Computational Quantum Physics

Week 11

Due on 11/1/21

Exercise 1: **Renormalization Group**

Given the quantum Ising Hamiltonian in transverse field on a one-dimensional lattice with nearest neighbor interaction:

(a) Compute the ground state energy as a function of the transverse field λ by means of the real-space RG algorithm.

(b) Optional: Compute the ground state energy as a function of λ by means of the INFINITE DMRG algorithm. Compare the results between them and with the mean field solution.