

## $\text{Aut}(F_5)$ has property (T)

Marek Kaluba

It has been a longstanding question whether  $\text{Aut}(F_n)$ , the group of automorphisms of free group has Kazhdan property (T). The property for this particular group (and its Kazhdan constant) has far reaching consequences including the efficiency non-deterministic algorithms for finite groups.

In 2015 Narutaka Ozawa gave an alternative equivalent definition of property (T) in the language of sum of squares decompositions in group algebras. This idea led to a new proof of property (T) for various groups and better estimates of so called Kazhdan constants. Developing those ideas further we present a computer assisted that  $\text{Aut}(F_5)$  has property (T).

This is joint work with Narutaka Ozawa (RIMS, Kyoto) and Piotr W. Nowak (IMPAN, Warsaw).