

Department of Mathematics, BGU

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# BGU Probability and Ergodic Theory (PET) seminar

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*On Thursday, June 30, 2022*

*At 11:10 – 12:00*

*In room 106, building 28*

MAKSIM ZHUKOVSKII (WEIZMANN INSTITUTE)

will talk about

## **Extremal independence in discrete random systems**

ABSTRACT: Let  $G$  be a graph with several vertices  $v_1, \dots, v_r$  being roots. A  $G$ -extension of  $u_1, \dots, u_r$  in a graph  $H$  is a subgraph  $G^*$  of  $H$  such that there exists a bijection from  $V(G)$  to  $V(G^*)$  that maps  $v_i$  to  $u_i$  and preserves edges of  $G$  with at least one non-root vertex. It is well known that, in dense binomial random graphs, the maximum number of  $G$ -extensions obeys the law of large numbers. The talk is devoted to new results describing the limit distribution of the maximum number of  $G$ -extensions. To prove these results, we develop new bounds on the probability that none of a given finite set of events occur. Our inequalities allow us to distinguish between weakly and strongly dependent events in contrast to well-known Janson's and Suen's inequalities as well as Lovasz Local Lemma. These bounds imply a general result on the convergence of maxima of dependent random variables.

**Please Note the Unusual Place!**