Floquet engineering and properties of 1D anyon models in ultracold atomic lattice gases

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Various theoretical proposals and recent experiments indicate the possibility to exploit the fast periodic modulation of certain degrees of freedom in an experiment to emulate effective models with anyon-like properties. I will give an introduction to these attempts and try to summarize various methods for the particular case of an anyon Hubbard model on a quasi one dimensional lattice. In the second part I will discuss basic properties of these models and possible experimental probes of the anyonic statistics on the lattice.
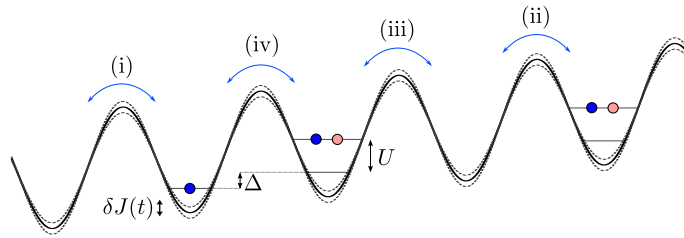

FIG. 1: Sketch of the lattice set-up with a tilting Δ and modulation $\delta J(t)$, which induces the the relevant hopping processes (i)-(iv) of the spin $\uparrow$ and $\downarrow$ particles interacting with strength U.