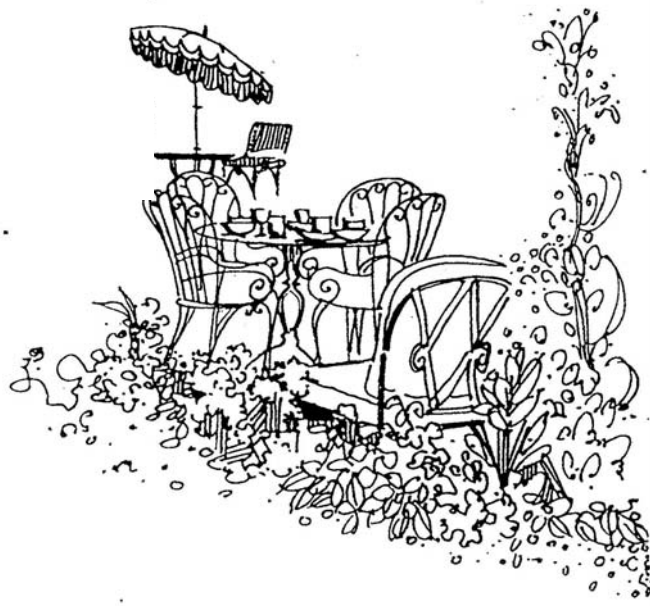
Chez Pierre

Presents ...

Thursday, April 23, 2009
1:15pm
MIT Room 4-331



A Special Chez Pierre Seminar

Professor Ali Yazdani

Princeton University

"Nodal Excitation Spectrum and Underlying Mechanism for Optimal Superconductivity in Cuprates"

Understanding the mechanism by which d-wave superconductivity in the copper-oxide compounds emerges and is optimized by doping a Mott insulator is one of the major outstanding problems in physics. A key unresolved experimental question in this field is how the strength of electron pairing evolves as function of doping and temperature and whether pairing strength and the Tc of the sample are related, as they are in simple BCS superconductors. To address these questions, we have developed several new experimental techniques with the scanning tunneling microscope to probe pairing in the cuprates on the atomic scale as a function of doping and temperature. I will describe these techniques as well as a series of new experiments that reveal a surprisingly simple picture of how nature optimizes superconductivity in the cuprates.