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【602】Generating multiple universality classes and nodal loops in Chern insulators by periodic driving

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We investigate the topology of a periodically-driven two-dimensional Chern insulator hosting anomalous edge modes. Using a renormalization group approach on the stroboscopic Berry curvature, we obtain flow diagrams that clearly delineate all topological phase boundaries, therefore demonstrating that a detailed knowledge of the micromotion is not necessary to assess the appearance of the Floquet topological phase transitions. Furthermore, we characterized the critical behavior of the Floquet topological excitation by extracting the critical exponents of measurable diverging quantities. We discover that two different universality classes coexist in the same model: a class characterized by linear, Dirac-type gap closures and another outlined by quadratic gap closures associated with a low-energy theory described by a nodal-loop semimetal.

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