

Applying Wegner's flow equation formulation of the renormalization group method to systems with strong disorder

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The conventional formulation of the renormalization group, which works by iteratively “integrating” out high energy degrees of freedom, is aimed at describing states near the top or bottom of a spectrum. Wegner's flow equation is an alternative formulation that is aimed at describing the entire spectrum by iteratively decoupling degrees of freedom of the system that have large energy separations. We apply Wegner's flow equations to two problems: (1) Anderson localization with on-site disorder and long range power-law hopping and (2) the problem of identifying local conserved quantities in many-body localized systems.

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