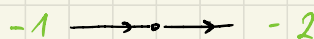
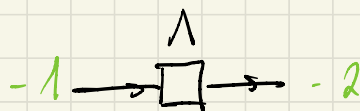
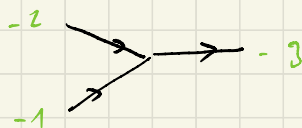
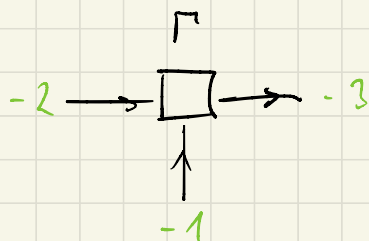
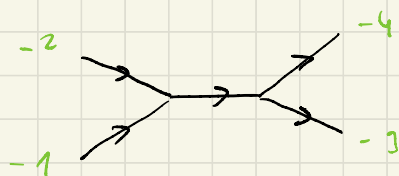
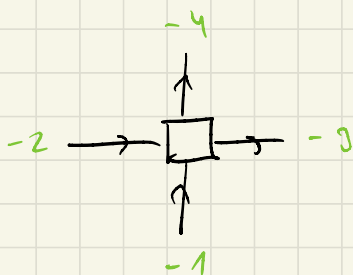


iDMRG with Tensor Operations

MPS

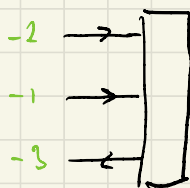


MPO



Environments

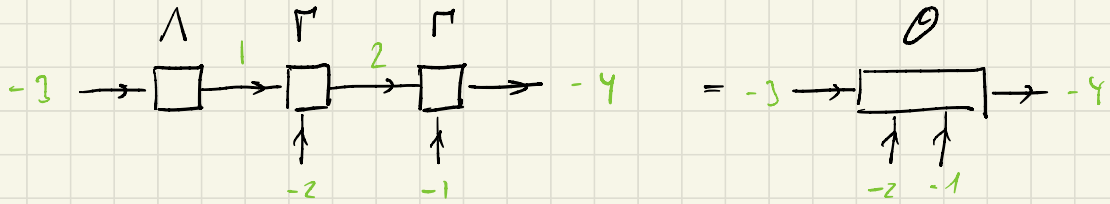
E_L



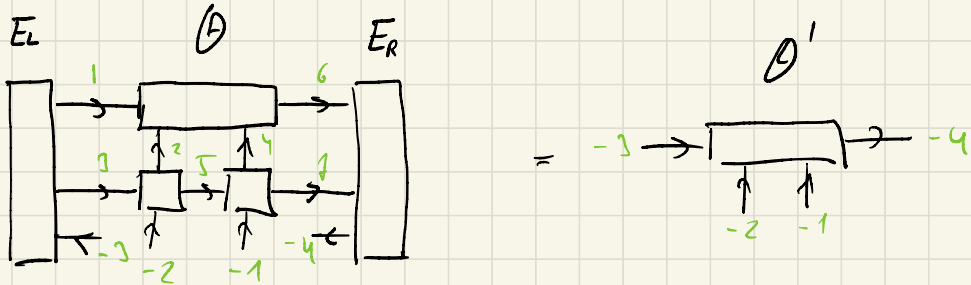
E_R



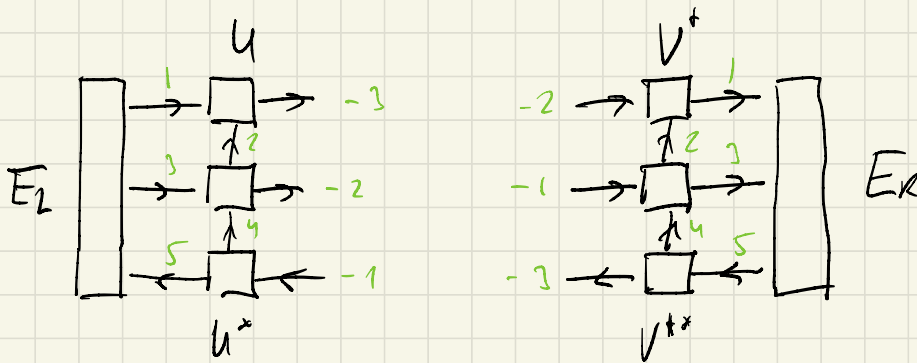
gates Wavefunction



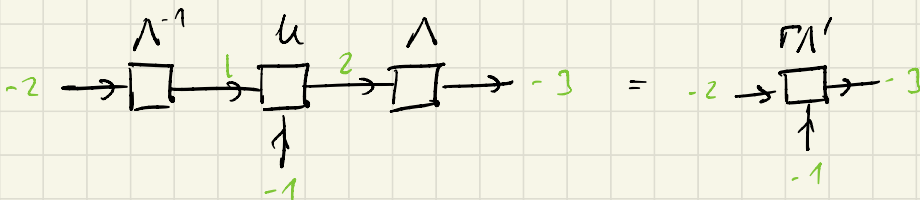
two-site optimization



environment updates



MPS update



Construction of Sing MPO

$$\text{MPO} = \begin{matrix} & \begin{matrix} 0_1 & 1_1 & 0_2 \end{matrix} \\ \begin{matrix} 0_1 \\ 1_1 \\ 0_2 \end{matrix} & \left(\begin{array}{ccc} \text{II} & X & -hZ \\ & & X \\ & & \text{II} \end{array} \right) \end{matrix} = \begin{matrix} & \begin{matrix} 0_1 & 0_2 & 1_1 \end{matrix} \\ \begin{matrix} 0_1 \\ 0_2 \\ 1_1 \end{matrix} & \left(\begin{array}{ccc} \text{II} & -hZ & -jX \\ & \text{II} & \\ & X & \end{array} \right) \end{matrix}$$