

Colloquium Notice

Igor Beloborodov

University of Chicago

Artificial Nanosolids

Artificial nanosolids, arrays of nanoscale grains interacting with each other through electron tunneling, offer rich new horizons of novel macroscopic behavior emerging from nanoscale structure and dynamics. Fundamental microscopic phenomena such as Coulomb correlation, disorder and coherence produce dramatically new and programmable bulk behavior when mediated by nanoscale granular structure. Each building block of these new materials can be viewed as a tiny cluster of atoms of metallic, semiconducting or superconducting elements. These clusters are not as small as molecules but not as large as macroscopic objects. I will review our progress made in the last several years in understanding the properties of artificial nanosolids. In particular, I will discuss the following topics:

- 1) Introduction to physics of artificial nanosolids
- 2) Novel transport regimes
- 3) The phase diagram of artificial nanosolids
- 4) Future opportunities

Reference

I. Beloborodov et al., *Reviews of Modern Physics*, **79**, 469 (2007).

Tuesday

March 18, 2008

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326