Abstract

Graphical degree stability is a combinatorial measure associated to a graph which can be computed through a systematic process called dominating vertex elimination method, which is known as DVE method. Using this measure a certain class of monomial ideals can be defined, called elimination ideal, which can be obtained by using sequential ideals associated to some families of simple, finite and connected graphs. In this thesis the graphical degree stabilities of some well known classes of graphs is computed. Moreover, some regularity bounds for the elimination ideals associated to some families of graphs is described by using their graphical degree stability. In addition, the computation of Castelnuovo-Mumford regularity using Minimal Free Resolution is discussed. At the end some new and interesting examples are presented as an application of known results.