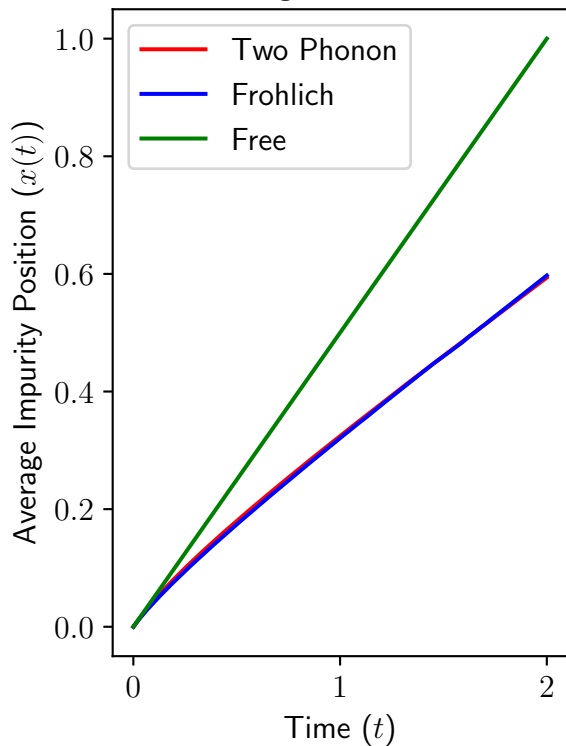Impurity Trajectory ($m_I = 0.25$, $\alpha = 1.00$)