• Seminar Series on Current Developments in Condensed Matter Physics •

# Recent Progress with Tinker Toys


## Daniel Arovas

### University of California, San Diego


## Thursday, September 17, 2009

### 4:15 pm-5:45 pm

### The Graduate Center / CUNY

### 365 5th Avenue, New York, NY

### Room # 9206

## Abstract


**Several interesting and paradigmatic quantum many body wavefunctions can be constructed following local rules, and can be visualized in terms of an old children's toy. A parade example is the class of valence bond solid (VBS) antiferromagnets identified by Affleck, Kennedy, Lieb, and Tasaki. I will briefly review the features of these states and discuss several recent developments, including their connection to matrix/tensor product wavefunctions, phase transitions between Neel antiferromagnets and quantum paramagnets, and fermionic extensions which interpolate between VBS and resonating valence bond (RVB) states. A second example is furnished by some recent models due to Kitaev involving Majorana fermions, and which have interesting topologically nontrivial phases and excitations.**


---

**Daniel Arovas is a professor of physics with interests and pioneering contributions in fields of quantum magnetism, quantum dynamics of superfluid vortices and quantum Hall effects.**

This talk is part of a Fall 2009 series of Thursday seminars held at The Graduate Center CUNY.
The series will address current developments in condensed matter physics.
Sponsors: College of Staten Island and Ph.D. Program in Physics, Graduate Center / CUNY


Seminar Series Contact Persons: **Dr. Vadim Oganesyan, College of Staten Island, oganesyan@mail.csi.cuny.edu**
Mr. Daniel Moy, The Graduate Center / CUNY, dmoy@gc.cuny.edu



Rev 09/09/09 dm