

Lie theory based on hyperplane arrangements

Marcelo Aguiar

Texas A & M University

Thursday, April 12, 2012

007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm 300 Kemeny Hall)

Abstract

There are well-known close links between the free Lie algebra, the symmetric group, and the braid arrangement of hyperplanes. In joint work in progress with Swapneel Mahajan, we propose an extension of this theory to hyperplane arrangements (real, central, and finite).

A central role is played by a generalized notion of Hopf monoid. We develop a Lie theory for these objects which includes analogs of the Eulerian and Dynkin idempotents, the theorems of Cartier-Milnor-Moore and of Poincaré-Birkhoff-Witt, among others. In the new setting, these classical notions and results acquire a new geometric meaning. The classical results are obtained by specializing to braid arrangements.

This talk should be accessible to graduate students