Bits of the future: Challenges for the continued growth of digital data

The dramatic increases of data storage densities over the last 60 years and the corresponding decrease in cost has helped drive the modern digital world. However as many of the critical dimensions approach the nanometer scale, a variety of physical phenomena are placing limits on the capacity of future storage devices. I will review the evolution of magnetic information storage, its impact on the use of digital data and the current state of the art. I will then discuss new challenges related to the energy use of data and the potential for a new generation of information storage, memory and processing technologies to address these challenges.

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University of California San Diego
- Distinguished Professor, Department of Electrical and Computer Engineering
- Distinguished Professor, Department of NanoEngineering
- Endowed Chair and Director, Center for Memory and Recording Research (CMRR)
- Fellow, American Physical Society and IEEE
- NAE

Dr. Fullerton’s expertise is in thin-film magnetic and nano-materials. He is an internationally acclaimed scholar in areas such as thin film and superlattice growth, magnetic recording and nano-technologies, and x-ray and neutron scattering. At IBM/Hitachi, Dr. Fullerton made fundamental advances in the development of high density magnetic recording media based on antiferromagnetically coupled ferromagnetic films. Early in his career, he developed a technique for mapping the structure of thin-film multi-layers from x-ray diffraction data that became the standard in the field.

Eric Fullerton, Ph.D.

Please join us for the reception immediately following the seminar.