## Floquet Engineering of Optical Solenoids and Quantized Charge Pumping in 2D

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The insertion of a local magnetic flux, as the one created by a thin solenoid, plays an important role in gedanken experiments of quantum Hall physics. By combining Floquet engineering of artificial magnetic fields with the ability of single-site addressing in quantum gas microscopes, we propose a scheme for the realization of such local solenoid-type magnetic fields in optical lattices [1]. We show that it can be employed to manipulate and probe elementary excitations of a topological Chern insulator. This includes quantized adiabatic charge pumping along tailored paths inside the bulk, as well as the controlled population of edge modes.



Fig. 1: Illustration of the solenoid.

[1] B. Wang and F. Nur Ünal and André Eckardt, Phys. Rev. Lett. 120, 243602 (2018).