

ABSTRACT

In this dissertation we study Cohen–Macaulay monomial ideals with a given radical. Among this set of ideals are the so-called Cohen–Macaulay modifications. Not all Cohen–Macaulay squarefree monomial ideals admit nontrivial Cohen–Macaulay modifications. It is shown that if there exists one such modification, then there exist indeed infinitely many. We also present classes of Cohen–Macaulay squarefree monomial ideals with infinitely many nontrivial Cohen–Macaulay modifications. We also study ideals which are the intersections of irreducible monomial ideals of height 2, whose radical is Cohen–Macaulay. Such ideals are naturally associated to a graph. For these ideals we give sufficient conditions in terms of the graph to be Cohen–Macaulay.