# Seminar

## Bridging lattice-scale physics and continuum field theory with quantum Monte Carlo simulations

Anders W Sandvik
Boston University

Time: 4:00pm, June.20, 2013 (Thursday)
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Venue: Room 607, Science Building 5
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## Abstract

I will discuss quantum Monte Carlo simulations of lattice models of interest in the context of quantum magnetism and show examples of how results of such calculations can be directly related to quantum field theories. One example, which I will focus on here, is the quantum phase transition between a Neel antiferromagnet and a non-magnetic valence-bond solid state in two dimensions. Here simulations of a quantum spin model with standard SU(2) S=1/2 spins can be generalized to SU(N) symmetry, which allows for direct comparisons with large-N expansion results for the field theory proposed to describe the transition.

Reference: R. K. Kaul, R. G. Melko, and A. W. Sandvik, Annual Review of Condensed Matter Physics 4, 179 (2013); arXiv:1204.5405

## About the Speaker

Anders Sandvik received his PhD from the University of California, Santa Barbara, in 1993. Since 2004 he has been a professor at Boston University. His research interests are in quantum and classical many-body physics, in particular quantum magnetism, where he is developing and using numerical methods to study model Hamiltonians without approximations. He is a Fellow of the American Physical Society.