



Center for Magnetic Recording Research  
**SEMINAR**

**Tuesday, October 26, 2010**

**3:30 PM – Refreshments - CMRR Lobby**

**4:00 PM – Seminar - CMRR Auditorium**

**Spin Transfer Torque Devices for  
Nonvolatile Memory, Microwave Signal  
Detection and Magnetic Field Sensing**

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**ABSTRACT:**

Spin-polarized current injected into a metallic ferromagnet exerts torque on the local magnetization of the ferromagnet. This spin transfer torque can induce magnetization reversal or can excite large-amplitude magnetization oscillations. I will discuss our recent progress in the development of non-volatile magnetic memory based on current-induced magnetization reversal in nanoscale magnetic tunnel junctions. I will also describe an unusual high-frequency stochastic resonance of magnetization excited by GHz-range alternating spin-polarized current in magnetic tunnel junctions with superparamagnetic free layers. This high-frequency stochastic resonance can be used for ultrasensitive microwave signal detection and magnetic field sensing.

**Bio Sketch:**

Ilya Krivorotov received his Ph.D. in physics from the University of Minnesota in 2002. After a postdoctoral appointment at Cornell University in 2002-2005, he became faculty at the Department of Physics and Astronomy, University of California at Irvine. His research interests include spin currents and spin angular momentum transfer in ferromagnetic nanostructures, magnetization dynamics of nanomagnets, domain wall motion in ferromagnetic nanowires, spin transfer torque memories, proximity effect in ferromagnet-superconductor hybrids and non-equilibrium magnetic phase transitions.

**Host:** Professor Eric E. Fullerton, ECE/CMRR

Please observe the "No Food or Drink in the Auditorium" policy.