

# MAXIMAL COHEN-MACAULAY MODULES AND NONCOMMUTATIVE ALGEBRAIC GEOMETRY

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ABSTRACT. The classical McKay correspondence relates maximal Cohen–Macaulay modules on Kleinian singularities to representations of the finite subgroups of  $SL(2, \mathbb{C})$  and to the exceptional divisors in the desingularization. It can also be interpreted (Kapranov–Vasserot, 1999) as an algebraic description of the derived category of coherent sheaves on the desingularization.

This approach has been vastly generalized, first by Bridgeland–King–Reid (2001), then by D. Orlov (2009) and most recently by Amiot–Iyama–Reiten (2012).

The potential of these developments in Commutative Algebra has not yet been explored, and we hope this talk will entice some to take a closer look.