1041-60-247 **Gábor Pete*** (gabor@math.toronto.edu). *Random walks on percolation clusters and percolation renormalization on groups.*

We show that for all $p > p_c(\mathbb{Z}^d)$ percolation parameters, the probability that the cluster of the origin is finite but is adjacent to the infinite cluster with at least t edges is exponentially small in t. This result yields a simple proof that the isoperimetric profile of the infinite cluster basically coincides with the profile of the original lattice. The same results hold for all finitely presented groups if p is close enough to 1, but renormalization can be used on $\mathbb{Z}^d$ to get the full result.

We also examine the possibility of renormalization on other groups. Itai Benjamini conjectured that if a group G is scale-invariant in the sense that has a finite index subgroup chain $G = G_0 \geq G_1 \geq G_2 \geq \ldots$ with $G_i \simeq G$ and $\bigcap_i G_i = \{1\}$, then it has to be of polynomial growth. In joint work with V. Nekrashevych, we have given several counterexamples: the lamplighter group $\mathbb{Z}_2 \wr \mathbb{Z}$, the solvable Baumslag-Solitar groups $BS(1,m)$, and the affine groups $\mathbb{Z}^d \rtimes GL(\mathbb{Z}, d)$ are all scale-invariant. (Received August 12, 2008)