

Department of Mathematics, BGU

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# BGU Probability and Ergodic Theory (PET) seminar

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*On Thursday, December ,23 2021*

*At 11:10 – 12:00*

*In 101-*

Shaked Mamana (BGU)

will talk about

## **A Probabilistic Algorithm for Vertex Cover**

Abstract: The Vertex Cover Problem is the optimization problem of finding a vertex cover  $V_c$  of minimal cardinality in a given graph. It is a classic NP-hard problem, and various algorithms have been suggested for it. In this talk, we will start with a basic algorithm for solving the problem. Using a probabilistic idea, we use it to develop an improved algorithm. The algorithm is greedy; at each step it adds to the cover a vertex such that the expected cover size, if we continue randomly after this step, is minimal. We will study the new algorithm theoretically and empirically, and present simulations that compare its performance to that of some algorithms of a similar nature.