Meeting: 1003, Atlanta, Georgia, AMS CP 1, AMS Contributed Paper Session

1003-60-856 **Lee Gibson*** (lgibson@math.cornell.edu), Department of Mathematics, Cornell University, 258 Malott Hall, Ithaca, NY 14853. *Survival Among Traps for a Random Walk on an Infinite Graph.* Preliminary report.

Consider a connected graph on which each vertex is a trap independently with probability q. As n tends to infinity, what is the behavior of the probability that a random walk on that graph avoids the traps up to time n? For the simple random walk in $\mathbb{Z}^d$ among obstacles this question was answered by Donsker and Varadhan [1] in 1979. By adapting Sznitman's [2] coarse-graining technique we can now describe some aspects of this behavior for any graph satisfying a Poincaré-type inequality and having sufficiently regular volume growth. The Cayley graphs of finitely generated groups with polynomial volume growth provide a large class of examples. For some particularly nice examples, such as the discrete Heisenberg group, the logarithmic behavior of the survival probability can be obtained as in the result of [1].

References

[1] M. D. Donsker and S. R. S. Varadhan. On the number of distinct sites visited by a random walk. *Comm. Pure Appl. Math.*, 32(6):721–747, 1979.

[2] Alain-Sol Sznitman. *Brownian motion, obstacles and random media*. Springer Monographs in Mathematics. Springer-Verlag, Berlin, 1998.

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