

Department of Mathematics, BGU

BGU Probability and Ergodic Theory (PET) seminar

On Thursday, May, 4 2023

At 14:00 – 15:00

In 101-

Vsevolod L. Chernyshev (National Research University Higher
School of Economics)

will talk about

Random walks on metric graphs and related problems from analytic number theory

Abstract: I will discuss a random walk on a metric graph, that is, on a one-dimensional cell complex. The main difference from the often considered case is that the endpoint of a walk can be any point on an edge of a metric graph and not just one of the vertices. Let a point start its motion along the path graph from a hanging vertex at the initial moment of time. The passage time for each individual edge is fixed. At each vertex, the point selects one of the edges for further movement with some nonzero probability. Backward turns on the edges are prohibited in this model. One could find asymptotics for the number $N(T)$ of possible endpoints of such a random walk as the time T increases, i.e. number of all possible lengths of paths on metric graph that not exceed T . Solutions to this

problem, depending on the type of graph, are associated with different problems of number theory. An overview of the results, which depend on the arithmetic properties of lengths, will be given as well as review of open problems.

Please Note the Unusual Time!