

## SEMINAR

**Friday, 16th of September 2011 at 15:00**

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### **Abstract**

"Dynamical Theory of Superfluidity in One Dimension."

A theory accounting for the dynamical aspects of the superfluid response of one dimensional (1D) quantum fluids is reported. In long 1D systems, the onset of superfluidity is related to the dynamical suppression of quantum phase slips at low temperatures. The effect of this suppression as a function of frequency and temperature is discussed within the framework of the relevant correlation function that is accessible experimentally, namely the momentum response function. Application of these results to the understanding of the superfluid properties of helium confined in nanometer-size pores, dislocations in solid  $^4\text{He}$ , and ultra-cold atomic gases is also briefly discussed.