

## **Distinguished UCSD plasma physics researcher and professor John Malmberg, dies**

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Media Contact: Warren R. Froelich, (619) 534-8564

John H. Malmberg, a distinguished plasma physics researcher and a professor emeritus of physics at the University of California, San Diego, died Tuesday, November 17 at his Del Mar home. He was 65.

Prof. Malmberg joined UCSD from General Atomics in 1969 as a professor of physics. Much of his work revolved around theoretical and experimental investigations of fully ionized gases or plasmas. The field could offer insights into how stars work and how to ignite and control thermonuclear reactions to produce fusion energy--the power that drives the sun.

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 recent years, Prof. Malmberg had been experimenting with pure electron plasmas that were trapped in a magnetic bottle. By contrast with electrically neutral plasmas that contain an equal number of positive and negative electrons, pure electron plasmas are rare in nature.

Before joining UCSD, Prof. Malmberg was director of the Plasma Turbulence group at General Atomics, where he carried out some of the first and most important experiments to test the basic principals of plasma physics. Perhaps his most important experiment involved the confirmation of the phenomenon called "Landau damping," where electrons surf on a plasma wave, stealing energy from the wave and causing it to damp (decrease in amplitude).

For his pioneering work in testing the basic principals of plasma, and for his more recent work with electron plasmas, Prof. Malmberg was named the recipient of the American Physical Society's James Clerk Maxwell Prize in Plasma Physics in 1985.

Prof. Malmberg--along with UCSD colleagues C. Fred Driscoll and Tom O'Neil--also received the "1991 Excellence in Plasma Physics Research Award" from the American Physical Society.

The citation for the award read: "For their pioneering and imaginative theoretical and experimental research in non-neutral plasmas. Their research in basic plasma physics has substantially enhanced our understanding of non-equilibrium, transport, and relaxation processes in plasmas."

Prof. Malmberg was a Fellow of the American Physical Society, and served on the Executive Committee of the Plasma Physics Division. In addition, he was an editor of *Physica Scripta* and an associate editor of the *Physics of Fluids*. He was an invited speaker and/or delegate to numerous international conferences on plasma physics, and was the recipient of the NASA Award for technical innovation.

Prior to arriving in San Diego, Prof. Malmberg held the position of teaching assistant or research assistant from 1949 to 1957 at the University of Illinois, where he earned his M.S. and Ph.D. degrees in physics. His major interests there were photomeson production, fast pulsed electronics and accelerators.

A long-time resident of Del Mar, Prof. Malmberg had been active in Del Mar politics, was a life member of the San Diego Yacht Club, and was an avid motorcyclist.

Prof. Malmberg is survived by his wife, Vilma Ruth Malmberg; a son, David Malmberg, a resident of Leucadia; a daughter, Lori Malmberg, of Los Angeles; two grandchildren, Dylan and Kelsey Malmberg; a sister, Ada Brown, of Baltimore, Maryland; and a brother, Constantine Malmberg, of Dover, Delaware.

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