

WE HEAR THAT

## ACOUSTICAL SOCIETY PRESENTS GOLD MEDAL TO SCHROEDER

The Acoustical Society of America recently presented Manfred R. Schroeder of the University of Göttingen with its highest honor, the Gold Medal. During a ceremony at the ASA meeting held in Baltimore, Maryland, in May, Schroeder was cited for his "theoretical and practical contributions to human communication through innovative application of mathematics to speech, hearing, and concert hall acoustics."

In 1958 Schroeder invented the voice-excited vocoder, the first speech synthesizer that did not have the electronic accent of previous devices. With Bishnu Atal, Schroeder developed a system known as linear predictive coding, which has become the primary method for digital speech coding, the citation said. He pioneered the use of computer simulations to evaluate concert halls, both existing and planned. With his students at Göttingen, Schroeder confirmed the importance of strong lateral sound waves in obtaining good acoustic quality, and he showed how to construct phase gratings, based on number theory, that scatter nearly equal energies into all diffraction orders to enhance lateral sounds.

Schroeder studied mathematics and physics at the University of Göttingen, where he earned a diploma in physics in 1951 and a doctorate in physics in 1954. From 1954 to 1987 he worked at Bell Labs in Murray Hill, New Jersey, becoming director of the Acoustics and Speech Research Laboratory in 1963. Since 1969 he has also been a professor of physics at Göttingen and director of one of the university's physics institutes.

Also recognized at the May meeting were Joseph M. Cuschieri of Florida Atlantic University and Yves H. Berthelot of the Georgia Institute of Technology. They each received the R. Bruce Lindsay Award, given to



Manfred R. Schroeder

outstanding researchers under the age of 35.

Cuschieri was selected for his "contributions to theory and measurement of power flow in vibrating structures." He is currently involved

in an Office of Naval Research study of water-loaded structures and is developing a multichannel laser-based system for measuring structural power flow.

After earning a PhD in noise and vibration control from the University of Southampton in 1983, Cuschieri joined the faculty of the ocean engineering department at Florida Atlantic University in Boca Raton. He is currently a professor of ocean engineering there.

ASA cited Berthelot for his "experimental and theoretical contributions to the use of lasers in acoustics and to the measurement of propagation of sound over irregular terrain." His current research involves the use of lasers to measure very small vibrations in structures and to detect sound waves in fluids.

Berthelot earned a PhD in mechanical engineering from the University of Texas, Austin, in 1985. Since then he has been at Georgia Tech, where he is currently an associate professor of mechanical engineering.

## MACARTHUR FELLOWSHIPS GIVEN FOR PHYSICS-RELATED WORK

Two of this year's 31 MacArthur Fellows have been honored for their achievements in physics and related fields.

Sergiu Klainerman, a professor of mathematics at Princeton University, has been recognized for his path-breaking work on partial-differential equations of mathematical physics. Another recipient is James A. Westphal, a professor of planetary science at the California Institute of Technology who is a leading designer and builder of cameras for use in space. Most notably he is the principal investigator of the Wide Field/Plane-

tary Camera for the Hubble Space Telescope.

Over the next five years Klainerman, 41, will receive \$250 000 and Westphal, 61, will receive \$360 000. The amount of the award is pegged to the age of the recipient.

Together with long-time collaborator Demetrios Christodoulou, Sergiu Klainerman wrote a 600-page paper, "Non-Linear Stability of the Minkowski Space-Time," which provides a mathematical framework for an exact theory of gravitational radiation at large distances from astronomic sources. Klainerman describes his