon called "Landau damping," where electrons surf on a plasma wave, stealing energy from the wave and causing it to damp (decrease in amplitude). He also has conducted pioneering work in the confinement and transport of non-neutral plasmas.

For their work, Profs. Malmberg, Driscoll and O'Neil received the 1991 Excellence in Plasma Physics Research Award from the American Physical Society.

UCSD is a leading center for plasma physics research. Prior UCSD winners of the Maxwell Prize include Prof. Malmberg; Marshall Rosenbluth, emeritus professor of physics; Tihiro Ohkawa, adjunct professor of physics; and John Greene, adjunct professor of physics.

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