$U = 0, \phi = 2\pi/3$
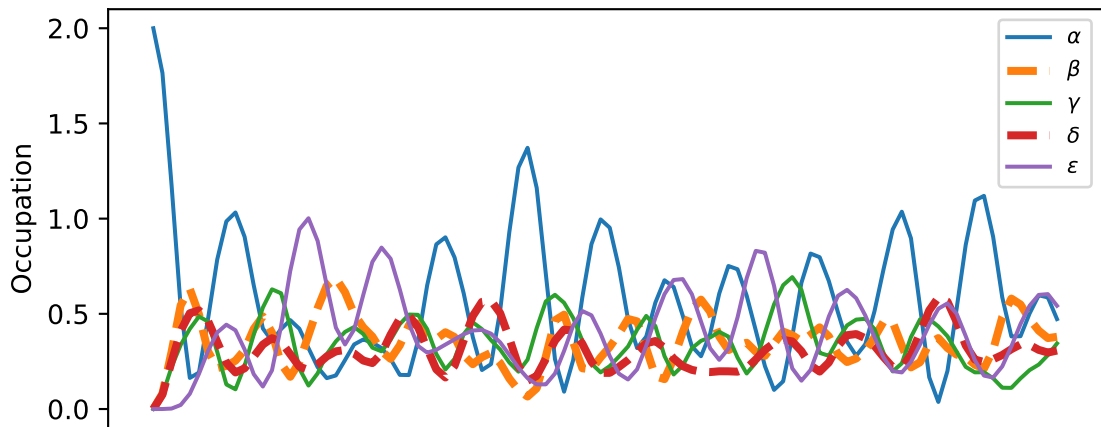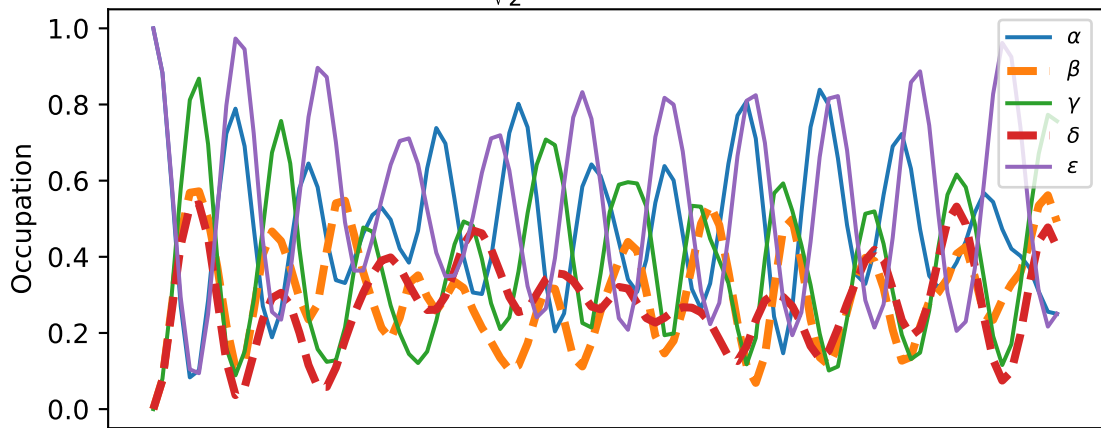
$|\alpha\alpha\rangle$

$\frac{1}{\sqrt{2}}(|\alpha\alpha\rangle + |\varepsilon\varepsilon\rangle)$

$|\alpha\varepsilon\rangle$