

1077-05-1574 **Marcelo Aguiar*** (maguiar@math.tamu.edu), 3368 Tamu, College Station, TX 77843, and
Swapneel Mahajan (swapneel@math.iitb.ac.in). *Algebra based on real hyperplane
arrangements.*

We discuss an algebraic theory based on the geometry of real hyperplane arrangements. We focus on the notion of Hopf monoid, for which the key ingredient is furnished by the projection maps of Tits. Geometric structures associated to arrangements afford examples of Hopf monoids. We discuss examples arising from chambers, subarrangements, and generalized zonotopes. When specialized to the braid arrangement, we recover Hopf algebraic structures on combinatorial objects such as graphs, linear orders, and generalized permutahedra. This is joint work in progress with Swapneel Mahajan. (Received September 20, 2011)