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Rafal Komendarczyk and **Jeff Pullen*** (jpullen@tulane.edu), Mathematics Department,
Tulane University, 6823 St. Charles Ave, New Orleans, LA 70118. *Complete Coverage Probability
Via Homology*. Preliminary report.

We address the issue of obtaining the probability of complete coverage for a given domain by a finite coverage process with compact convex grains. In the process, we define homology of a random compact set S and consider a random simplicial complex corresponding to the nerve of a random covering. This allows us to determine the distributions of random Betti numbers as well as the Euler characteristic of S . Armed with these notions, we address the probability of complete coverage of domains which have a homotopy type of a simplicial complex which has potential applications in the area of sensor networks. (Received August 25, 2011)