

Department of Mathematics, BGU

BGU Probability and Ergodic Theory (PET) seminar

On Thursday, May 4 2023

At 11:10 – 12:00

In 101-

Daren Wei (The Hebrew University of Jerusalem)

will talk about

Time change for unipotent flows and rigidity

Abstract: Two flows are said to be Kakutani equivalent if one is isomorphic to the other after time change, or equivalently if there are Poincaré sections for the flows so that the respective induced maps are isomorphic to each other. Ratner showed that if $G = \operatorname{SL}(2, \mathbb{R})$ and Γ is a lattice in G , and if u_t is a one parameter unipotent subgroup in G then the u_t action on G/Γ equipped with Haar measure is loosely Bernoulli, i.e. Kakutani equivalent to a circle rotation. Thus any two such systems $(\operatorname{SL}(2, \mathbb{R})/\Gamma_i, u_t, m_i)$ are Kakutani equivalent to each other. On the other hand, Ratner showed that if $G = \operatorname{SL}(2, \mathbb{R}) \times \operatorname{SL}(2, \mathbb{R})$ and Γ is a reducible lattice, and u_t is the diagonally embedded one parameter unipotent subgroup in G , then $(G/\Gamma, u_t, m)$ is not loosely Bernoulli.

We show that in fact in this case and many other situations one cannot have Kakutani equivalence between such systems unless they are actually isomorphic. This is a joint work with Elon Lindenstrauss.