Real-space renormalization group methods and the prospect of observing conformal Calabrese-Cardy scaling JUDAH UNMUTH-YOCKEY, University of Iowa, JIN ZHANG, University of California Riverside, PHILIPP PREISS, Physikalisches Institut, LI-PING YANG, Chongqing University, SHAN-WEN TSAI, University of California Riverside, YANNICK MEURICE, University of Iowa — Numerical real-space renormalization group methods have contributed greatly to understanding the phase structure of lattice models in both condensed matter physics and lattice gauge theory over the past few decades. Using two of these methods, the tensor renormalization group and the density matrix renormalization group, we consider the possibility of experimentally observing the conformal Calabrese-Cardy scaling, and measuring the conformal charge in the superfluid phase of the Bose-Hubbard model in one spatial dimension. We propose using existing experimental methods to measure the quantum purity, however we take a unique approach in that the ground state of the proposed experimental set-up is adiabatically prepared at relatively small J/U and at *half-filling*.

Judah Unmuth-Yockey
University of Iowa

Date submitted: 27 Jan 2017   Electronic form version 1.4