Workshop on The Algebraic Geometry and Topology of Hyperplane Arrangements

Northeastern University

April 8, 2011

Computing cohomology

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ABSTRACT

Suppose a discrete group G acts properly on a CW-complex Y with compact quotient. There is some interest in computing the compactly supported cohomology $H_c^*(Y)$ and the (reduced) L^2-cohomology $L^2H^*(Y)$, as they contain a lot of information about the group G. For example, if Y is acyclic, these cohomologies of Y are invariants of G. Quite often the space Y has a natural cover by simpler subspaces, so one can try to use a Mayer–Vietoris type spectral sequence.

I will explain a new condition on the cover, which provides for a complete calculation. The condition is satisfied in many examples, including Artin groups, graph products of infinite groups, and complements of hyperplane arrangements. This allows to unify some previous computations, and to obtain new ones.

This is a joint work with Mike Davis, and also with Tadeusz Januszkiewicz and Ian Leary.