



AN HONORS UNIVERSITY IN MARYLAND

Department of Mechanical Engineering

Fall 2006 Seminar Series, Friday- Dec. 1st, ITE 229 at 2:30pm

Mechanical Vibration Challenges in High Density Computer Data Storage

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Abstract: Developing new technologies for storing information - ranging from hieroglyphics to peer-to-peer file sharing - is a fundamental human activity. Each year, several exabytes of new data are produced and stored in digital form on computer hard disk drives and robotic tape libraries. In the domains of medical imaging and homeland security, the value of the stored information increases with time. The density at which information can be stored magnetically, as measured by data bits per square inch in disk drives or per cubic inch in tape libraries, has grown historically at a compound annual growth rate of approximately 60%. The technology is nearing the point at which the entire print contents of the Library of Congress could be held in the palm of one's hand. Computer data storage is an interdisciplinary engineering endeavor, and this presentation will describe progress in the area of mechanical vibration that enables future increases in data track density in hard disk drives and tape

Biosketch: Jonathan Wickert is a Professor of Mechanical Engineering at Carnegie Mellon University. His research in the fields of mechanical vibration and applied mechanics combines physical modeling, analytical techniques, and measurement. Applications of his work include high-density computer data storage, the design of automotive disk brakes, machine dynamics, and the manufacture of sheet metal, fiberglass, and polymer materials. Dr. Wickert is the author of the textbook *An Introduction to Mechanical Engineering*, the co-inventor of two U.S. patents, and the author or co-author of over one hundred papers in archival journals and at technical conferences. Dr. Wickert was elected a fellow of the American Society of Mechanical Engineers, and he has served as an associate editor of the *ASME Journal of Vibration and Acoustics* and the *Journal of Information Storage Systems*. He was a member of the founding executive committee for the ASME Information Storage and Processing Systems Division, and he served as the division's chair, vice-chair, secretary, and program chair. Dr. Wickert has organized symposia comprising hundreds of technical papers at ASME International Mechanical Engineering Congresses and Expositions, and at ASME Mechanical Vibration and Noise Conferences. He was the local chair of the 2001 ASME International Design Engineering Technical Conferences, and he served on advisory boards for the International Workshop on the Analysis of Vibrating Systems, and for ASME/JSME Joint Conferences on Micromechatronics for Information and Precision Equipment. Listed in *Who's Who in America*, Dr. Wickert received the Curriculum Innovation Award from the American Society of Mechanical Engineers, the Ralph Teeter Educational Award from the Society of Automotive Engineers, the Curtis McGraw Research Award from the American Society for Engineering Education, and the Technical Achievement Award from the Information Storage Industry Consortium. He is the recipient of the George Tallman Ladd Research Award, the Marsha and Philip Dowd Faculty Fellowship, the Theodore Ahrens Associate Professorship, and the Benjamin Teare Educational Award from Carnegie Mellon. He earned B.S., M.S., and Ph.D. degrees in mechanical engineering from the University of California, Berkeley, and he was an NSF/NATO post-doctoral fellow at the University of Cambridge, UK.

Refreshments will be served

Host: Dr. W. Zhu