Condensed Matter Theory Seminar

"Strongly anisotropic ballistic magnetoresistance in compact three-dimensional semiconducting nanoarchitectures"

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Abstract: After an introduction to the electronic properties of semiconducting materials in curved geometries, I will discuss the recent theoretical finding of a strongly anisotropic ballistic magnetoresistance in non-magnetic thin films rolled-up into compact quasi-one-dimensional nanoarchitectures. This phenomenon originates from the curved open geometry of rolled-up nanotubes and thus does neither require the presence of magnetism nor the presence of a spin-orbit interaction. The experimental significance is illustrated by a sizable anisotropy that scales with the inverse of the winding number, and persists up to a critical temperature that can be strongly enhanced by increasing the strength of the external magnetic field or the characteristic radius of curvature, up to room temperature.

References:

12:00noon
Tuesday, March 10, 2015
Duboc Seminar Room (4-331)