

Abstract Submitted
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An Analytic Phase Diagram for Anderson Disorder ROGER HAYDOCK¹, Department of Physics and Materials Science Institute, University of Oregon, NIGEL GOLDENFELD, Department of Physics, University of Illinois at Urbana-Champaign, and Department of Applied Mathematics and Theoretical Physics, Cambridge, UK — The Anderson model for independent electrons in a disordered potential transforms analytically and exactly to an ordered lattice of spins interacting through an itinerant electron, a variant of augmented space [see Phys. Rev. B 66, 155121]. Anderson transitions are clear in this representation where the sector of augmented space dominating the asymptotics of states changes at critical disorders. There are also critical energies or mobility edges which depend on the disorder and separate band states from defect states. The critical disorders together with improved approximations for critical energies produce an analytic phase diagram which can be largely reconciled with the results of single-parameter scaling and numerical scaling.

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