

1061-13-126

Federico Ardila* (federico@math.sfsu.edu), Department of Mathematics, San Francisco State University, 1600 Holloway Ave., San Francisco, CA 94110, and **Alexander Postnikov**, Department of Mathematics, Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge, MA 02139. *Power ideals of hyperplane arrangements.*

We investigate ideals in a polynomial ring which are generated by powers of linear forms. We pay special attention to a family of power ideals that arises naturally from a hyperplane arrangement A . We prove that their Hilbert series are determined by the combinatorics of A . We also compute the Hilbert series of the resulting fat point ideals and zonotopal Cox rings. Our work unifies and generalizes results on power ideals obtained by Dahmen-Micchelli, de Boer-Ron, Holtz-Ron, Postnikov-Shapiro-Shapiro, and Sturmfels-Xu, among others. It also settles a conjecture of Holtz-Ron on the spline interpolation of functions on the lattice points of a zonotope. This is joint work with Alex Postnikov from MIT. (Received April 10, 2010)