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Hierarchical Anderson Model

The hierarchical Anderson model is the random self-adjoint operator

$$H = L + cV,$$

where L is a hierarchical Laplacian, V is a random potential and $c > 0$ is a coupling constant measuring the strength of the disorder. In this talk, I will first review the basic properties of L and the associated spectral dimension d . Then I will present the following results about the spectral behavior of H .

- (1) If $d < 4$ then, with probability one, the spectrum of H is pure point at all energies and for all c .
- (2) If $d < 1$ then, in a natural scaling limit, the eigenvalues of finite volume approximations to H converge to a Poisson point process.