

Massachusetts Institute of Technology  
Department of Physics

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## Condensed Matter Theory Seminar

"Exact solution of a quantum dimer model for topological metals"

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**Abstract:** In this talk I will mainly discuss an effective quantum dimer model for hole-doped antiferromagnets in two-dimensions, which features an interesting metallic ground state with bulk topological order, known as a fractionalized Fermi liquid. Its main ingredients are ordinary bosonic spin singlet dimers, as well as fermionic dimers, which can be viewed as bound states of spinons and holons in a hole-doped resonating valence bond state. In particular, I will focus on an exact solution of this model along a particular line in parameter space and show that the ground state is indeed a fractionalized Fermi liquid with small pocket Fermi surfaces in the vicinity of the exactly solvable line. The second part of the talk contains some bonus material on deconfined quantum criticality in  $SU(3)$  antiferromagnets.

**12:00pm noon**  
**Friday, March 2, 2018**  
**Duboc Room (4-331)**