

1142-13-66

Giulio Caviglia and **Alessio Sammartano*** (asammart@nd.edu). *Maximal syzygies in Hilbert schemes of complete intersections*. Preliminary report.

Abstract. Let d_1, \dots, d_c be positive integers and consider the monomial complete intersection $Y \subseteq \mathbb{P}^n$ defined by the vanishing of $x_1^{d_1}, \dots, x_c^{d_c}$. For each Hilbert polynomial $p(\zeta)$ we construct a distinguished point in the Hilbert scheme $\text{Hilb}^p(Y)$, which we call the expansive point. This point achieves the largest possible syzygies among all subschemes $Z \in \text{Hilb}^p(Y)$. Assuming the validity of the lex-plus-powers conjecture, the expansive point provides uniform sharp upper bounds for the syzygies of subschemes $Z \in \text{Hilb}^p(X)$ for all complete intersections $X = X(d_1, \dots, d_c) \subseteq \mathbb{P}^n$. In some cases, the expansive point achieves extremal Betti numbers for the infinite free resolutions associated to a subscheme in $\text{Hilb}^p(Y)$. Our approach is new even in the special case $Y = \mathbb{P}^n$, where it provides new results and simpler proofs of known theorems. (Received August 27, 2018)