

The Molchanov–Vainberg Laplacian

P. Poulin

ppoulin@math.mcgill.ca
Department of Mathematics
McGill University
805, Sherbrooke Street W.
Montréal, Québec H3A 2K6
Canada

Abstract

This is well known that the Green function, $R(n-0)$, of the standard discrete Laplacian on the d -dimensional lattice exhibits a pathological behavior in dimension $d > 2$. In particular, the polynomial estimate $R(n-0) = O(|n|^{(d-1)/2})$ fails at level of energy $0 < |E| < 1 - 2/d$. This fact complicates the study of the scattering theory of discrete Schrödinger operators. In this talk I will present an alternative to the standard discrete Laplacian suggested by Molchanov and Vainberg, for which the previous estimate holds for any E . If time permits, some applications to Anderson type Hamiltonians with sparse random potential will be discussed.