DSP為主體之永磁式無刷馬達控制器研製-使用改良式可變結構控制理論

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摘 要

數位訊號處理器(DSP)為主體之永磁式無刷馬達控制在本論文 中作深入的理論分析與控制器實作，使用全新的改良式輸出回授可 變結構控制理論，經由實驗結果證實其應用在永磁無刷伺服馬達上 是可行而且效果極佳。 在論文中的理論分析藉由線性矩陣不等式方法應用在非匹配 不確定輸出回授可變結構系統，經由此線性矩陣不等式之理論能有 效減少非匹配不確定成份在輸出回授順滑模態下的不良影響，保證 系統穩定而且性能良好。 另外，由於大型系統的控制問題日益重要，本文再進一步探討 非匹配不確定大型系統的穩定性和顫動問題之解決方法，在大型系 統的各子系統中，我們藉由使用一個虛擬的控制，去證明系統的穩 定度。為了改善顫動問題，提出一個連續式滑動模式控制器去處 理，此一新的分散式可變結構控制器證明是穩定且具有良好的動態 特性。

關鍵詞 : 數位訊號處理器，永磁無刷馬達，可變結構系統，線性矩陣不等式，順滑模態，顫動問題

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