

中文摘要

本文主要目的是創出新型的主動式懸吊系統，並使所產出之新型機構具省力與動作迅速的性能。

論文首先介紹傳統的被動式、半主動式以及主動式懸吊機構的系統架構和運作原理；接下來分析現有的被動式懸吊機構，整理出現有懸吊機構的拓樸構造特性，再加入主動式懸吊所需的特性，作為創思拓樸構造的基礎；然後利用顏氏創造性機構設計方法，設計限制條件，合成出符合限制條件的新型機構，最後產出新型的四桿與六桿主動式懸吊機構。為了使新型機構符合實際運用需要，本論文對所創出之四桿機構，進行運動分析與動力分析，並利用分析結果進行動力特性之尺寸最佳化；最後對此最佳化後之主動式懸吊機構做運動性能的評估，以驗證此主動式懸吊機構之可行性。

英文摘要

The objective of this thesis is the creative mechanism design of activesuspension systems.

At first, passive suspension systems, semi-active suspension systems and active suspension systems are introduced. In order to realize the nature of active suspension mechanisms, topological structure of traditional passive suspension mechanisms are analyzed. Then, design requirements and constraints of active suspension mechanisms can be set up. As a result, new types of active suspensions mechanisms are obtained by using Yan's creative mechanism design methodology. To make the generated active suspension mechanism more applicable, kinematic and dynamic analysis of a chosen 4-bar suspensions mechanism is performed. Optimization is then used for dimensional synthesis of the chosen mechanism. Finally, the kinematic and dynamic analysis of the resulting mechanism is given to verify the feasibility of this work.