Abstract Submitted
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Topological nonsymmorphic metals from band inversion[1] LUKAS MUECHLER, Dept. of Chemistry, Princeton University, ARIS ALEXANDRADINATA, Dept. of Physics, Yale University, TITUS NEUPERT, Dept. of Physics, University of Zurich, ROBERTO CAR, Dept. of Chemistry and Physics, Princeton University — We expand the phase diagram of two-dimensional, nonsymmorphic crystals at integer fillings that do *not* guarantee gaplessness. In addition to the trivial, gapped phase that is expected, we find that band inversion leads to a class of topological, gapless phases. These topological phases are exemplified by the monolayers of MTe_2 (M = W, Mo) if spin-orbit coupling is neglected. We characterize the Dirac band touching of these topological metals by the Wilson loop of the non-Abelian Berry gauge field. Furthermore, we develop a criterion for the proximity of these topological metals to 2D and 3D $_2$ topological insulators when spin-orbit coupling is included; our criterion is based on nonsymmorphic symmetry eigenvalues, and may be used to identify topological materials without inversion symmetry. Reference: arXiv:1604.01398 (to be published in Phys. Rev. X)

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