

## Department of Physics Colloquium

Friday, September 11, 2009 • 4:00 P.M. • 2241 Chamberlin Hall

cookies &amp; coffee served at 3:30 p.m

## Anderson Localization

## Looking Forward



## Boris Altshuler

Columbia University

Host: Chubukov

Localization of the eigenfunctions of quantum particles in a random potential was discovered by P.W. Anderson more than 50 years ago. In spite of its respectable age and rather intensive theoretical and experimental studies this field is by far not exhausted. Anderson localization was originally discovered and studied in connection with spin relaxation and charge transport in disordered conductors. Later this phenomenon was observed for light, microwaves, sound, and more recently for cold atoms. Moreover, it became clear that the domain of applicability of the concept of localization is much broader. For example, it provides an adequate framework for discussing the transition between integrable and chaotic behavior in quantum systems. This talk is an introduction into the current understanding of the Anderson localization and its manifestation in different systems. In particular, we will see that the ideas developed for understanding quantum mechanics of a single particle can be extended to attack many-body problems in the presence of disorder.

