

Quasi-polynomial growth of minimal free resolutions

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Every module over an arbitrary ring can be “resolved” by sequences of homomorphisms of free modules. Finitely generated modules over noetherian local rings (or graded connected algebras) admit minimal resolutions that are unique up to isomorphism; the ranks of the free modules in such resolutions provide important intensely studied invariants of the module. It a long-open question to describe the rings over which those ranks are eventually given by (quasi-)polynomials. Recent results will be presented for commutative rings; their proofs hinge on the structure of super Lie-algebras canonically associated to such rings. The talk is partly based on joint work with N. Packauskas and M. Walker, and with A. Seceleanu and Z. Yang.