

$$Q. H = \epsilon \sum_i c_i^\dagger c_i + t \sum_{\langle ij \rangle} c_i^\dagger c_j$$

→ diagonalize it

$$c_k = \frac{1}{\sqrt{N}} \sum_{j=1}^N e^{i k R_j} c_j$$

$$H = \sum [\epsilon_k] c_k^\dagger c_k$$

$$c_k^\dagger = \begin{bmatrix} \dots \end{bmatrix} c^\dagger$$

$$\{ \epsilon_k, c_k^\dagger | vac \}$$

I first read for BCS theory

↳ n,n;

mean field approx.

$$\Delta (c_i c_j + c_j^\dagger c_i)$$

BCS, BdG.

I diagonalize

$$H + \Delta (c_i c_j + \dots)$$

I

check out the

SSH chain