



College of  
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## Weekly Calendar

March 9- 13, 2015

### Departmental Colloquium

**“Hysteresis, Avalanches, and Slow Relaxation: Complex non-equilibrium spin dynamics in a simple Zeeman-limited superconductor”**

3:30 PM Thursday, March 12, 2015  
119 Nicholson Hall

*Phillip Adams*

Department of Physics & Astronomy, LSU

HOST: Ilya Vekhter

• Refreshments served at 3:10 PM in 232 (Library) Nicholson Hall •

We have recently been studying non-equilibrium spin dynamics of BCS superconductivity in a high Zeeman field. Thin aluminum films are driven from the superconducting phase to the normal phase by the application of a magnetic field that is oriented parallel to the film surface. Near the first-order parallel critical field transition, we observe avalanches in both transport and density of states measurements. These avalanches are not associated with flux jumps but are representative of the behavior of the condensate as the system tries to accommodate spin-singlet superconductivity in the presence of a large Zeeman field and disorder. I will argue that the presence of avalanches in the density of state spectra has important implications for the nature of the superconducting ground state near the Clogston-Chandrasekhar limit. Specifically, we believe that a non-trivial, spatially modulated, order parameter emerges in the critical regime.