Abstract Submitted
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Classification of Two Dimensional Topological Crystalline Superconductors and Majorana Bound States at Disclinations[1] WLADIMIR BENALCAZAR, JEFFREY TEO, TAYLOR HUGHES, University of Illinois at Urbana-Champaign, INSTITUTE FOR CONDENSED MATTER PHYSICS TEAM — We classify discrete-rotation symmetric topological crystalline superconductors (TCS) in two dimensions and provide the criteria for a zero energy Majorana bound state (MBS) to be present at composite defects made from magnetic flux, dislocations, and disclinations. In addition to the Chern number that encodes chirality, discrete rotation symmetry further divides TCS into distinct stable topological classes according to the rotation eigenspectrum of Bogoliubov-de Gennes quasi-particles. Conical crystalline defects are shown to be able to accommodate robust MBS when a certain combination of these bulk topological invariants is non-trivial as dictated by the index theorems proved within. The number parity of MBS is counted by a Z_2-valued index that solely depends on the disclination and the topological class of the TCS. We also discuss the implications for corner-bound Majorana modes on the boundary of topological crystalline superconductors

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