Stony Brook University
The Graduate School

Doctoral Defense Announcement

Abstract

Algebraic Bethe Ansatz and Tensor Networks

By

You Quan Chong

We consider models of strongly correlated electrons in one dimension, such as the t-J model and the Hubbard model. The t-J model and Hubbard model are solved by using the method of graded algebraic Bethe ansatz. We use it to design graded tensor networks which can be contracted approximately to obtain a Matrix Product State. This overcomes a major shortcoming of current density matrix renormalization group (DMRG) methods which work well on the ground states, but have difficulty working with the excited states of such models. As a proof of principle, we calculate correlation functions of ground states and excited states of such models on finite lattices of lengths in an intermediate regime which are of experimental interest.

Date: April 20, 2015
Time: 2pm
Place: YITP Common room

Program: Physics
Dissertation Advisor: Prof Vladimir Korepin