Geoffrey S.D. Beach

Professor of Materials Science and Engineering

Co-director, Materials Research Laboratory (MRL) at MIT

BS Physics, California Institute of Technology, 1997

PhD Physics, University of California, San Diego, 2003

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Research:

Professor Geoffrey Beach worked in UCSD's Center for Magnetic Recording Research to develop novel magnetic thin-film nanocomposites for ultrafast data storage applications. He later went on to the University of Texas at Austin as a Postdoctoral Fellow in the Department of Physics and the Texas Materials Institute where he made important discoveries in magnetization dynamics and spin-transfer torque in nanoscale magnetic structures. His current research interests focus on spin dynamics and "spin-electronics" in nanoscale magnetic materials and devices. Developing ways to store information more densely and to access it more quickly requires understanding the magnetization configurations in nanoscale structures and how they evolve in time. His work aims in part to understand and control spin excitations in magnetic materials whose dimensions approach fundamental magnetic length scales. One of the most exciting prospects in magnetism today is the possibility of electrical control of the magnetic state of a device, taking advantage of the coupling between spin and charge in a conducting ferromagnetic material. A major thrust of his research aims to harness the spin of the electron in magnetic materials to realize new approaches to spin-based storage and computation. Studying these processes requires the development of advanced instrumentation capable of probing magnetization dynamics at the shortest timescales and the smallest length scales. His group will work to develop new optical and electrical approaches to push the detection limits in order to enable development of new materials and structures to meet the information storage and processing demands of the future.

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Professors Beach and Olivetti promoted

Monday, May 21, 2018 - 2:30pm

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Monday, October 2, 2017 - 3:15pm

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