

# *Chez Pierre*

Presents ...

**Friday, April 15, 2011**

**12:00pm**

**MIT Room 6C-333**



## **SPECIAL CHEZ PIERRE SEMINAR**

**Konstantin Matveev**

**Argonne National Laboratory**

***"Equilibration of Luttinger liquid and conductance of quantum wires"***

Luttinger liquid theory describes one-dimensional electron systems in terms of non-interacting bosonic excitations. In this approximation thermal excitations are decoupled from the current flowing through a quantum wire, and the conductance is quantized. I will show that relaxation processes not captured by the Luttinger liquid theory lead to equilibration of the excitations with the current and give rise to a temperature-dependent correction to the conductance. In long wires, the magnitude of the correction is expressed in terms of the velocities of bosonic excitations.

In shorter wires it is controlled by the relaxation rate. I will then discuss how the relaxation rate can be evaluated in the limit of strongly interacting electrons.