



center for nanophysics
and advanced materials

Condensed Matter Colloquium

Thursday, February 2, 2012

2 pm, Room 1201

Gabriel Kotliar

Department of Physics, Rutgers University

***Sleuthing Hidden Order in Correlated Materials:
A Case Study on URu_2Si_2***

A long standing mystery in condensed matter physics is the nature of the ordered state that sets in at 17 K in a uranium-based strongly correlated electron heavy fermion material URu_2Si_2 . In spite of a clear phase transition with an entropy of a fraction of $\log(2)$, experimentalists and theorists alike have not been able to conclusively decipher what degrees of freedom order in the low temperature phase. In the last three years there has been a concerted effort by the condensed matter community to apply the latest experimental and theoretical tools to this problem. In this colloquium, I will review the key experimental constraints emerging from these studies. Then I will describe our recent proposal, motivated by Dynamical Mean Field Theory calculations, to understand the hidden order in terms of hexadecapolar order. I will conclude by framing this problem in the more general challenge of understanding strongly correlated materials.

Refreshments at 1:30 pm in **Room 1305F**

