1163-16-1255 **Andrew B. Conner*** (abc12@stmarys-ca.edu) and **Peter D. Goetz**. *Noncommutative Projective Geometry of Certain Twisted Tensor Products.* Preliminary report.

Let $T$ denote the free associative $k$-algebra on $n+1$ generators of degree 1. Let $A = T/I$ be the quotient by a finitely-generated, homogeneous ideal $I$. For $d \geq 1$, let $Z_d \subset (\mathbb{P}^n)^{\times d}$ be the scheme of common zeros of elements of $I_d$, viewed as functions $(T_1^*)^{\otimes d} \to k$. From the geometric data of the schemes $Z_d$, one can define a ring structure on $B = \bigoplus_d H^0(Z_d, i^*\mathcal{O}_{(\mathbb{P}^n)^{\times d}}(1))$ where $i : Z_d \to (\mathbb{P}^n)^{\times d}$ is the inclusion.

If $A$ is an Artin-Schelter (AS) regular algebra on three generators, then $Z_d \cong Z_2$ for all $d \geq 2$, and $Z_2$ is the graph of an automorphism $\sigma$ on a scheme $X$. In this case, $B$ is isomorphic to a twisted homogeneous coordinate ring on the data $(X, \sigma, \mathcal{L})$ where $\mathcal{L}$ is an invertible sheaf. If $A$ is not AS-regular, the sequence $\{Z_d\}$ need not stabilize.

In this talk we describe the schemes $Z_d$, some of their geometric properties, and the associated ring structure of $B$ in the case where $A$ is a quadratic twisted tensor product of $k[x, y]$ and $k[z]$. Such twisted tensor products were recently classified by the authors, and the classification includes both AS-regular and non-noetherian examples. (Received September 15, 2020)