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Strain-induced Landau Levels in arbitrary dimensions with an exact spectrum STEPHAN RACHEL, ILJA GOETHEL, TU Dresden, DANIEL P. AROVAS, UC San Diego, MATTHIAS VOJTA, TU Dresden — Certain non-uniform strain applied to graphene flakes has been shown to induce pseudo-Landau levels in the single-particle spectrum, which can be rationalized in terms of a pseudo-magnetic field for electrons near the Dirac points. However, this Landau level structure is in general approximate and restricted to low energies. Here we introduce a family of strained bipartite tight-binding models in arbitrary spatial dimension d and analytically prove that their entire spectrum consists of perfectly degenerate pseudo-Landau levels. This construction generalizes the case of triaxial strain on graphene's honeycomb lattice to arbitrary d; in $d = 3$ our model corresponds to tetraxial strain on the diamond lattice. We discuss general aspects of pseudo-Landau levels in arbitrary d.

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