CENTER FOR BEAM PHYSICS SEMINAR

"Use of Low-Power Radar-Like Sensors for Real-Time Internal Organ Measurements"

John F. Holzrichter, LLNL

Friday, August 3, 2001, 10:30 AM
Albert Ghiorso Conference Room, bldg. 71, LBNL

Summary:

With the increasing availability of very low power microwave interferometers of reduced dimension, properties of human internal organs (such as heart ventricular contraction patterns and arterial elasticity) can be obtained in real time. I will discuss the human speech system as one application of this technology, illustrating new algorithms to improve communications and to aid practitioners in diagnoses and treatments.

Biographical data and research interests:

Dr. Holzrichter is a Senior Scientist and assistant to the Director of the Lawrence Livermore National Laboratory (LLNL). During the past five years, working with UC-Davis students, he and his colleagues invented and developed the concepts of EM radar-sensor/acoustic speech characterization. As president of the Fannie and John Hertz Foundation, he sponsors graduate fellowships in the applied physical and biological sciences.

He obtained his Ph.D. in Physics from Stanford University in 1971. After a short period at the Naval Research Laboratory, he joined LLNL in 1972. He has held a variety of technical and management positions including group leader for laser plasma experiments and division leader for the Laboratory's solid state laser program which conducted the research, executed the designs, and constructed LLNL's successful series of high power fusion lasers: Janus, Argus, Shiva, Novette, and NOVA. From 1981 to 1985, he directed the Laboratory's Inertial Confinement Fusion program during which several key pellet-fusion demonstrations were accomplished and major programmatic questions were resolved. In addition, the first soft x-ray lasers were demonstrated and an environment for scientific investigation was established. For over 14 years, he has been responsible for developing and managing the LLNL Laboratory Directed Research and Development program. A few of the most notable successes of this program have been the development of the basis for massive parallel computing, participating in the element 114 discovery, and high-power picosecond laser and laser interaction technology.

He has been a recipient of a Sloan Fellowship, a Fulbright Fellowship (Heidelberg), and a Hertz Foundation Fellowship. He is a member of several professional societies, has published over 50 papers and monographs on lasers, fusion, force microscopy, and speech recognition. He serves on a variety of professional committees, and has given many invited lectures on project management and technical innovation. His present research is concerned with laser tweezers to sequence DNA, using radar-like sensors for human organ imaging, and in creating and better understanding R&D management mechanisms for the public sector.

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