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Anderson transition in one-dimension using Wegner's Flow equations PARAJ BHATTACHARJEE, California Institute of Technology, VICTOR QUITO, State University of Campinas, DAVID PEKKER, University of Pittsburgh, GIL REFAEL, California Institute of Technology — We study the Anderson transition in one-dimensional random single-particle Hamiltonians with long-range hoppings decaying in a power-law. Explicitly, we consider the single particle tight-binding model in the spin representation with disorder both in the fields and hoppings. It has been shown by Mirlin et. al. that this model shows an extended-to-localized transition as a function of the power-law exponent with a critical multifractal regime when the decay exponent is equal to one. We generalize the flow equation technique, first introduced by Wegner, to the disordered system and use it to study the model and elucidate the character of this transition. This method allows us to efficiently compute the eigenvalues and local observables. We follow, analytically and numerically, the flow of the coupling distributions for the different exponents as a function of the flow-time and look for signatures of the two distinct phases as well as a characterization of the critical point.

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