1038-13-129 **A. Beecher** (`Amanda.Beecher@usma.edu`), **T. Clark** (`tc7999@albany.edu`) and **A. Tchernev*** (`tchernev@math.albany.edu`). *Arrangements of hyperplanes, poset resolutions of monomial ideals, and free resolutions of multigraded modules.*

We discuss two canonical constructions due to the speaker. Let $\Bbbk$ be a field. First we take a finite poset P with a minimum $\hat{0}$ and use homology of open intervals $(\hat{0}, x)$ in P to produce a sequence of maps of $\Bbbk$-spaces $C_\bullet(P)$, which is a complex when P is "nice" (e.g. when P is ranked). This is useful when a poset map $\eta : P \to \mathbb{N}^n$ is given – then one can approximate the minimal free resolution of the monomial ideal generated in $R = \Bbbk[X_1, \ldots, X_n]$ by the monomials with exponents the images of the atoms of P; T. Clark shows in his thesis that, among others, the class of generic ideals, the class of ideals with linear resolutions, and the class of stable ideals have minimal free resolutions of this form. Our second construction takes a finite subset ϕ of a $\Bbbk$-space W and yields an acyclic complex of $\Bbbk$-spaces $T_\bullet(\phi)$; in earlier work the speaker used it to give an explicit free resolution for any Noetherian $\mathbb{Z}^n$-graded R-module. We show that $T_\bullet(\phi)$ has a canonical filtration with quotients acyclic complexes of the form $C_\bullet(P_i)$ for appropriate posets P_i arising from an arrangement of hyperplanes "dual" to the arrangement given by the set ϕ. (Received February 12, 2008)