

Department of Mathematics, BGU

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# BGU Probability and Ergodic Theory (PET) seminar

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*On Thursday, October 31 2019*

*At 11:10 – 12:00*

*In 101-*

Barak Weiss (Tel-Aviv University)

will talk about

## **Geometric invariants of lattices and points close to a line, and their asymptotics**

Abstract: Given a lattice  $\Lambda$  and a (perhaps long) vector  $v \in \Lambda$ , we consider two geometric quantities: - the projection  $\Delta$  of  $\Lambda$  along the line through  $v$  - the “lfit functional” which encodes how one can recover  $\Lambda$  from the projection  $\Delta$ . Fixing  $\Lambda$  and taking some infinite sequences of vectors  $v_n$ , we identify the asymptotic distribution of these two quantities. For example, for a.e. line  $L$ , if  $v_n$  is the sequence of  $\epsilon$ -approximants to  $L$  then the sequence  $\Delta(v_n)$  equidistributes according to Haar measure, and if  $v'_n$  is the sequence of best approximants to  $L$  then there is another measure which  $\Delta(v'_n)$  equidistributes according to. The basic tool is a cross section for a diagonal flow on the space of lattices, and after some analysis of this cross section, the results follow from the Birkhoff pointwise ergodic theorem.

Joint work with Uri Shapira.