

1070-52-327

Graham Denham, Hal Schenck, Mathias Schulze and Max Wakefield*
(wakefiel@usna.edu), 572-C Holloway Rd, US Naval Academy, Department of Mathematics,
Annapolis, MD 21402, and **Uli Walther**. *On syzygies of the Jacobian ideal of a hyperplane
arrangement.*

Let A be hyperplane arrangement with defining polynomial f . The Jacobian ideal $J(A)$ is the ideal generated by all partial derivatives of f . The set of zeros of $J(A)$ is the singular locus of A and, by a result of Terao, $J(A)$ is a Cohen-Macaulay ideal if and only if the module of logarithmic derivations is free. In this presentation we will study some intricate algebraic properties of $J(A)$. We will give a new algebraic criterion for freeness based on embedded primes of the Jacobian ideal and the projective dimension of the module of logarithmic 1-forms. We will conclude with an investigation of some graphic and generic arrangements. (Received February 15, 2011)