TITLE: Conditional Probability Distributions of Finite Absorbing Quantum Walks

ABSTRACT: Quantum walks are known to have nontrivial interactions with absorbing boundaries. In particular it has been shown that an absorbing boundary in the one dimensional quantum walk partially reflects information, as observed by absorption probability computations. In this talk, we shift our sights from the local phenomena of absorption probabilities to the global behavior of finite absorbing quantum walks in one dimension. We conduct our analysis by approximating the eigenbasis of the associated absorbing quantum walk operator matrix Q_n where n is the lattice size. The conditional probability distributions of these finite absorbing quantum walks exhibit distinct behavior at various timescales, namely wavelike reflections for $t=O(n)$, periodic modal mixing for $t=O(n^2)$, and stability for $t=O(n^3)$. At the end of this talk, we demonstrate the existence of periodic modal mixing in other sufficiently regular quantum systems.