

# 不確定性互聯系統之穩定性分析與控制器設計

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## 摘要

針對可變結構控制的應用，我們提出一個以可變結構控制為基礎的模糊控制器，藉著加入平滑參數來降低系統的顫動現象。平滑參數所產生的影響將會在文中被分析。另一方面，本篇論文對非匹配不確定可變結構大型系統，進行穩定性的研究。這種分析和設計被應用在具有非匹配不確定藕合項的系統中。我們設計出的控制器不但可以消除顫動現象而且滿足到達條件。此外，我們另設計一種可變結構控制器能使系統達到指數穩定。根據Barbalat引理，這些控制器會迫使系統軌跡進入順滑平面上。在論文中，我們不只將輸出回授可變結構控制器應用在非匹配大型系統，更進一步推導出新的分散式輸出回授可變結構控制器，能保證系統能於有限時間進入滑動模式，系統的回授控制只用到輸出變數而且不需要估測器。

關鍵詞：可變結構控制，顫動現象，指數穩定，輸出回授

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