Adam Mickiewicz University
Faculty of Mathematics and Computer Science

Geometry and Topology Seminar

10:15 AM, Tuesday, October 17, 2017
A1-33, Collegium Mathematicum

Speaker: Takao Satoh (Tokyo U. of Science; Max-Planck Institute for Mathematics)

Title: On the Andreadakis conjecture of the automorphism groups of free groups

Abstract:

In the mapping class group of a surface, there are two descending central filtrations of the Torelli group. One is called the Johnson filtration, which is defined by using the actions of the mapping class group on the nilpotent quotients of the fundamental group of the surface. The other is the lower central series of the Torelli group. Due to Johnson and Morita, it is known that they are different by certain "obstructions" coming from topological reasons.

Here, we consider a similar situation for the automorphism group of a free group. The group of automorphisms which act on the abelianization of the free group is called the IA-automorphism group. This group has two descending central filtrations. One is called the Andreadakis–Johnson filtration, and the other is the lower central series of the IA-automorphism group. Andreadakis showed that they are equal if the rank of the free group is two, and conjectured that they coincide in general. Recently, Bartholdi showed that this conjecture is not true if the rank is three.

In this talk, we will talk about a combinatorial group theoretic approach to this problem, and some recent results.