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Mathias Drton and **Caroline J Klivans*** (cjk@math.uchicago.edu), 1100 E. 58th St., Chicago, IL 60637, and **Ed Swartz**. *A Geometric Interpretation of the Characteristic Polynomial of a Hyperplane Arrangement.*

We consider projections of points in R^n onto chambers of real linear hyperplane arrangements. We show that the coefficients of the characteristic polynomial are proportional to the average spherical volumes of the sets of points that are projected onto faces of a given dimension. As a corollary we obtain that for real finite reflection arrangements the coefficients of the characteristic polynomial precisely give the spherical volumes of points projected onto faces of a fixed dimension of the fundamental chamber. The connection between projection volumes and the characteristic polynomial is established by considering angle sums of the associated zonotope.

This talk reflects joint work with Mathias Drton and Ed Swartz. (Received January 20, 2010)