

The role of big Cohen-Macaulay modules and algebras in commutative algebra

Rebecca R. G. , George Mason University, Fairfax VA – 22030

Abstract

The concept of a Cohen-Macaulay ring plays a key role in commutative algebra. The Cohen-Macaulay property indicates that a ring mimics the behavior of a polynomial ring in significant ways. However, when the ring is not Cohen-Macaulay, it often possesses a module with a similar property whose existence is enough to allow us to prove results extending those that hold in Cohen-Macaulay rings. In this talk I will discuss the history of big Cohen-Macaulay modules and algebras and their many applications in commutative algebra, including in my own research on singularities of commutative rings.

Keywords: polynomial ring, Cohen-Macaulay ring, big Cohen-Macaulay module.