Apoorva Khare* (khare@stanford.edu) and Akaki Tikaradze. BGG Category $\mathcal{O}$ over generalized Weyl algebras.

Generalized Weyl algebras (GWAs), including down-up algebras and their quantum variants, have been the focus of much recent activity. In this talk, we first show that a large family of generalized down-up algebras, which are deformations of $U(\mathfrak{sl}_2)$, admit quantizations, which are deformations of $U_q(\mathfrak{sl}_2)$. Next, we study the BGG Category $\mathcal{O}$ over a “triangular GWA”. More precisely, we study a block with finitely many simple objects, say $n$. We show that the endomorphism algebra of a projective generator of this block is finite-dimensional and graded Koszul. We also provide a presentation of this algebra, showing that it depends only on $n$. This shows that the blocks of $\mathcal{O}$ for any two triangular GWAs, with the same number of simple objects in each, are Morita equivalent. (Received September 14, 2015)