

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

" Fractionalization and broken symmetries in the underdoped cuprates "

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Abstract: A number of recent experiments in the underdoped regime of the hole-doped cuprates have found evidence for an incommensurate charge density wave order. I'll present an overview of how this new discovery, and a panoply of other measurements, affects our understanding of the mysterious pseudogap phase. In particular, I'll demonstrate that the observed charge density wave order may be interpreted as a low-temperature instability of a fractionalized Fermi-liquid, where the electronic excitations are coupled to a background quantum spin-liquid. The pseudogap regime can then likely be described by such an unconventional metal, at least over intermediate length and energy scales. I'll discuss various theoretical approaches towards describing such a fractionalized Fermi-liquid in models appropriate for the cuprates and provide an outlook for the open problems in the field.

11:00am
Thursday, November 5, 2015
***Low Room 6C-333**

Host: Liang Fu