

Abstract Submitted
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Quantum anomalous Hall insulators and transitions in spin-orbit coupled double perovskites¹ ARUN PARAMEKANTI, ASHLEY COOK, CIARAN HICKEY, University of Toronto — Motivated by the interest with strong spin-orbit coupling and ferromagnetism, we study quantum anomalous Hall insulators and their quantum phase transitions in clean systems. We show that certain quantum anomalous Hall critical points support quadratic band touching points, which can lead to interaction induced emergent phases which form a dome around the critical point. This yields the simplest example of the ubiquitously observed formation of novel phases around an underlying metallic quantum critical point. We explore metallic double perovskites with high Tc ferromagnetism and strong spin-orbit coupling, including $\text{Sr}_2\text{FeMoO}_6$, as possible candidate materials in which to explore this physics.

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