Dynamics and Group theory session

14:00-14:45 **Michael Brandenburski** (BGU)

<u>Title</u>: C^0-gap between entropy-zero Hamiltonians and autonomous diffeomorphisms of surfaces

<u>Abstract</u>: Let Σ be a surface equipped with an area form. There is a long standing open question by Katok, which, in particular, asks whether every entropy-zero Hamiltonian diffeomorphism of a surface lies in the C^0-closure of the set of integrable diffeomorphisms. A slightly weaker version of this question asks: ``Does every entropy-zero Hamiltonian diffeomorphism of a surface lie in the C^0-closure of the set of autonomous diffeomorphisms?'' In this talk I will answer in negative the later question. In particular, I will show that on a surface Σ the set of autonomous Hamiltonian diffeomorphisms is not C^0-dense in the set of entropy-zero Hamiltonians. Explicitly constructed examples of such Hamiltonians cannot be approximated by autonomous diffeomorphisms. (Joint with M. Khanevsky).

14:55-15:40 **Zvi Shem-Tov** (HUJI)

<u>Title</u>: Norm rigidity for arithmetic and profinite groups

<u>Abstract</u>: A conjugation invariant norm on a group induces (and is induced by) a bi-invariant metric on it.
Two natural, yet quite extremal sources of such metrics are the discrete one, on any (discrete) group, and a compact one, coming from a (embedding into a) compact metric group.
In the talk we shall discuss some rigidity phenomena related to these norms. In particular, we shall be interested in examples where every other norm on a discrete/compact group arises from the opposite source.
Our basic examples come from arithmetic-like groups, and we shall see how they are intimately related to deep results such as Margulis' normal subgroup theorem and Nikolov-Segal work on finitely generated profinite groups.
Based on joint work with Leonid Polterovich and Yehuda Shalom.

15:50-16:35 **Itamar Vigdorovich** (Weizmann)

<u>Title</u>: **Stiff dynamics and charmenability of arithmetic groups**

<u>Abstract</u>: The notion of charmenability describes groups that have amenable-like properties when restricting attention to certain aspects of their character theory. The term was coined in a recent paper by Bader, Boutonnet, Houdayer and Peterson, where remarkable implications were established pertaining to normal subgroups, IRS's, URS's, characters, representations, and associated operator algebras. In a recent joint work with Uri Bader, we classify charmenability among arithmetic groups. This extends previous results on higher-rank lattices. The main novelty is a stiffness result: we show that whenever a higher rank lattice acts on a f.g

nilpotent group H, any stationary probability measure on the space of characters of H must be invariant. This is a generalization of Furstenberg's stiffness result for dynamics on tori.

16:45-17:30 **Michael Chapman** (HUJI)

<u>Title</u>: **Entropic methods for cutoff**

<u>Abstract</u>: A random walk on a graph exhibits the cutoff phenomenon if the transition from being far from mixed to being very mixed happens (relatively) abruptly. Ozawa provided in September of 2020 an entropic criterion for cutoff and applied it to Ramanujan graphs, reproving a result of Lubetzky and Peres from 2015.

My plan is to:

- Survey some results and proof methods in the field.
- Discuss a generalization of Ozawa's approach.
- Apply this generalization to sequences of graphs that were not known previously to exhibit cutoff.

This talk is based on joint works with Ori Parzanchevski and Yuval Peled.