

This Week in Physics

SYRACUSE UNIVERSITY
College of Arts & Sciences

Week of
October 5, 2009

[http://www.phy.syr.edu/
SeminarsEvents.htm](http://www.phy.syr.edu/SeminarsEvents.htm)

DEPARTMENT OF PHYSICS

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THURSDAY, OCTOBER 8

Colloquium

4:00 PM, Rm 202 (refreshments 3:30 PM)

Prof. Philippe Jacquod (University of Arizona)

Mesoscopic physics in presence of superconductivity: what are the new rules of the game?

Quantum coherence significantly affects the conductance of purely metallic mesoscopic systems, and leads to a number of deviations from the standard Drude theory of transport, such as Aharonov-Bohm conductance oscillations, anomalous magnetoconductance, universal conductance fluctuations and the apparent violation of macroscopic symmetries.

All these effects are universal in that their magnitude does not scale with the conductance of the system. It has been known for some time that the rules of the games are modified, however, when the system is connected to superconductors. As but one example, experiments have shown that the amplitude of Aharonov-Bohm oscillations is magnified by orders of magnitude in presence of superconductivity. In this presentation, I will investigate a number of quantum coherent effects in presence of superconductivity, and review the new rules that they need to follow.

FRIDAY, OCTOBER 9

Condensed Matter/Biological Physics Seminar

11:00 AM, Rm 202

Prof. Will Oliver (Lincoln Laboratory, MIT)

Amplitude spectroscopy with a superconducting artificial atom

