Abstract

The aim of the present thesis is to study, develop and implement certain algorithms in order to find the type of singularities for isolated complete intersection singularities w.r.t contact equivalence of modality ≤ 1 defined over an algebraically closed field K. The new investigation is that we do not compute the normal form of a given singularity because this would be space and time consuming. We present a characterization of the different types of singularities in terms of certain invariants and use the characterization to identify the singularities. We describe our implementation in computer algebra system SINGULAR. Therefore, we discuss three problems in this thesis.

- Problem 1 deals with the classification of hypersurface singularities with respect to contact equivalence when the characteristic of the field $p > 2$ by using blowing up as a new tool.

- Problem 2 studies the classification of simple complete intersection singularities in terms of certain invariants when the characteristic of the field $p = 0$.

- Problem 3 includes to find the complete list of unimodular complete intersection space curve singularities and the characterization of these singularities in terms of certain invariants when the characteristic of the field $p = 0$.