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Metal-insulator transition in Hubbard-like models with random hopping MATTHEW FOSTER, University of California, Santa Barbara, ANDREAS LUDWIG, University of California, Santa Barbara — We study the combined effects of random hopping disorder and short-ranged interparticle interactions in half-filled Hubbard-like models of spinless and spinful fermions in $D \geq 2$ dimensions. In a given realization, the hopping disorder is chosen to break time-reversal invariance, but to preserve the special "nesting" symmetry responsible for the charge density wave instability of the clean, non-interacting Fermi surface. For spinless fermions, the hopping disorder may arise from the application of a random orbital magnetic field to the otherwise *clean* Hubbard-like model. For the case of spin 1/2 fermions, in addition, the spin SU(2) rotational symmetry is assumed to be broken completely, e.g. by a homogeneous spin-orbit coupling. Using a perturbative renormalization group approach [1], we identify a new, disorder-driven metal-insulator transition in $D = 2 + \epsilon$ dimensions, stabilized by the presence of the interactions. Without the "nesting" symmetry, these systems would be in the unitary symmetry class "with magnetic impurities," where interaction effects are irrelevant [1]. [1] For a review, see e.g. D. Belitz and T. R. Kirkpatrick, Rev. Mod. Phys. 66, 261 (1994).

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