1128-13-182 **Daniel Smolkin*** (smolkin@math.utah.edu). *Subadditivity formulas for test ideals.* Preliminary report.

Given a ring R of positive characteristic, an ideal $\mathfrak{a}$ in R, and a positive number t, one can construct what's called the *test ideal* of this data, denoted $\tau(\mathfrak{a}^t)$. This notion was introduced by Hara and Yoshida in 2003, based on work in tight closure by Hochster and Huneke, and it measures the singularities of R and $\mathfrak{a}$. Hara and Yoshida also showed that test ideals on regular rings obey a *subadditivity* formula, namely $\tau(\mathfrak{a}^s\mathfrak{b}^t) \subseteq \tau(\mathfrak{a}^s)\tau(\mathfrak{b}^t)$, and Takagi generalized this formula to the affine case. This formula has a number of important applications, such as bounding the growth of symbolic powers of ideals.

In this talk, I will discuss progress towards an improved subadditivity formula for non-regular rings using the formalism of Cartier algebras. Along the way, I will show some constructions for the toric case. (Received February 25, 2017)