A Series of Lectures

On

Mesoscopic System

Course details:

1. Introduction: (To be announced)

a) Length scale, characterization of different dimensional systems.

b) Derivation of Landauer formula.

2. Persistent current in normal metal rings.

(for (a) & (b) 2nd class To be announced)
a) Basic criteria for the existence of persistent current.
b) Calculation of persistent current in 1D perfect rings.

(for (c) & (d) 3rd class To be announced)
c) Role of electron-electron correlation on persistent current in perfect rings.
d) Role of electron-electron correlation on persistent current in dirty rings.

(for (e) 4th class To be announced)
e) Effect of higher order hopping integrals on persistent current in dirty rings.

(for (f) 5th class To be announced)
f) Magnetic response: Low-field magnetic susceptibility.

3. Magnetic response in mesoscopic cylinders.

(for (a) & (b) 6th & 7th classes To be announced)
a) Persistent current for fixed chemical potentials and fixed number of electrons.
b) Low-field magnetic susceptibility: Effects of temperatures.

4. Magnetic response in Moebius strips. (8th class To be announced)

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