TRIVIAL AND NON-TRIVIAL ACTIONS OF THE JOHNSON FILTRATION ON THE HOMOLOGY OF CONFIGURATION SPACES

Fudan Topology Seminar

Speaker: Andrea Bianchi
University of Copenhagen

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Meeting Zoom ID: 853 0188 1524 Password: Fudan2022

Abstract: Let S=S_{g,1} be a compact, connected, orientable surface of genus g with one boundary curve, and let F_n(S) denote the space of ordered configurations of n distinct points in S. The homology groups H_*(F_n(S)) admit a natural action of the mapping class group Mod(S)=pi_0(Diff_+(S,dS)),and we are broadly interested in what kind of representations of Mod(S) arise in this way; in particular, how trivial/non-trivial the action of Mod(S) is.

We consider the Johnson filtration on Mod(S) by subgroups

J(0)>J(1)>...>J(i)>..., for i>=0. We will compare the following results:

1) (joint with J.Miller and J.Wilson) J(i) acts trivially on H_*(F_n(S)) for i>=n;

2) (joint with A.Stavrou) If g>=2, J(n-1) acts non-trivially on H_n(F_n(S)).

3) I will discuss the main ideas of the proofs, and I will conclude with a conjecture.