

Title: Generalized Weyl Algebras

Abstract: Generalized Weyl algebras (GWAs) form a class of algebras whose representation theory resembles those of Lie algebras. They are defined by Bavula and Hodges and found extensive use in noncommutative resolutions of Kleinian singularities. Apart from noncommutative resolutions of Kleinian singularities, the class is known to contain the ordinary Weyl algebras, the enveloping algebra $U(\mathfrak{sl}_2)$ and its primitive quotients, and the quantum enveloping algebra $U_q(\mathfrak{sl}_2)$. In this talk, I will define what GWAs are, and then show that the quantum monoid $\mathcal{O}_q(M_2)$, the quantum groups $\mathcal{O}_q(GL_2)$, $\mathcal{O}_q(SL_2)$ and $\mathcal{O}_q(SU_2)$, and Podleś spheres $\mathcal{O}_q(S^2)$ are all examples of GWAs. Then, time permitting, I will give an account of their representation theory in terms of certain smash products and local isomorphisms.