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30-Effects of Disorder in Higher-order Topological Insulators

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Topological insulators are a current hot topic of research due to their remarkable electric properties, such as the existence of quantized robust edge states, promising groundbreaking applications in quantum computing. Higher-order topological insulators (HOTIs) are a new (conceptualized in 2017) type of topological material featuring exciting properties. HOTIs extend the notion of a topological insulator, in the sense that their edge states have lowered dimensionality. Any practical implementation of such systems implies the existence of impurities and defects in the underlying material realization, constituting disorder. Disorder may break the topological properties of systems but may also cause topological transitions to non-trivial topological phases. Determining the effects of disorder in these systems is thus of paramount importance. Although some advancements have been made in this topic, a study of the disordered third-order topological insulator is still lacking, and will therefore be our subject in this master's thesis.

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