Department of Mathematics, BGU

Colloquium

On *Tuesday, March 28, 2017*

At *14:30 − 15:30*

In *Math -101*

Vitali Milman (Tel Aviv University)

will talk about

Some Fundamental Operator Relations in Convex Geometry and Classical Analysis

Abstract: The main goal of the talk is to show how some classical constructions in Geometry and Analysis appear (and in a unique way) from elementary and very simple properties. For example, the polarity relation and support functions are very important and well known constructions in Convex Geometry, but some elementary properties uniquely imply these constructions, and lead to their functional versions, say, in the class of log-concave functions. It turns out that they are uniquely defined also for this class, as well as for many other classes of functions. In this talk we will use these Geometric results as an introduction to the main topic which involves the analogous results in Analysis. We will start the Analysis part by characterizing the Fourier transform (on the Schwartz class in R^n) as, essentially, the only map which transforms the product to the convolution, and discuss a very surprising rigidity of the Chain Rule

Operator equation (which characterizes the derivation operation). There will be more examples pointing to an exciting continuation of this direction in Analysis.

The results of the geometric part are mostly joint work with Shiri Artstein-Avidan, and of the second, Analysis part, are mostly joint work with Hermann Koenig.

The talk will be easily accessible for graduate students.