

應用遺傳算則於壓電致動平台之建模與定位控制

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摘要

本論文中的壓電致動平台使採用Bouc-Wen model 來建立系統模型，而影響建模是否精準的系統外型參數以往都只是用試誤法來調整，非常的不方便因此本論文採用基因遺傳演算法，利用其尋優的特性來搜尋壓電平台的系統參數以達到高精度定位控制。由於壓電致動器本身存在著磁滯與蠕動現象，會使得定位精度變差，因此本論文使用結合磁滯觀測器來設計反向前饋控制器來補償磁滯與蠕動現象，此外再加上前饋與PI回授控制器來提高定位精度，在實驗方面使用雙軸壓電平台來做循環定位控制，此外還結合微步進平台做四軸粗微定位平台的定位控制。

關鍵詞：基因遺傳演算法，磁滯，觀測器，前饋控制

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