1172-13-22 **Juan Migliore*** (migliore.1@nd.edu), **Uwe Nagel** and **Hal Schenck**. *Schemes associated to hyperplane and hypersurface arrangements.*

We describe work with Uwe Nagel and Hal Schenck, and work in progress with Uwe Nagel. Let A be a hyperplane arrangement in $\mathbb{P}^n$. Let J be the Jacobian ideal of A in the polynomial ring R. A is free if and only if R/J is Cohen-Macaulay (CM). However, J is usually not unmixed, much less CM. We consider associated ideals, J^{top} and $\sqrt{J}$; both are unmixed and define equidimensional schemes in $\mathbb{P}^n$, and both have a claim to being called the (unmixed) singular locus of A. We ask when either of these ideals is CM. If a certain mild combinatorial property $(*)$ of the incidence lattice of A is satisfied, then both R/J^{top} and $R/\sqrt{J}$ are CM. If $(*)$ does not hold, either or both of these quotients may fail to be CM. For curves in $\mathbb{P}^3$, they both can fail to be CM by as much as you like (measured by the dimension of the Hartshorne-Rao module). The second set of results involves passing from hyperplane to hypersurface arrangements. J^{top} and $\sqrt{J}$ are defined in the same way. We show that there is still a set of conditions analogous to $(*)$, but a bit more technical, that forces both quotients to be CM. Both papers use tricks from liaison theory, among other tools, which we will briefly review along the way. (Received August 04, 2021)