

1030-05-93

Margaret A. Readdy* (readdy@ms.uky.edu), University of Kentucky, Department of Mathematics, Lexington, KY 40506, **Richard Ehrenborg** (jrge@ms.uky.edu), University of Kentucky, Department of Mathematics, Lexington, KY 40506, and **Michael Slone** (mslone@ms.uky.edu), University of Kentucky, Department of Mathematics, Lexington, KY 40506. *Affine and toric hyperplane arrangements.*

In the 1970's Zaslavsky initiated the modern study of hyperplane arrangements. For a central hyperplane arrangement he showed evaluating the characteristic polynomial at -1 gives the number of regions in the complement of the arrangement, whereas for an affine arrangement evaluating at $+1$ gives the number of bounded regions in the complement. For central arrangements Bayer and Sturmfels proved its flag f -vector can be determined by the intersection lattice. Billera, Ehrenborg and Readdy make this map explicit using coalgebraic techniques.

We extend the Billera-Ehrenborg-Readdy theorem to affine and toric hyperplane arrangements. For toric arrangements, we also generalize Zaslavsky's fundamental result on the number of regions. We believe our work hints at a wealth of problems involving regular subdivisions of manifolds. A few of these directions will be indicated. (Received July 22, 2007)