1077-14-2724        **Jia Wan*** (`wan2235@vandals.uidaho.edu`), 514 Taylor Apt.6, Moscow, ID 83843. *On the Secant Defectivity of Classically Studied Varieties.*

Consider an irreducible, non-degenerate projective variety X. The k-th secant variety of X is the Zariski closure of the union of the linear spaces spanned by all k tuple points on X. The study of this object is centered around finding related invariants, such as dimension. Although it can be traced back to Bezout's work in the 18th century, scientists have shown more interest in this topic at the turn of the 20th century, since the problem is strongly connected to questions in representation theory, coding theory, algebraic complexity theory, and combinatorics. In recent years, many efforts have been made to develop techniques to describe secant varieties for some well known varieties. In 1995, work by J. Alexander and A. Hirschowitz completed a project that was underway for over 100 years and confirmed the conjecture that finished the Waring's problem. However, the problem is still unsolved in its generality. Indeed, we are still far away from completing the classification of all the defective secant varieties, even for some specific varieties. In this talk, I will explain the techniques involved in classifying defective secant varieties of some classically studied varieties, as well as conjectures, open problems and some recent improvements we have achieved in this area. (Received September 22, 2011)