



U N I V E R S I T Y O F
SOUTH CAROLINA

**DEPARTMENT OF
PHYSICS AND ASTRONOMY
COLLOQUIUM**

Speaker:

**Yuriy Pershin
Department of Physics
University of California, San Diego**

Title:

“Transport of Spin-Polarized Electrons in Semiconducting Nanostructures”

Abstract:

The goal of spintronics is to control and manipulate the electronic spin degree of freedom, promising new applications. I will discuss two predictions I have recently made in this field: spin blockade at a semiconductor/ferromagnet interface, and the formation of a transverse voltage in a spin Hall system with inhomogeneous electron density in the direction perpendicular to main current flow. The first phenomenon shows the remarkable difference between spin injection and spin extraction, while the second would allow the electrical measurement of the spin Hall effect in non-magnetic systems and without injection of spin-polarized electrons. These examples also show the emergence of new phenomena still unexplored in the field of electron and spin transport in nanostructures. I will conclude with an outlook on future research directions.

**Jones Physical Science Center
Rogers Room
PSC 409**

**Thursday, March 6, 2008
3:30 pm**

Refreshments at 3:15 pm

Everyone invited

Hosted by:

Rick Creswick