

# 中文摘要

切換式磁阻馬達具結構簡單、成本低、散熱佳與效率高等優點，其結合感應及直流馬達的特質和直流無刷馬達的特點，極適合應用於可變速驅動之場合。為了使馬達在系統參數變動及負載干擾情形下，得到較佳速度響應及負載干擾消除能力，本文提出具有模糊邏輯補償及具有模糊邏輯修正積分比例控制法則作為切換式磁阻馬達速度控制。其模糊邏輯法則為根據速度誤差值及其微分量作為系統參數變動及負載干擾量多寡為依據，進而決定加入反饋迴路加權能量大小及比例積分控制器參數修正值，藉以降低系統響應超越量及減少上升時間，使驅動系統得到最佳暫態響應及負載干擾之消除。最後利用數位訊號微處理器與電腦分工的特性，建立即時人機控制系統，驗證本控制法則的正確性及可行性。

## 英文摘要

A switched reluctance motor has the advantages of simple structure, low manufacturing cost, easy to cool and high efficiency. It combines many desirable qualities of induction motor drives, DC motor drives, and PM brushless DC systems. To achieve good dynamic performance, an IP structure controller with fuzzy logic compensation and fuzzy logic modified controller parameter are employed to reduce the effects of motor and mechanical parameter variations and provide a good disturbance rejection. A fuzzy logic inference is adopted to determine the value of the weight based on the velocity error and its derivative. In the proposed method, both the overshoot and the rise time in tracking can be reduced. All the designed SR motor controllers are implemented by using a TMS320C240 digital signal processor and personal computer to establish an online user interface, and the robustness of tracking performance is verified when subjected to parameter uncertainties and load disturbance.