

Abstract Submitted
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Create Dirac Cones in Your Favorite Materials¹ CHIA-HUI LIN,
WEI KU, Brookhaven National Laboratory / Stony Brook University — We propose a theoretical recipe to create Dirac cones into anyone’s favorite materials. The method allows to tailor anisotropy and quantity of cones in any effective one-band two-dimensional lattice. The validity of our theory is demonstrated with two examples on the square lattice, an “unlikely” candidate hosting Dirac cones, and show that a graphene-like low-energy electronic structure can be realized. The proposed recipe can be applied in real materials via introduction of vacancy, substitution or intercalation, and also extended to photonic crystal, molecular array, and cold atoms systems.

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Chia-Hui Lin
Brookhaven National Lab

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