1093-16-160 **Ellen E Kirkman*** (kirkman@wfu.edu), **Thomas Cassidy**, **Andrew Conner** and **W. Frank Moore**. *Twisted Matrix Factorizations.*

Let A be a connected graded, locally finite k-algebra, and let f be a homogeneous, regular, normal element of A with $af = f\sigma(a)$, for σ an automorphism of A. For a finitely generated graded left A-module M, let $M^{tw} := M^{\sigma}(-d)$, where d is the degree of f and M^{σ} is the associated Zhang twist of M. A *twisted left matrix factorization of f over A* is an ordered pair of maps of finitely generated graded free left A-modules $(\varphi : F \to G, \tau : G^{tw} \to F)$ such that $\varphi\tau = \lambda_f^G$ and $\tau\varphi^{tw} = \lambda_f^F$, where $\varphi^{tw} : F^{tw} \to G^{tw}$ is the map induced by φ, and $\lambda_f^M : M^{tw} \to M$ is the graded left A-module homomorphism given by left multiplication by f. We show that many of the properties of matrix factorizations in commutative regular local rings extend to the setting where A is a left noetherian Artin-Schelter regular ring of finite GK dimension, and we provide some examples of twisted matrix factorizations. (Received August 12, 2013)