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Vortex lattice disorder and the stability of nucleated topological liquids VILLE LAHTINEN, University of Amsterdam, ANDREAS LUDWIG, University of California, Santa Barbara, SIMON TREBST, University of Cologne —
When interacting non-Abelian anyons are arranged on a regular lattice, such as an Abrikosov lattice in a topological superconductor or a Wigner crystal in a fractional quantum Hall liquid, it has been shown that a new topological state is nucleated. Studying Majorana mode binding vortex lattices in Kitaev's honeycomb model, we show that the nucleated phases are stable with respect to both moderate vortex dimerization and local random disorder. In the limit of strong disorder, the first will recover the parent topological state, while the latter will drive the system into a gapless thermal metal state.

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