$$\phi(t - \Delta t), \mathbf{V}(t - \Delta t)$$

$$t \to t - \Delta t$$

$$\phi(t), \mathbf{V}(t)$$

$$\phi(t) = \frac{e^{-i\mathbf{H_0}\Delta t}\phi^{(-)}(t - \Delta t) + \boldsymbol{f}\left(t : \phi(t), \tilde{\mathbf{V}}(t)\right)}{\mathbf{I} + \frac{i\Delta t}{2\hbar}\tilde{\mathbf{V}}(t)}$$

$$\langle \hat{a}_i^\dagger \hat{a}_j \rangle_\psi = \sqrt{n_i n_j}\, e^{i(\theta_j - \theta_i)}$$

$$\dot{n}_j = -i \sum_k T_{ki}(\langle \hat{a}_i^\dagger \hat{a}_k \rangle_\psi - \langle \hat{a}_k^\dagger \hat{a}_i \rangle_\psi)$$

$$\Delta \boldsymbol{\theta} = \mathbf{J}^{-1}(\dot{\mathbf{n}} - \dot{\mathbf{n}}^{aim}) = -\mathbf{K}^{-1}(\dot{\mathbf{n}} - \dot{\mathbf{n}}^{aim})$$

Reset phases

1. Converge $\phi(t)$ with $V(t)$ fixed

2. Converge $V(t)$ using converged $\phi(t)$

Calculate orbitals and Potential for time t