

The Koszul Complex blows up a point

Ragnar-Olaf Buchweitz
(University of Toronto Scarborough, UTSC)

Abstract:

We will report on joint work with Thuy Pham (UTSC). Our key result is that the endomorphism ring of the syzygy modules in the tautological Koszul complex is of finite global dimension, with its derived category equivalent to that of quasicoherent sheaves on affine space blown up in a point.

As a consequence, the cone over any Veronese embedding of projective space admits a noncommutative desingularization in that its canonical small desingularization, the total space of the embedding ample line bundle, has its derived category equivalent to that of a Veronese subalgebra of the endomorphism ring above.

Time permitting, we will also discuss more generally the question of existence of tilting objects on affine bundles, how it potentially gives rise to new invariants, and may help address some classical open problems in Commutative Algebra.