Media Relations

UNH Space Physicist Honored As American Geophysical Union Fellow

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For the Interstellar Boundary Explorer mission, a UNH team of scientists, engineers, and students built the equivalent of the iris – a device that "collimates" or precisely lines up incoming neutral atoms. The collimator, components of which flank Eberhard Möbius in this photo, is an elaborately engineered ring of aluminum and ceramics. Photo by Perry Smith, UNH Photo Services.

DURHAM, N.H. -- University of New Hampshire physics professor Eberhard Möbius will be honored today as a Fellow of the American Geophysical Union (AGU) at the organization's annual, week-long scientific gathering in San Francisco where over 18,000 scientists from around the world share the latest research findings in the Earth and space sciences.

AGU membership encompasses more than 58,000 individuals from more than 135 countries, and to be designated a Fellow is reserved for those who have made exceptional scientific contributions and attained acknowledged eminence in their particular discipline. The honor is conferred upon no more than one-tenth of a percent of all AGU members in any given year. Möbius will join ranks with five other UNH professors who have been so honored through the years.

A professor of space plasma physics at the UNH Institute for the Study of Earth, Oceans, and Space (EOS) and the Department of Physics, which he currently chairs, Möbius is being recognized for contributions he has made over four decades in the field of solar, heliospheric, and magnetospheric physics that have had far-reaching applications in galactic physics and cosmology. His work includes the development of state-of-the-art instrumentation for space missions that have probed fundamental aspects of how our solar system interacts with the interstellar medium (the "space between the stars"), and a discovery that opened up an entirely new means of exploring our universe.

The 1985 discovery of "pickup ions" in the solar wind, achieved by a team led by Möbius as part of the three-spacecraft Active Magnetospheric Particle Tracer Explorer mission, was the first time atoms from deep space were captured and measured at Earth's doorstep. The existence of such atoms had been predicted but never seen before. The instrument designed and built by Möbius' team made the discovery possible.

This provided scientists with a means of investigating directly and quantitatively the composition and physical properties of the local interstellar medium, its interaction with the solar wind, and the formation of the heliosphere – the vast bubble that surrounds the Sun. The discovery also forged a connection between space physics and astrophysics, the latter which investigates far-flung phenomena through the use of various types of telescopes, including light, x-ray, gamma-ray, and radio.

In the past two years, Möbius has come "full circle" in his work probing interstellar space using another variety of deep-space atom delivered to our neighborhood by the solar wind – energetic neutral atoms – and the tools of space physics. The ultra-high sensitivity cameras designed and built by Möbius' team on NASA's Interstellar Boundary Explorer (IBEX) mission have helped to provide another first – maps of the edge of our solar system.

"We are using the neutral atoms to make images of something at a great distance to learn about the

boundary region of the heliosphere, which is the Earth's first shield of protection against energetic cosmic radiation," Möbius says.

"Eberhard's vision and contributions to developing IBEX have been truly outstanding – this mission would not have been possible without him," says David McComas, assistant vice president for space science and engineering at the Southwest Research Institute in San Antonio and principal investigator for the IBEX mission. "Moreover," McComas adds, "it has been tremendously gratifying to work with Eberhard and all the other talented scientists, engineers, and students he has pulled into the IBEX program up at UNH."

In addition to his contributions to the field of space physics, another significant element in Möbius being named an AGU Fellow is his career work as teacher and mentor for both graduate and undergraduate students, and education and outreach efforts that have helped bring the meaning, relevance, and excitement of space science discoveries to the public at large.

Says John Aber, UNH professor and provost, "Eberhard is not only a truly outstanding scholar in his field but also a model university citizen, both intellectually and in terms of service and academic leadership. He has pioneered new teaching methods on campus, and both led and contributed to interdisciplinary classes and seminars in areas as diverse as environmental science and the interactions of science with philosophy and spirituality. He has also directed the Space Science Center, which for more than 50 years has been a major contributor to the understanding of Sun-Earth interactions. UNH is fortunate to have someone with Eberhard's talent, dedication, and wide-ranging intellect as a member of our faculty."

Adds space plasma physicist Harlan Spence, director of EOS, "Eberhard is a remarkable colleague, a pioneer and leader in both research and education, and is richly generous with his time, talents, and energy. I can think of no one in the AGU membership more deserving of this crowning and exclusive honor."

The University of New Hampshire, founded in 1866, is a world-class public research university with the feel of a New England liberal arts college. A land, sea, and space-grant university, UNH is the state's flagship public institution, enrolling 12,200 undergraduate and 2,300 graduate students.

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Photograph available to download:
http://www.eos.unh.edu/newsimage/mobius_lg.jpg
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