# Condensed Matter Theory Center Seminar

***Distinguished Lecture****


Bertrand I. Halperin

(Harvard University)


Monday, September 27

12:30-1:30 PM

1201 Physics Building

## "Interferometry in a Quantized Hall State"


Interference experiments in can be a powerful probe of the nature of quantum Hall states and of their edges. However, existing experiments are only partially understood, even in the case of integer quantized Hall states. I shall review how Fabry-Perot and Mach-Zehnder geometries can be implemented in quantized Hall systems, and I shall present some of the basic theoretical considerations for Fabry-Perot experiments, including, in the case of fractional quantized Hall states, the role of fractional charge and fractional statistics and the possibility of non-abelian statistics. Then, we shall look at complications that arise in real systems due to fluctuations in the area of the interfering chiral edge state, driven by Coulomb interactions with the enclosed localized quasiparticle states, whose total occupation numbers must change discontinuously. We shall highlight the difference between “Aharonov-Bohm” and “Coulomb-Dominated” behaviors seen in various experiments.


***Jointly with JQI Seminar**