

Physics
AT QUEENS COLLEGE

Colloquium Notice

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*Magnetotransport in an asymmetric quantum wire
loop*

In this talk I will discuss recent results^[1] on ballistic transport and quantum interference in a nanoscale quantum wire loop. Nanolithography is applied to fabricated multi-terminal quantum wire structures from GaAs/AlGaAs field-effect heterostructures hosting a high-mobility two-dimensional electron gas. Four-terminal measurements of current and voltage characteristics as a function of top gate voltages show negative bend resistance as a clear signature of ballistic transport. In perpendicular magnetic fields, phase-coherent transport leads to Aharonov-Bohm conductance oscillations, which show equal amplitudes in the local and the nonlocal measurement at a temperature of 1.5 K and above. We attribute this observation to the symmetry of the orthogonal cross junctions connecting the four quantum wire leads with the asymmetric quantum wire ring.

[1] S.S. Buchholz, et al. APL 94, 022107 (2009).

Monday
April 27, 2009
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326