# 電流變液阻尼器之設計與測試=design and testing of electrorheological fluid damper


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**摘 要**

智慧型車輛已是下一世代道路運輸工具主要發展方向之一，而整個智慧型車輛系統中之駕駛舒適度的提升是不可或缺的一環。本論文主要在於探討電流變液阻尼器的特性之研究。本研究首先推導在圓環狀流道之節流口，電流變液壓力降與幾何尺寸、控制電壓、流體材料之關係，並與平行板流道之模擬結果作比較，驗證推導之正確性。一般情況下兩理論模型差異不大，但當降伏應力變小與極大的流量就會使得兩理論模型產生誤差。為了能驗證理論之正確性，本研究製作一電流變液阻尼器，控制外加電場與活塞推擠速度兩實驗參數的方式量測節流口壓力降與阻尼力之改變。當電場強度增加、活塞推擠速度變快、節流口的電極間隙變小與電極長度的增大，皆會使得阻尼力與節流口壓力降隨著增加，其節流口壓力降與阻尼力，隨著活塞速度的增加變化幅度越平緩。而實驗結果可以證明電流變液阻尼器，可利用電場強度來調整所需之阻尼力。



關鍵詞 : 智慧型車輛 ; 半主動式承載系統 ; 電流變液阻尼器


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