Department of Mathematics, BGU

BGU Probability and Ergodic Theory (PET) seminar

On *Thursday, December ,5 2019*

At *11:10 − 12:00*

In *101-*

Amnon Yekutieti (Ben-Gurion University)

will talk about

An averaging process for unipotent group actions – in dffierential geometry

Abstract: The usual weighted average of points $(z_0, ..., z_q)$ in the real vector space R^n, with weights $(w_0, ..., w_q)$, is translation invariant. Hence it can be seen as an average of points in a torsor Z over the Lie group $G = R^n$ (A G-torsor is a G-manfiold with a simply transitive action.)

In this talk I will explain how this averaging process can be generalized to a torsor Z over a unipotent Lie group G. (In dffierential geometry, a unipotent group is a simply connected nilpotent Lie group. R^n is an abelian unipotent group.)

I will explain how to construct the unipotent weighted average, and discuss its properties (functoriality, symmetry and simpliciality). If time permits, I will talk about torsors over a base manfiold, and families of sections parametrized by

simplices. I will indicate how I came about this idea, while working on a problem in deformation quantization.

Such an averaging process exists only for unipotent groups. For instance, it does not exist for a torus G (an abelian Lie group that's not simply connected). In algebraic geometry the unipotent averaging has arithmetic signfiicance, but this is not visible in dffierential geometry.

Notes for the talk can be founds here: https://www.math.bgu.ac.il/∼amyekut/lectures/average-dffi-geom/abstract.html