Contribution ID: **5** Type: **not specified**

Extraction of Conformal Data using Tensor Network Renormalization

Friday, 7 February 2025 11:00 (30 minutes)

We propose a scheme to extract the conformal data of critical two-dimensional classical models. The basic idea is to perform finite-size scaling to extract central charge, scaling dimension, conformal spin, and operator product expansion (OPE) coefficients. The key point is to identify the length scale below which the system is in the finite-size scaling regime. While above such a length scale the system crossovers into finite-entanglement scaling regime due to bond-dimension induced relevant perturbation. The scheme can work with any tensor network renormalization method. In this work, we benchmark against three tensor network renormalization method: HOTRT, PTMRG, CTRG and apply the scheme to 2D Ising model and 3-state clock model at criticality. Our results show that all conformal data can be extracted with high accuracy. Moreover, we show how to define entanglement scaling for classical systems.

Primary author: Prof. CHEN, Pochung (NHTU)

Presenter: Prof. CHEN, Pochung (NHTU)