Hamiltonian RG flow equation

Hamiltonian flow $H_{(j)} \xrightarrow{U_{(j)}} H_{(j-1)}$

Structure of the unitary disentangler $U_{(j)} = \prod_{j,l} U_{j,l}$ disentangles electronic state

$|\mathbf{k}_{\Lambda_j}(\hat{s}), \sigma\rangle = |j, l\rangle$
where $l = \hat{s}, \sigma$

$$U_{j,l} = \frac{1}{\sqrt{2}}\left[1 + \eta_{j,l} - \eta_{j,l}^{\dagger}\right]$$

$$= \exp \frac{\pi}{4}(\eta_{j,l} - \eta_{j,l}^{\dagger})$$

$\{\eta_{j,l}, \eta_{j,l}^{\dagger}\} = 1, [\eta_{j,l}, \eta_{j,l}^{\dagger}] = 1 - 2\hat{n}_{j,l}$ algebra of the operators

$\eta_{j,l}$:many body electron-hole transition operator