Tensor Renormalization Group Method and Its Application

Tao Xiang

Institute of Physics and Institute of Theoretical Physics, Chinese Academy of Sciences, China

In this talk, I will give an introduction to the second renormalized tensor renormalization group method for the quantum tensor-network states or classical statistical models in two dimensions. For a quantum system, a tensor-network wavefucntion can be accurately and efficiently determined by an iterative projection approach which takes a mean-field approximation to account for the contribution of environment. The application of the method to the Potts model and the quantum Heisenberg model will be discussed.