Adam Mickiewicz University
Faculty of Mathematics and Computer Science

GEOMETRY AND TOPOLOGY SEMINAR

12 AM, Friday, March 24, 2017
B1-37, Collegium Mathematicum

Speaker: Marek Kaluba (Adam Mickiewicz University)

Title: The computational aspects of property (T)

Abstract:

Kazhdan's property (T) is a well known concept in the theory of group actions. Its numerous applications include finite generation of lattices, fixed-point properties of isometric actions, constructions of expanding graphs and product replacement algorithm. However a complicated notion requires a serious firepower to be established. Indeed to prove that a group has property (T) requires a non-trivial effort even in the case of most classical examples, such as $SL(3, \mathbb{Z})$.

We hope to ease the effort by drawing from the field of semi-definite programming and cone-optimisation. Using the Positivestellensatz and following the work of Ozawa and Netzer & Thom, we will show how to translate property (T) into a semi-definite optimisation problem. Given an explicit generating set S of a finitely presented group G, this will (possibly) allow us to produce a "witness" for the property (T) and simultaneously estimate the Kazhdan's constant for (G, S).