

Lie algebras associated to configuration spaces and arrangements

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Abstract

A hyperplane arrangement is a finite collection of codimension one affine subspaces in Euclidean space. These objects may be studied from a variety of perspectives. I will describe a number of algebraic, combinatorial, and topological aspects of arrangements, and relations among them. The complement of an arrangement is what remains of Euclidean space when the hyperplanes are removed. The topology of these spaces is rich. For instance, the complement of the "braid arrangement" is the configuration space of points in the plane, and the fundamental group is a pure braid group. I will discuss the structure of the Lie algebra arising from the lower central series of the fundamental group for a class of arrangements which includes these. I will also describe the relationship between this Lie algebra and others which arise in the context of higher dimensional configuration spaces and subspace arrangements.