Abstract:
A quantum particle is considered in a one-dimensional disordered lattice with Anderson localization, in the presence of multi-frequency perturbations of the onsite energies. With the use of Floquet representation, the eigenvalue problem is transformed into a Wannier-Stark basis. Each frequency component contributes either to a single channel or a multi-channel connectivity along the lattice, depending on the control parameters. The single channel regime is essentially equivalent to the undriven case. The multi-channel driving substantially increases the localization length for slow driving, showing two different scaling regimes of weak and strong driving, yet the localization length stays finite for a finite number of frequency components.