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Constructing all graded torsionfree modules over quasi-homogeneous Gorenstein curve singularities

In this joint work with Iyama and Yamaura we show that the stable category of graded maximal Cohen-Macaulay modules over a quasi-homogeneous Gorenstein curve singularity with nonnegative a-invariant admits an (explicit!) tilting object.

This means, in particular, that that triangulated category is exact equivalent to the derived category of modules of finite length over a (usually noncommutative) Artin algebra. If the singularity is reduced, then that Artin algebra is of finite global dimension and one can use this to construct any graded torsionfree module over the curve singularity through finitely many extensions of finitely many modules and their (co-)syzygies.