Abstract

In this thesis, we study the existence of positive solutions for various boundary value problems by different methods. In fact, this thesis consists of the following four parts. First, we apply the Schauder's fixed-theorem to deal with the existence of positive solutions for second order ordinary differential equations, under some assumptions on the source term, equipped with well-known Sturm-Liouville's, or multi-point boundary condition, and so on. Second, by Krasnoselkii's fixed-point theorem, we consider positive solutions for functional differential equations with boundary condition of Sturm-Liouville's type and remark several criteria for applications, especially on general ordinary differential equations. Third, for higher order $p-$Laplacian differential equations with another kind of three-point boundary conditions, a famous generalization of Leggett-Willams' fixed-point theorem will be introduced to show these problems have multiple solutions. Finally, we also discuss the second order nonlinear elliptic equation on an exterior domain by constructing upper and lower solutions.