Andrew B. Conner* (abc12@stmarys-ca.edu), Ellen Kirkman, W. Frank Moore and Chelsea Walton. Noncommutative Knörrer periodicity and quantum Kleinian singularities.

Chan, Kirkman, Walton, and Zhang recently established a version of the McKay correspondence in characteristic 0 for the action of a semisimple Hopf algebra $H$ acting inner-faithfully with trivial homological determinant on an Artin-Schelter (AS) regular algebra $A$ of dimension 2. The invariant rings $A^H$ for these actions are noncommutative hypersurfaces: they are isomorphic to $C/\langle \Omega \rangle$ where $C$ is a 3-dimensional AS-regular algebra and $\Omega$ is a normal element. The rings $A^H$ were dubbed quantum Kleinian singularities and were shown to have finite Cohen-Macaulay (CM) type.

In this talk we use noncommutative matrix factorizations to describe the isomorphism classes of indecomposable maximal Cohen-Macaulay modules for the quantum Kleinian singularities. We then use a noncommutative analog of Knörrer periodicity to prove that $D/\langle \Omega + z_1^2 + z_2^2 + \cdots + z_d^2 \rangle$ has finite CM type where $D$ belongs to a certain class of iterated Ore extensions of $C$. (Received February 04, 2018)