

Abstract Submitted
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2D non-Fermi liquids from coupled Leech wires EUGENIU PLAMADEALA, Univ of Illinois - Urbana, DOMINIC ELSE, University of California Santa Barbara, MICHAEL MULLIGAN, University of California Riverside, CHETAN NAYAK, University of California Santa Barbara, Microsoft Station Q — We present a completely stable gapless quantum critical point of interacting electrons in two dimensions. It is obtained by coupling an infinite parallel array of quantum wires, each described by a CFT associated with Leech lattice. The low energy theory decomposes into two sectors: a chiral Fermi liquid with an open Fermi surface, and a chiral Luttinger liquid on each wire, with no inter-wire hopping. The stability of the fixed point to all perturbations is due to special (but not fine-tuned) large values of the interactions between the channels, as well as kinematic suppression of potentially relevant perturbations. The QCP describes a hyperconductor, and is immune to disorder-induced localization along the wires.

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