Quantum Information and Computing
James Peter Chryssanthacopoulos - David Lange 06/03/2023 – 08/04/2023

1) Study MERA ansatz and focus on the simulation of the time evolution algorithm as reported in the paper https://arxiv.org/pdf/0706.0868.pdf.

2) Develop a numerical code for the t-MERA. You may choose to use an open-source library such as iTensor (http://itensor.org) for the basic tensor manipulations. Consider the test case of the Ising chain with open boundaries.

A second option for the final assignment:

1) Study TEBD as applied to MPS ansatz;

2) Develop your numerical code for the TEBD-MPS and test it for the Ising chain with open boundaries.

By the due date please submit both the code and the presentation of the final project. The presentation has to cover the topics detailed above, including the theory part. There is no limit to the number of slides however, the final presentation should be ~15 minutes for each component of the team.