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Dynamical Quantum Phase Transitions in a Chiral p-Wave Superconductor upon Quantum Quenches of Hopping Amplitudes

Yuto Shibata,[1,2] Chitra Ramasubramanian,[2] and Aline Ramires[1]

[1] *Condensed Matter Theory Group, Paul Scherrer Institut, 5232 Villigen PSI, Switzerland*
[2] *Institute for Theoretical Physics, ETH Zürich, 8093 Zürich, Switzerland*

Dynamical quantum phase transitions (DQPTs) upon quantum quenches are shown to be useful for the identification of the non-trivial topology of non-interacting quantum systems [1]. For instance, periodic occurrences of DQPTs are ensured in Chern insulators if the moduli of initial and final Hamiltonians are different. Whether such a sufficient condition holds for interacting systems has remained obscure. To this end, we study DQPTs in a two-dimensional chiral p-wave superconductor by numerically solving the BdG equations self-consistently for various quantum quenches of hopping parameters, which control the Chern number [2]. We will discuss DQPTs observed after those quenches and address their origins. This work is financially supported by the Swiss National Science Foundation (SNF) through SNF Ambizione Grant No. 186043.

[1] M. Heyl, Rep. Prog. Phys. 81, 054001 (2018).
[2] M. Sato, Phys. Rev. B 79, 214526 (2009).
[3] Y. Shibata et al., in preparation (2022).