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Homological Regularities

Let A be a noetherian connected graded \mathbb{k} -algebra with a balanced dualizing complex, and let X be a cochain complex of graded left A -modules. The elements of X possess both an internal and various homological degrees, and it is useful to study the relationships between these degrees. Jørgensen and Dong-Wu extended the study of Tor-regularity and Castelnuovo-Mumford regularity from commutative algebras to noncommutative algebras. We consider these regularities further, and define new numerical invariants that involve linear combinations of internal and homological degrees. This is joint work with Robert Won and James J. Zhang.